DEPARTMENT OF TAMIL SF

LIST OF VALUE ADDED COURSES-WITH EXPLANATION

<table>
<tr><td colspan="4">தமிழ்த்துறை(சுயநிதிப்பிரிவு)</td></tr>
<tr><td>பாடத் குறியீட்டு எண்</td><td>பாடத் தலைப்பு</td><td>கல்வியாண்டு</td><td>விளக்கம்</td></tr>
<tr><td>117EVS</td><td>பகுதி IV – Environmental Studies</td><td>2017-2018</td><td>சுற்றுச்சூழல் குறித்த விழிப்புணர்வை ஏற்படுத்தும் நோக்கில் கற்றல்</td></tr>
<tr><td>217VEC</td><td>பகுதி IV – Value Education</td><td>2017-2018</td><td>தனி மனித மதிப்பீடு சமூக மதிப்பீடுகள் குறித்து அறிவுறுத்தல்</td></tr>
<tr><td>317Q05</td><td>பகுதி III – முதன்மைப்பாடம் – V
பக்தி இலக்கியமும்,சிற்றிலக்கியமும்</td><td>2017-2018</td><td>ஆன்மீக உணர்வை ஊட்டல்.மத நல்லிணக்கத்தை ஏற்படுத்துதல்.அரிய வரலாற்று நிகழ்வுகைக் கற்பித்தல்.</td></tr>
<tr><td>417Q07</td><td>பகுதி III – முதன்மைப்பாடம் – VII
காப்பியங்கள்</td><td>2017-2018</td><td>தனி மனித வீரம் பற்றி அறிவுறுத்தல்.அறப் பண்புகளைப் போதித்தல்.</td></tr>
<tr><td>517Q09</td><td>பகுதி III – முதன்மைப்பாடம் – IX
அற இலக்கியம்</td><td>2017-2018</td><td>வாழ்வியல் மதிப்பீடுகளை அறிவுறுத்தல். தனி மனித ஒழுக்கத்தை வலியுறுத்தல்.</td></tr>
<tr><td>115EVS</td><td>பகுதி IV – Environmental Studies</td><td>2016-2017</td><td>சுற்றுச்சூழல் குறித்த விழிப்புணர்வை ஏற்படுத்தும் நோக்கில் கற்றல்</td></tr>
<tr><td>215VEC</td><td>பகுதி IV – Value Education</td><td>2016-2017</td><td>தனி மனித மதிப்பீடு சமூக மதிப்பீடுகள் குறித்து அறிவுறுத்தல்</td></tr>
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</table>

	அற இலக்கியம்		
115EVS	பகுதி IV – Environmental Studies	2014-2015	சுற்றுச்சூழல் குறித்த விழிப்புணர்வை ஏற்படுத்தும் நோக்கில் கற்றல்
215VEC	பகுதி IV – Value Education	2014-2015	தனி மனித மதிப்பீடு சமூக மதிப்பீடுகள் குறித்து அறிவுறுத்தல்
314Q05	பகுதி III – முதன்மைப்பாடம் – V பக்தி இலக்கியமும்,சிற்றிலக்கியமும்	2014-2015	ஆன்மீக உணர்வை ஊட்டல்.மத நல்லிணக்கத்தை ஏற்படுத்துதல்.அரிய வரலாற்று நிகழ்வுககைக் கற்பித்தல்
414Q07	பகுதி III – முதன்மைப்பாடம் – VII காப்பியங்கள்	2014-2015	தனி மனித வீரம் பற்றி அறிவுறுத்தல்.அறப் பண்புகளைப் போதித்தல்
514Q09	பகுதி III – முதன்மைப்பாடம் – IX அற இலக்கியம்	2014-2015	வாழ்வியல் மதிப்பீடுகளை அறிவுறுத்தல். தனி மனித ஒழுக்கத்தை வலியுறுத்தல்.

ஸ்ரீ ஜி.வி.ஜி விசாலாட்சி மகளிர் கல்லூரி (தன்னாட்சி)
பாரதியார் பல்கலைக் கழகத்திற்கு உட்பட்டது
தமிழ்த்துறை (சுயநிதிப்பிரிவு)
இளங்கலை தமிழ் இலக்கியம்
பருவமுறைத் தேர்வும் மதிப்பெண் பகிர்வும்
2017-2018-ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
	பருவம் - I						
117TA1	பகுதி I – தமிழ்த்தாள் - I	6	3	25	75	100	4
117EN1	பகுதி II – ஆங்கிலம் – I	6	3	25	75	100	4
117Q01	பகுதி III – முதன்மைப்பாடம் – I கவிதை இலக்கியம்	5	3	25	50	75	3
117Q02	முதன்மைப்பாடம்-II நாட்டுப்புறவியல்	5	3	25	50	75	3
117AQ1	துணைப்பாடம் I – தமிழக வரலாறும் பண்பாடும் - I	6	3	25	75	100	4
117EVS	பகுதி IV – Environmental Studies	2	2	50	--	50	2
	பருவம் - II						
217TA2	பகுதி I – தமிழ்த்தாள் – II	6	3	25	75	100	4
217EN2	பகுதி II – ஆங்கிலம் – II	6	3	25	75	100	4
217Q03	பகுதி III – முதன்மைப்பாடம் – III உரைநடை இலக்கியம்	5	3	25	75	100	4
217Q04	முதன்மைப்பாடம் IV இலக்கணம் I நன்னூல் - எழுத்து	5	3	25	75	100	4
217AQ2	துணைப்பாடம் II – தமிழக வரலாறும் பண்பாடும் - II	6	3	25	75	100	4
217VEC	பகுதி IV – Value Education	2	2	50	--	50	2
	பருவம் - III						
317TA3	பகுதி I – தமிழ்த்தாள் – III	6	3	25	75	100	4
317EN3	பகுதி II – ஆங்கிலம் – III	6	3	25	75	100	4

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
317Q05	பகுதி III – முதன்மைப்பாடம் – V பக்தி இலக்கியமும்,சிற்றிலக்கியமும்	3	3	25	75	100	4
317Q06	முதன்மைப்பாடம் VI இலக்கணம் II நன்னூல் -சொல்	4	3	25	75	100	4
317AQ3	துணைப்பாடம் III – தமிழ் இலக்கிய வரலாறு – I	6	3	25	75	100	4
317NUM	துறைசாரா சிறப்பு இலக்கியம் – I உணவே மருந்து	3	3	75	--	75	3
317NUM	பகுதி IV-Skill Enhancement course I-திரைத்தமிழ்	2	2	50	--	50	2
	பருவம் -IV						
417TA4	பகுதி I – தமிழ்த்தாள் – IV	6	3	25	75	100	4
417EN4	பகுதி II – ஆங்கிலம் – IV	6	3	25	75	100	4
417Q07	பகுதி III – முதன்மைப்பாடம் – VII காப்பியங்கள்	3	3	25	75	100	4
417Q08	முதன்மைப்பாடம் – VIII – இலக்கணம் III யாப்பருங்கலக்காரிகை(ஒழிபியல் நீங்கலாக)தண்டியலங்காரம்	4	3	25	75	100	4
417AQ4	துணைப்பாடம் IV – தமிழ் இலக்கிய வரலாறு – II	6	3	25	75	100	4
417NGA	General Awareness	-	1	50	--	50	2
417QS2	பகுதி IV-Skill Enhancement Course II-ஆட்சித்தமிழ்	3	3	75	--	75	3
417GIS	Information Security	2	2	50	--	Grade	Grade
417ALQ	Advanced Learners Course I வாய்மொழித் தேர்வு	--	--	--	100	100	4*
	பருவம் - V						
517Q09	பகுதி III – முதன்மைப்பாடம் – IX அற இலக்கியம்	5	3	25	75	100	4
517Q10	முதன்மைப்பாடம் – X சங்க இலக்கியம் - அகம்	6	3	25	75	100	4
517Q11	முதன்மைப்பாடம் – XI இலக்கணம் -IV- நம்பியகப்பொருள் புறப்பொருள் வெண்பாமாலை	5	3	25	75	100	4
517Q12	முதன்மைப்பாடம் – XII படைப்புக்கலை	5	3	25	75	100	4
517QE1 517QE2	சிறப்புப்பாடம் I- இதழியல்/ கோயிற்கலைகள்	6	3	25	75	100	4
517QS3	பகுதி IV – Skill Enhancement Course – III - இயற்கை மருத்துவம்	3	3	75	--	75	3
	பருவம் - VI						
617Q13	பகுதி III – முதன்மைப்பாடம் – XIII சங்க இலக்கியம் - புறம்	5	3	25	75	100	4

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
617Q14	முதன்மைப்பாடம் – XIV தமிழ்மொழி வரலாறு	5	3	25	75	100	4
617Q15	முதன்மைப்பாடம் – XV தமிழின் செம்மொழிப் பண்புகள்	5	3	25	75	100	4
617QE3/ 617QE4	சிறப்புப்பாடம் – II –திறனாய்வு இலக்கியம்/கால்டுவெல் ஒப்பிலக்கண	6	3	25	75	100	4
617QE5 617QE6	சிறப்புப்பாடம் – III – சுற்றுலாவியல்/ மொழிபெயர்ப்பியல்	6	3	25	75	100	4
617QS4	பகுதி IV – Skill Enhansment Course IV அரசுத்தேர்வில் தமிழ்	3	3	75	--	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	பகுதி – V Extension Activity	--	--	50	--	50	2
617ALQ	Advanced Learners Course - II வாய்மொழித் தேர்வு	--	--	--	100	100	4*
	Total Credits						140

இரண்டாமாண்டு -மூன்றாம் பருவம்

பகுதி-III முதன்மைப்பாடம் -V பக்தி இலக்கியமும் சிற்றிலக்கியமும்

(2017-2018 கல்வியாண்டில் முதல் பயிலும் மாணவியருக்குரியது)   317Q05

நோக்கம்:

பக்தி இலக்கியங்கள் வழி ஆன்மீக உணர்வூட்டல்

நாயன்மார்கள் ஆழ்வார்கள் பக்தலையையும்,இறைவனின் அற்புதச் செயல்களையும் அறியச்செய்தல

அலகு 1:சைவம்

1.திருஞானசம்பந்தர்-திருவண்ணாமலை பதிகம் -உண்ணாமுலை யுமையாளொடு எனத் தொடங்கும் 11 பாடல்கள், திருப்பிரமபுரம் பதிகம்-தோடுடைய செவியன் எனத் தொடங்கும் 11 பாடல்கள்

2:திருநாவுக்கரசர்-நமச்சிவாயப் பதிகம் -எல்லாம் சிவனென் எனத் தொடங்கும் 10 பாடல்கள் திருவாரூர் பதிகம் - தில்லைவாழ் எனத் தொடங்கும் 11 பாடல்கள்

3.சுந்தரர்-திருவெண்ணெய் நல்லூர் பதிகம் -பித்தா பிறைசூடி எனத் தொடங்கும் 10 பாடல்கள்

4.மாணிக்கவாசகர் -சிவபுராணம் முழுமையும்

அலகு 2: வைணவம்

1.பொய்கையாழ்வார் -வையம் தகழியா எனத் தொடங்கும் 10பாடல்கள்

2.நம்மாழ்வார் -பெரியதிருவந்தாதி-முயற்று சுமந்தெழுந்து எனத் தொடங்கும் 10பாடல்கள்

3.பெரியாழ்வார் -திருமொழி –திருப்பல்லாண்டு -12 பாடல்கள்

திருமழிசையாழ்வார் -திருச்சந்த விருத்தம் -12 பாடல்கள்

4. நாச்சியார் திருமொழி –தாமுகக்கும் தம்கையில் -10பாடல்கள்

5..குலசேகர ஆழ்வார்-பெருமாள் திருமொழி -11பாடல்கள்.

அலகு 3:கிறித்துவமும் இஸ்லாமும்

1.வீரமாமுனிவர் -தேம்பாவணி-மகிழ்வினை படலம்-திருமகன் உயர்வு கருதிய

சூசையின் உருகம் -12பாடல்கள்,

சூசையின்நன்றிக் கனிவு -13பாடல்கள்,

2.குணங்குடி மஸ்தானசாகிப -இஸ்லாம் பராபரக்கண்ணி-அண்ட புவனமென்றும்   எனத்
தொடங்கும் 20 பாடல்கள்.

அலகு 4: சிற்றிலக்கியம்

1.முத்துகுமரசாமி பிள்ளைத் தமிழ்-செங்கீரைப் பருவம்,தாலப் பருவம்,முத்தப் பருவம்,
வருகைப் பருவம் 5 பருவங்களிலும் முதல் -2 பாடல்கள்.

2.சரசுவதி அந்தாதி- 30 பாடல்கள்

3.முக்கூடற்பள்ளு –மழைக்குறி – (34-49)   15 பாடல்கள்.

அலகு 5: சிற்றிலக்கியம்

1.திருவரங்க கலம்பகம் - முதல் 10பாடல்கள்.

2.கலிங்கத்துப்பரணி – தேவியைப் பாடியது- (82-85) 4 பாடல்கள்.

போர்ப் பாடியது (145- 163)   19 பாடல்கள்.

களம் பாடியது   7பாடல்கள்.

3.தமிழ்விடுதூது – 30 கண்ணிகள் தேர்ந்தெடுக்கப்பட்டவை.

பார்வை நூல்கள்

1. டாக்டர் ரா.கண்ணன் -சிற்றிலக்கிய ஆராய்ச்சி 2002.

2.மு.அருணாச்சலம் -பிரபந்த மரபியல், முதற்பதிப்பு-1976.

இளங்கலை தமிழ் இலக்கியம்
இரண்டாமாண்டு-நான்காம்பருவம்
பகுதி–**III**-முதன்மைப்பாடம்-**VII**-காப்பியங்கள்   **417Q07**

(2017-2018ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)   (38 மணி)

நோக்கம்:

காப்பியங்களின் வழி நான்கு வகை உறுதிப்பொருள்களின் தன்மையை உணரக்
செய்தல்.

தனிமனிதனுடைய வீரம், அறப்பண்புகள் பற்றி தெளிவுறுத்தல்.

அலகு 1: சிலப்பதிகாரம்

புறஞ்சேரியிறுத்த காதை ,வழக்குரைத்த காதை

அலகு 2: மணிமேகலை

மணிமேகலா தெய்வம் வந்து தோன்றிய காதை ,பளிக்கறை புக்க காதை

அலகு 3: சீவக சிந்தாமணி

சுரமஞ்சரியார் இலம்பகம் -30 பாடல்கள் (தேர்ந்தெடுக்கப்பட்டவை)

பெருங்கதை

மகத காண்டம் -யாழ் நலஞ் தெரிந்தது

அலகு 4: கம்பராமாயணம்

பால காண்டம் -கடிமணப்படலம் -30பாடல்கள்

வில்லிபாரதம் -சூது போர்ச் சருக்கம்

தருமனைச் சூதாட அழைத்தல் 10 பாடல்கள்

தருமன் தோற்றல் - 6 பாடல்கள்

திரௌபதியின் முறையீடு - 2 பாடல்கள்

திரௌபதி நியாயம் வேண்டல் - 2 பாடல்கள்

கண்ணன் அருள்புரிதல் -4 பாடல்கள்

வீமன் சினம் - 4பாடல்கள்

திரௌபதியும் தம்பியும் சபதம் ஏற்றல் - 5 பாடல்கள்

அலகு 5: கவிமணி –மருமக்கள் வழி மான்மியம் (முழுவதும்)

முடியரசன் -பூங்கொடி –முதல் 5 காதைகள்

பார்வை நூல்கள்

1.சோம இளவரசு –காப்பியத்திறன் -குமரன் பதிப்பகம் ,சிதம்பரம் 1973.

2.காசிராசன்,இரா.காப்பியத்தமிழ், அருள்நாதர் பதிப்பகம்,மதுரை.

ஸ்ரீ ஜி.வி.ஜி. விசாலாட்சி மகளிர் கல்லூரி (தன்னாட்சி)
பாரதியார் பல்கலைக் கழகத்திற்கு உட்பட்டது
தமிழ்த்துறை
இளங்கலை தமிழ் இலக்கியம்
பருவமுறைத் தேர்வும் மதிப்பெண் பகிர்வும்
2016-2017-ஆம் கல்வியாண்டில்   பயிலும் மாணவியருக்குரியது

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
	பருவம் - I						
115TA1	பகுதி I – தமிழ்த்தாள் - I	6	3	25	75	100	4
115EN1	பகுதி II – ஆங்கிலம் – I	6	3	25	75	100	4
115Q01	பகுதி III – முதன்மைப்பாடம் – I இக்கால இலக்கியம்	5	3	25	50	75	3
115Q02	முதன்மைப்பாடம் – II இலக்கணம் I: நன்னூல் - எழுத்து	5	3	25	50	75	3
115AQ1	துணைப்பாடம் I – தமிழக வரலாறும் பண்பாடும் - I	6	3	25	75	100	4
115EVS	பகுதி IV – Environmental Studies	2	2	50	--	50	2
	பருவம் - II						
215TA2	பகுதி II – தமிழ்த்தாள் – II	6	3	25	75	100	4

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
215EN2	பகுதி II – ஆங்கிலம் – II	6	3	25	75	100	4
215Q03	பகுதி III – முதன்மைப்பாடம் – III நாட்டுப்புறவியல்	5	3	25	75	100	4
215Q04	முதன்மைப்பாடம் IV இலக்கணம் II நன்னூல் - சொல்	5	3	25	75	100	4
215AQ2	துணைப்பாடம் II – தமிழக வரலாறும் பண்பாடும் - II	6	3	25	75	100	4
215VEC	பகுதி IV – Value Education	2	2	50	--	50	2
	பருவம் - III						
315TA3	பகுதி I – தமிழ்த்தாள் – III	6	3	25	75	100	4
315EN3	பகுதி II – ஆங்கிலம் – III	6	3	25	75	100	4
315Q05	பகுதி III – முதன்மைப்பாடம் – V பக்தி இலக்கியமும் சிற்றிலக்கியமும்	3	3	25	75	100	4
315Q06	முதன்மைப்பாடம் VI இலக்கணம் III யாப்பருங்கலக்காரிகையும் (ஓழியியல் நீங்கலாக) தண்டியலங்காரமும்	4	3	25	75	100	4
315AQ3	துணைப்பாடம் III – தமிழ் இலக்கிய வரலாறு – I	6	3	25	75	100	4
315QS1	பகுதி IV – Skill Based Course I – மொழியியல்	3	3	75	--	75	3
315NUM	துறைசாரா சிறப்பு இலக்கியம் – I உணவே மருந்து	2	2	50	--	50	2
	பருவம் -IV						
415TA4	பகுதி I – தமிழ்த்தாள் – IV	6	3	25	75	100	4
415EN4	பகுதி II – ஆங்கிலம் – IV	6	3	25	75	100	4
415Q07	பகுதி III – முதன்மைப்பாடம் – VII காப்பியங்கள்	4	3	25	75	100	4
415Q08	முதன்மைப்பாடம் – VIII – இலக்கணம் IV: நம்பியகப்பொருளும், புறப்பொருள் வெண்பாமாலையும்	4	3	25	75	100	4
415AQ4	துணைப்பாடம் IV – தமிழ் இலக்கிய வரலாறு – II	6	3	25	75	100	4
415QS2	பகுதி IV – Skill Based Course II – மொழிபெயர்ப்பியல்	3	3	75	--	75	3
415NGA	துறைசாரா சிறப்பு இலக்கியம் II General Awareness (Online)	--	1	50	--	50	2
415GIS	Information Security	2	2	--	50	50	Grade
415EX1/ 415EX2/ 415EX4/	பகுதி – V Extension	--	--	50	--	50	2

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு			மொத்த மதிப்பெண்	தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு		
415EX5							
415ALQ	Advanced Learners Course I வாய்மொழித் தேர்வு	--	--	--	100	100	3*
	பருவம் - V						
515Q09	பகுதி III – முதன்மைப்பாடம் – IX அற இலக்கியம்	5	3	25	75	100	4
515Q10	முதன்மைப்பாடம் – X சங்க இலக்கியம் - அகம்	5	3	25	75	100	4
515Q11	முதன்மைப்பாடம் – XI தமிழ்மொழி வரலாறு	6	3	25	75	100	4
515Q12	முதன்மைப்பாடம் – XII இலக்கியத் திறனாய்வியல்	5	3	25	75	100	4
515QE1	சிறப்புப்பாடம் – I – இதழியல்	6	3	25	75	100	4
515QS3	பகுதி IV – Skill Based Course – III - இயற்கை மருத்துவம்	3	3	75	--	75	3
	பருவம் - VI						
615Q13	பகுதி III – முதன்மைப்பாடம் – XIII சங்க இலக்கியம் - புறம்	5	3	25	75	100	4
615Q14	முதன்மைப்பாடம் – XIV கால்டுவெல் ஒப்பிலக்கணம்	5	3	25	75	100	4
615Q15	முதன்மைப்பாடம் – XV தமிழின் செம்மொழிப் பண்புகள்	5	3	25	75	100	4
615QE2	சிறப்புப்பாடம் – II –சுற்றுலாவியல்	6	3	25	75	100	4
615QE3	சிறப்புப்பாடம் – III – கவின்கலைகள்	6	3	25	75	100	4
615QS4	பகுதி IV – Skill Based Course IV கல்வெட்டியல்	3	3	75	--	75	3
415EX3/	பகுதி – V Extension	--	--	50	--	50	2
615ALQ	Advanced Learners Course - II வாய்மொழித் தேர்வு	--	--	--	100	100	3*
	Total Credits						140

இளங்கலை தமிழ் இலக்கியம்

இரண்டாமாண்டு - மூன்றாம் பருவம்

பகுதி –III முதன்மைப்பாடம் :V-பக்தி இலக்கியமும் சிற்றிலக்கியமும்   314Q05/315Q05

(2015 -2016 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

(38 மணி)

நோக்கம் : ❖ பக்தி இலக்கியங்கள் வழி ஆன்மீக உணர்வூட்டல்

❖ நாயன்மார்கள், ஆழ்வார்களின் பக்தியையும், இறைவனின் அற்புதச் செயலையும் அறியச் செய்தல்

❖ சிற்றிலக்கியங்கள் வழி இடைக்காலத்திலும், பிற்காலத்திலும் நடந்த அரிய பல வரலாற்று நிகழ்வுகளை கற்பித்தல்

❖ பிள்ளைத்தமிழ், தூது, குறவஞ்சி, பள்ளு முதலிய சிற்றிலக்கியங்களின் இலக்கிய நயத்தை மாணவர்களுக்கு அறிவுறுத்தல்

அலகு 1 :   **சைவம்**   (8 மணி)

1. திருஞான சம்பந்தர் – பொது

"வேயுறு தோளி பங்கன்" என்று தொடங்கும் 11 பாடல்கள்

2. திருநாவுக்கரசர் – திருவதிகை வீரட்டானத்துப் பதிகம்
"கூற்றாயின் வாறு விலக்கலீர்" எனத் தொடங்கும் 10 பாடல்கள்
3. சுந்தரர் – அவிநாசி பதிகம் – "எற்றான் மறக்கோன்" எனத் தொடங்கும் 10 பாடல்கள்
4. மாணிக்கவாசகர் – திருஅம்மானைப் பதிகம் – "செங்கண் நெடுமாலும்" எனத் தொடங்கும் முதல் 10 பாடல்கள்

பார்வை நூல்கள்

1. அவ்வை சு. துரைசாமிப்பிள்ளை, **சைவமுரசு**, சைவ சித்தாந்த நூல் பதிப்புக் கழகம், 2003.
1. பானுமதி ரமேஷ், **சைவம் வளர்த்த தமிழ்**, நியூ செஞ்சுரி புக் ஹவுஸ், முதற்பதிப்பு 2011.

அலகு 2:   **வைணவம்**   (8 மணி)

1. பெரியாழ்வார் – "ஆனிரை மேய்க்க நீ போதி" எனத் தொடங்கும் 10 பாடல்கள்
2. ஆண்டாள் – நாச்சியார் திருமொழி – சிற்றில் சிதையேல் நாமமாயிரம் "நாமமாயிர மேத்த நின்ற" எனத் தொடங்கும் 10 பாடல்கள்
3. குலசேகராழ்வார் – பெருமாள் திருமொழி – "ஆலை நீள் கரும்பு" எனத் தொடங்கும் பதிகம் 11 பாடல்கள்
4. நம்மாழ்வார் – திருவாய்மொழி – "வைகுந்தா! மணிவண்ணனே" எனத் தொடங்கும் 11 பாடல்கள்

பார்வை நூல்கள்

1. பேராசிரியர் ந. சுப்பு ரெட்டியார் - வைணவ உரைவளம், பாரி நிலையம், 1985.
2. பேராசிரியர் ந. சுப்பு ரெட்டியார் - ஆழ்வார்களின் ஆரா அமுது, ஐந்திணைப் பதிப்பகம், 1987.

அலகு 3: **கிறிஸ்தவமும் இஸ்லாமும்**   (7 மணி)
1. கண்ணதாசன் - இயேசு காவியம் - மகிமை (ஐந்தாம் பாகம்) (142-149)
                                                          8 தலைப்புகள்
2. உமறுப்புலவர் - சீறாப்புராணம் - தசைக் கட்டியைப் பெண்ணுரு அமைத்த படலம்   35 பாடல்கள்

பார்வை நூல்கள்

1. டேவிட் வில்சன், இயேசு காவியம் காப்பியப் பார்வை, 2008.
2. மயிலை சீனி. வேங்கடசாமி, கிறிஸ்தவமும் தமிழும், கழக வெளியீடு, 1936.
3. டாக்டர் முகமது உவைஸ், இஸ்லாமும் இன்பத்தமிழும், யுனிவர்சல் பப்ளிஷர்ஸ் வெளியீடு, 2008.

அலகு 4: சிற்றிலக்கியம்   (7 மணி)

1. குமரகுருபரர் - மீனாட்சியம்மை பிள்ளைத் தமிழ் (தாலப் பருவம், சப்பாணிப் பருவம், முத்தப் பருவம், வருகைப் பருவம், அம்புலிப் பருவம்) – (5 பருவங்களிலும் முதல் 2 பாடல்கள்)   10 பாடல்கள்
2. பலபட்டடைச் சொக்கநாதப் புலவர் – அழகர் கிள்ளைவிடு தூது – (முழுவதும்)

அலகு 5 : சிற்றிலக்கியம்   (8 மணி)

1. "திரிகூடராசப்பக கவிராயர் – திருக்குற்றாலக் குறவஞ்சி – இறைவனின் திருவுலா   18 பாடல்கள்
2. முக்கூடற்பள்ளு – ஏசல் நாட்டுவளம்   15 பாடல்கள்

பாடநூல் : பாடங்கள் தொகுக்கப் பெற்று துறை வெளியீடு.

பார்வை நூல்கள்

1. டாக்டர் இரா. கண்ணன், சிற்றிலக்கிய ஆராய்ச்சி, 2002.
2. அருணாசலம். மு., பிரபந்த மரபியல், முதற்பதிப்பு 1976.
3. நா.வீ. ஜெயராமன், சிற்றிலக்கியச் செல்வங்கள், மணிவாசகர் நூலகம், சிதம்பரம், முதற்பதிப்பு 1967.
4. மு. சண்முகம்பிள்ளை, சிற்றிலக்கிய வளர்ச்சி, மணிவாசகர் நூலகம், சிதம்பரம், 1981.
5. நா.வீ. ஜெயராமன், சிற்றிலக்கிய திறனாய்வு, இலக்கியப் பதிப்பகம், சென்னை 1980.

                    தயாரிப்பு   : சு. பிருந்தா
                    சரிபார்ப்பு   : முனைவர் மு. ருக்மணி
                    மேற்பார்வை   : முனைவர் ப. தமிழ்ப்பாவை
                இளங்கலை தமிழ் இலக்கியம்
                இரண்டாமாண்டு - நான்காம் பருவம்

பகுதி – III முதன்மைப்பாடம் -VII – காப்பியங்கள்   414Q07/415Q07

(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

                                                         (52 மணி)

நோக்கம் ❖ காப்பியங்களின் வழி நான்குவகை உறுதிப் பொருள்களின் தன்மையை உணரச் செய்தல்

        ❖ தனிமனிதனுடைய வீரம், அறப்பண்புகள், பற்றித் தெளிவுறுத்தல்
        ❖ இறையருளின் பேராற்றல் - இறையடியார்களின் பக்திச் சிறப்பினைப் புலப்படுத்துதல்

அலகு 1 :   (10 மணி)
        காப்பியம் எழுந்த காலம் - காப்பியம் என்றால் என்ன? – காப்பியத்தின் இலக்கணம் - காப்பியத்தின் பண்புகள் - சிறப்புகள்

அலகு 2 :   (10 மணி)
  சிலப்பதிகாரம் - அரங்கேற்றுக்காதை – மணிமேகலை – சிறைக்கோட்டத்தை
  அறக்கோட்டமாக்கிய காதை

அலகு 3 :   (10 மணி)
  சீவகசிந்தாமணி – நாமகள் இலம்பகம் (30 பாடல்கள்) – பெருங்கதை – கரடு
  பெயர்த்தது (முழுவதும்)

அலகு 4 :   (11 மணி)
  சூளாமணி – சுயம்வரச் சருக்கம் – 25 பாடல்கள்
  தேம்பாவணி – வளன் சனித்த படலம் – 25 பாடல்கள்
  கம்பராமாயணம் – வாலிவதைப் படலம் – 25 பாடல்கள்

அலகு 5 :   (11 மணி)
  கவிமணி – மருமக்கள் வழிமான்மியம்
  கவிஞர் முடியரசன் - 'பூங்கொடி'

பாடநூல் : பாடத்திட்டப் பகுதிகளைத் தொகுத்து துறை வெளியீடு.

பார்வை நூல்கள்

1. இளவரசு, சோம., 'காப்பியத்திறன்', குமரன் பதிப்பகம், சிதம்பரம், 1973.
2. காசிராஜன், இரா., காப்பியத்தமிழ், அருள்நாதர் பதிப்பகம், மதுரை.
3. சுப்பிரமணியன், ச.வே., காப்பியப்புனைதிறன், தமிழ்ப்பதிப்பகம், சென்னை, 1979.
4. காசிராஜன், இரா., காப்பிய தோற்றமும் வளர்ச்சியும், மதி பதிப்பகம், மதுரை, 2008.

                                  தயாரிப்பு : ந. சாரதாமணி

                                  சரிபார்ப்பு : முனைவர் மு.ருக்மணி

                                  மேற்பார்வை : முனைவர் ப. தமிழ்ப்பாவை

இளங்கலை தமிழ் இலக்கியம்
மூன்றாமாண்டு – ஐந்தாம் பருவம்
பகுதி – **III** முதன்மைப்பாடம் – **IX** : அற இலக்கியம்   **514Q09/515Q09**
(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)
                                                                                (65 மணி)

நோக்கம்   :   ❖   வாழ்வியல் மதிப்பீடுகளை மாணவியர் உணரச்செய்தல்
                      ❖   அறச்சிந்தனைகளை மாணவியரிடையே விதைத்தல்
                      ❖   அறத்தின்வழிப்பட்ட வாழ்வினை வாழ அறிவுறுத்தல்

அலகு 1 :   திருக்குறள் – அறத்துப்பால் முதல் 10 அதிகாரம்   (13 மணி)

அலகு 2 :   ஆசாரக்கோவை முதல் 20 பாடல்கள்   (1-20)   (13 மணி)

அலகு 3 : இனியவை நாற்பது முதல் 20 பாடல்கள் (1-20)   (13 மணி)

அலகு 4 : நாலடியார் – பொருட்பால் 5 அதிகாரங்கள்   (13 மணி)
(கல்வி, குடிப்பிறப்பு மேன்மக்கள், நல்லினம் சேர்தல், தாளாண்மை)

அலகு 5 : உலகநீதி முழுமையும் (13 பாடல்கள்)   (13 மணி)

பாடநூல் :
1. பாடங்கள் தொகுக்கப்பெற்று தமிழ்த்துறை வெளியீடு.

பார்வை நூல்கள்
1. ந. சுப்ரமண்யன், திருக்குறட்கட்டுரைகள், என்னெஸ் ப்பளிகேஷன்ஸ், உடுமலை, முதற்பதிப்பு 2004.

2. மு. மரியதெரசா, திருக்குறள் சிறுகதைகள், விஜயா பதிப்பகம், முதற்பதிப்பு 2010.
3. மு. சற்குணவதி, அறவியல் சிந்தனைகளும் வாழ்வியல் சிந்தனைகளும், 2008.
தயாரிப்பு : முனைவர் ப.தமிழ்ப்பாவை

சரிபார்ப்பு: முனைவர் சு.சசிகலா

மேற்பார்வை: சு. பிருந்தா

ஸ்ரீ ஜி.வி.ஜி. விசாலாட்சி மகளிர் கல்லூரி (தன்னாட்சி)
பாரதியார் பல்கலைக் கழகத்திற்கு உட்பட்டது
தமிழ்த்துறை
இளங்கலை தமிழ் இலக்கியம்
பருவமுறைத் தேர்வும் மதிப்பெண் பகிர்வும்
2015-2016-ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
	பருவம் - I						
115TA1	பகுதி I – தமிழ்த்தாள் - I	6	3	25	75	100	4
115EN1	பகுதி II – ஆங்கிலம் – I	6	3	25	75	100	4
115Q01	பகுதி III – முதன்மைப்பாடம் – I இக்கால இலக்கியம்	5	3	25	50	75	3
115Q02	முதன்மைப்பாடம் – II இலக்கணம் I: நன்னூல் - எழுத்து	5	3	25	50	75	3

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
115AQ1	துணைப்பாடம் I – தமிழக வரலாறும் பண்பாடும் - I	6	3	25	75	100	4
115EVS	பகுதி IV – Environmental Studies	2	2	50	--	50	2
	பருவம் - II						
215TA2	பகுதி II – தமிழ்த்தாள் – II	6	3	25	75	100	4
215EN2	பகுதி II – ஆங்கிலம் – II	6	3	25	75	100	4
215Q03	பகுதி III – முதன்மைப்பாடம் – III நாட்டுப்புறவியல்	5	3	25	75	100	4
215Q04	முதன்மைப்பாடம் IV இலக்கணம் II நன்னூல் - சொல்	5	3	25	75	100	4
215AQ2	துணைப்பாடம் II – தமிழக வரலாறும் பண்பாடும் - II	6	3	25	75	100	4
215VEC	பகுதி IV – Value Education	2	2	50	--	50	2
	பருவம் - III						
315TA3	பகுதி I – தமிழ்த்தாள் – III	6	3	25	75	100	4
315EN3	பகுதி II – ஆங்கிலம் – III	6	3	25	75	100	4
315Q05	பகுதி III – முதன்மைப்பாடம் – V பக்தி இலக்கியமும் சிற்றிலக்கியமும்	3	3	25	75	100	4
315Q06	முதன்மைப்பாடம் VI இலக்கணம் III யாப்பருங்கலக்காரிகையும் (ஒழிபியல் நீங்கலாக) தண்டியலங்காரமும்	4	3	25	75	100	4
315AQ3	துணைப்பாடம் III – தமிழ் இலக்கிய வரலாறு – I	6	3	25	75	100	4
315QS1	பகுதி IV – Skill Based Course I – மொழியியல்	3	3	75	--	75	3
315NUM	துறைசாரா சிறப்பு இலக்கியம் – I உணவே மருந்து	2	2	50	--	50	2
	பருவம் -IV						
415TA4	பகுதி I – தமிழ்த்தாள் – IV	6	3	25	75	100	4
415EN4	பகுதி II – ஆங்கிலம் – IV	6	3	25	75	100	4
415Q07	பகுதி III – முதன்மைப்பாடம் – VII காப்பியங்கள்	4	3	25	75	100	4
415Q08	முதன்மைப்பாடம் – VIII – இலக்கணம் IV: நம்பியகப்பொருளும், புறப்பொருள் வெண்பாமாலையும்	4	3	25	75	100	4
415AQ4	துணைப்பாடம் IV – தமிழ் இலக்கிய வரலாறு – II	6	3	25	75	100	4
415QS2	பகுதி IV – Skill Based Course II – மொழிபெயர்ப்பியல்	3	3	75	--	75	3

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
415NGA	துறைசாரா சிறப்பு இலக்கியம் II General Awareness (Online)	--	1	50	--	50	2
415GIS	Information Security	2	2	--	50	50	Grade
415EX1/ 415EX2/ 415EX4/ 415EX5	பகுதி – V Extension	--	--	50	--	50	2
415ALQ	Advanced Learners Course I வாய்மொழித் தேர்வு	--	--	--	100	100	3*
	பருவம் - V						
515Q09	பகுதி III – முதன்மைப்பாடம் – IX அற இலக்கியம்	5	3	25	75	100	4
515Q10	முதன்மைப்பாடம் – X சங்க இலக்கியம் - அகம்	5	3	25	75	100	4
515Q11	முதன்மைப்பாடம் – XI தமிழ்மொழி வரலாறு	6	3	25	75	100	4
515Q12	முதன்மைப்பாடம் – XII இலக்கியத் திறனாய்வியல்	5	3	25	75	100	4
515QE1	சிறப்புப்பாடம் – I – இதழியல்	6	3	25	75	100	4
515QS3	பகுதி IV – Skill Based Course – III - இயற்கை மருத்துவம்	3	3	75	--	75	3
	பருவம் - VI						
615Q13	பகுதி III – முதன்மைப்பாடம் – XIII சங்க இலக்கியம் - புறம்	5	3	25	75	100	4
615Q14	முதன்மைப்பாடம் – XIV கால்டுவெல் ஒப்பிலக்கணம்	5	3	25	75	100	4
615Q15	முதன்மைப்பாடம் – XV தமிழின் செம்மொழிப் பண்புகள்	5	3	25	75	100	4
615QE2	சிறப்புப்பாடம் – II –சுற்றுலாவியல்	6	3	25	75	100	4
615QE3	சிறப்புப்பாடம் – III – கவின்கலைகள்	6	3	25	75	100	4
615QS4	பகுதி IV – Skill Based Course IV கல்வெட்டியல்	3	3	75	--	75	3
415EX3/	பகுதி – V Extension	--	--	50	--	50	2
615ALQ	Advanced Learners Course - II வாய்மொழித் தேர்வு	--	--	--	100	100	3*
	Total Credits						140

இளங்கலை தமிழ் இலக்கியம்

இரண்டாமாண்டு - மூன்றாம் பருவம்

பகுதி –III முதன்மைப்பாடம் :V-பக்தி இலக்கியமும் சிற்றிலக்கியமும்   314Q05/315Q05

(2014 -2015 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

நோக்கம் :   ❖ பக்தி இலக்கியங்கள் வழி ஆன்மீக உணர்வூட்டல்

❖ நாயன்மார்கள், ஆழ்வார்களின் பக்தியையும், இறைவனின் அற்புதச் செயலையும் அறியச் செய்தல்

❖ சிற்றிலக்கியங்கள் வழி இடைக்காலத்திலும், பிற்காலத்திலும் நடந்த அரிய பல வரலாற்று நிகழ்வுகளை கற்பித்தல்

❖ பிள்ளைத்தமிழ், தூது, குறவஞ்சி, பள்ளு முதலிய சிற்றிலக்கியங்களின் இலக்கிய நயத்தை மாணவர்களுக்கு அறிவுறுத்தல்

அலகு 1 :   **சைவம்**   (8 மணி)

5. திருஞான சம்பந்தர் – பொது
"வேயுறு தோளி பங்கன்" என்று தொடங்கும் 11 பாடல்கள்

6. திருநாவுக்கரசர் – திருவதிகை வீரட்டானத்துப் பதிகம்
"கூற்றாயின் வாறு விலக்கலீர்" எனத் தொடங்கும் 10 பாடல்கள்

7. சுந்தரர் – அவிநாசி பதிகம் – "எற்றான் மறக்கோன்" எனத் தொடங்கும் 10 பாடல்கள்

8. மாணிக்கவாசகர் – திருஅம்மானைப் பதிகம் – "செங்கண் நெடுமாலும்" எனத் தொடங்கும் முதல் 10 பாடல்கள்

பார்வை நூல்கள்

1. அவ்வை சு. துரைசாமிப்பிள்ளை, **சைவமுரசு**, சைவ சித்தாந்த நூல் பதிப்புக் கழகம், 2003.

2. பானுமதி ரமேஷ், **சைவம் வளர்த்த தமிழ்**, நியூ செஞ்சுரி புக் ஹவுஸ், முதற்பதிப்பு 2011.

அலகு 2:   **வைணவம்**   (8 மணி)

5. பெரியாழ்வார் – "ஆனிரை மேய்க்க நீ போதி" எனத் தொடங்கும் 10 பாடல்கள்

6. ஆண்டாள் – நாச்சியார் திருமொழி – சிற்றில் சிதையேல் நாமமாயிரம் "நாமமாயிர மேத்த நின்ற" எனத் தொடங்கும் 10 பாடல்கள்

7. குலசேகராழ்வார் – பெருமாள் திருமொழி – "ஆலை நீள் கரும்பு" எனத் தொடங்கும் பதிகம் 11 பாடல்கள்

8. நம்மாழ்வார் – திருவாய்மொழி – "வைகுந்தா! மணிவண்ணனே" எனத் தொடங்கும் 11 பாடல்கள்

பார்வை நூல்கள்

1. பேராசிரியர் ந. சுப்பு ரெட்டியார் - வைணவ உரைவளம், பாரி நிலையம், 1985.

2. பேராசிரியர் ந. சுப்பு ரெட்டியார் - ஆழ்வார்களின் ஆரா அமுது, ஐந்திணைப் பதிப்பகம், 1987.

அலகு 3: **கிறிஸ்தவமும் இஸ்லாமும்**   (7 மணி)

2. கண்ணதாசன் - இயேசு காவியம் - மகிமை (ஐந்தாம் பாகம்) (142-149)
                                                                            8 தலைப்புகள்

2. உமறுப்புலவர் - சீறாப்புராணம் - தசைக் கட்டியைப் பெண்ணுரு அமைத்த படலம்   35 பாடல்கள்

பார்வை நூல்கள்

1. டேவிட் வில்சன், இயேசு காவியம் காப்பியப் பார்வை, 2008.
2. மயிலை சீனி. வேங்கடசாமி, கிறிஸ்தவமும் தமிழும், கழக வெளியீடு, 1936.
3. டாக்டர் முகமது உவைஸ், இஸ்லாமும் இன்பத்தமிழும், யுனிவர்ஸல் பப்ளிஷர்ஸ் வெளியீடு, 2008.

அலகு 4: சிற்றிலக்கியம்   (7 மணி)
2. குமரகுருபரர் - மீனாட்சியம்மை பிள்ளைத் தமிழ் (தாலப் பருவம், சப்பாணிப் பருவம், முத்தப் பருவம், வருகைப் பருவம், அம்புலிப் பருவம்) – (5 பருவங்களிலும் முதல் 2 பாடல்கள்)   10 பாடல்கள்
2. பலபட்டடைச் சொக்கநாதப் புலவர் – அழகர் கிள்ளைவிடு தூது – (முழுவதும்)

அலகு 5 : சிற்றிலக்கியம்   (8 மணி)
3. "திரிகூடராசப்பக கவிராயர் – திருக்குற்றாலக் குறவஞ்சி – இறைவனின் திருவுலா   18 பாடல்கள்
4. முக்கூடற்பள்ளு – ஏசல் நாட்டுவளம்   15 பாடல்கள்

பாடநூல் : பாடங்கள் தொகுக்கப் பெற்று துறை வெளியீடு.

பார்வை நூல்கள்

6. டாக்டர் இரா. கண்ணன், சிற்றிலக்கிய ஆராய்ச்சி, 2002.
7. அருணாசலம். மு., பிரபந்த மரபியல், முதற்பதிப்பு 1976.
8. நா.வீ. ஜெயராமன், சிற்றிலக்கியச் செல்வங்கள், மணிவாசகர் நூலகம், சிதம்பரம், முதற்பதிப்பு 1967.
9. மு. சண்முகம்பிள்ளை, சிற்றிலக்கிய வளர்ச்சி, மணிவாசகர் நூலகம், சிதம்பரம், 1981.
10. நா.வீ. ஜெயராமன், சிற்றிலக்கிய திறனாய்வு, இலக்கியப் பதிப்பகம், சென்னை 1980.

தயாரிப்பு   : சு. பிருந்தா
சரிபார்ப்பு   : முனைவர் மு. ருக்மணி
மேற்பார்வை   : முனைவர் ப. தமிழ்ப்பாவை
இளங்கலை தமிழ் இலக்கியம்
இரண்டாமாண்டு - நான்காம் பருவம்

பகுதி –III முதன்மைப்பாடம் -VII – காப்பியங்கள்   414Q07/415Q07

(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

(52 மணி)

நோக்கம் ❖   காப்பியங்களின் வழி நான்குவகை உறுதிப் பொருள்களின் தன்மையை உணரச் செய்தல்

❖   தனிமனிதனுடைய வீரம், அறப்பண்புகள், பற்றித் தெளிவுறுத்தல்

❖   இறையருளின் பேராற்றல் - இறையடியார்களின் பக்திச் சிறப்பினைப் புலப்படுத்துதல்

அலகு 1 :   (10 மணி)

காப்பியம் எழுந்த காலம் - காப்பியம் என்றால் என்ன? – காப்பியத்தின் இலக்கணம் - காப்பியத்தின் பண்புகள் - சிறப்புகள்

அலகு 2 :   (10 மணி)

சிலப்பதிகாரம் - அரங்கேற்றுக்காதை – மணிமேகலை – சிறைக்கோட்டத்தை அறக்கோட்டமாக்கிய காதை

அலகு 3 :   (10 மணி)

சீவகசிந்தாமணி – நாமகள் இலம்பகம் (30 பாடல்கள்) – பெருங்கதை – கரடு பெயர்த்தது (முழுவதும்)

அலகு 4 :   (11 மணி)

சூளாமணி – சுயம்வரச் சருக்கம் – 25 பாடல்கள்

தேம்பாவணி – வளன் சனித்த படலம் – 25 பாடல்கள்

கம்பராமாயணம் – வாலிவதைப் படலம் – 25 பாடல்கள்

அலகு 5 :   (11 மணி)

கவிமணி – மருமக்கள் வழிமான்மியம்

கவிஞர் முடியரசன் - 'பூங்கொடி'

பாடநூல் :   பாடத்திட்டப் பகுதிகளைத் தொகுத்து துறை வெளியீடு.

பார்வை நூல்கள்

5. இளவரசு, சோம., 'காப்பியத்திறன்', குமரன் பதிப்பகம், சிதம்பரம், 1973.

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தயாரிப்பு :   ந. சாரதாமணி

சரிபார்ப்பு :   முனைவர் மு.ருக்மணி

மேற்பார்வை : முனைவர் ப. தமிழ்ப்பாவை

இளங்கலை தமிழ் இலக்கியம்

மூன்றாமாண்டு – ஐந்தாம் பருவம்

பகுதி – III முதன்மைப்பாடம் – IX : அற இலக்கியம்   514Q09/515Q09
(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)
                                                                         (65 மணி)

நோக்கம்   :   ❖   வாழ்வியல் மதிப்பீடுகளை மாணவியர் உணரச்செய்தல்

❖   அறச்சிந்தனைகளை மாணவியரிடையே விதைத்தல்

❖   அறத்தின்வழிப்பட்ட வாழ்வினை வாழ அறிவுறுத்தல்

அலகு 1 : திருக்குறள் – அறத்துப்பால் முதல் 10 அதிகாரம்   (13 மணி)

அலகு 2 :   ஆசாரக்கோவை முதல் 20   ள(13 மணி)

அலகு 3 : இனியவை நாற்பது முதல் 20 பாடல்கள் (1-20)   (13 மணி)

அலகு 4 : நாலடியார் – பொருட்பால் 5 அதிகாரங்கள்   (13 மணி)
(கல்வி, குடிப்பிறப்பு மேன்மக்கள், நல்லினம் சேர்தல், தாளாண்மை)

அலகு 5 : உலகநீதி முழுமையும் (13 பாடல்கள்)   (13 மணி)

ஸ்ரீ ஜி.வி.ஜி. விசாலாட்சி மகளிர் கல்லூரி (தன்னாட்சி)
பாரதியார் பல்கலைக் கழகத்திற்கு உட்பட்டது
தமிழ்த்துறை
இளங்கலை தமிழ் இலக்கியம்
பருவமுறைத் தேர்வும் மதிப்பெண் பகிர்வும்
2014-2015-ஆம் கல்வியாண்டில் பயிலும் மாணவியருக்குரியது

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
	பருவம் - I						
114TA1	பகுதி I – தமிழ்த்தாள் - I	6	3	25	75	100	3
114EN1	பகுதி II – ஆங்கிலம் – I	6	3	25	75	100	3
114Q01	பகுதி III – முதன்மைப்பாடம் – I இக்கால இலக்கியம் I	5	3	25	75	100	4
114Q02	முதன்மைப்பாடம் – II இலக்கணம் I: நன்னூல் - எழுத்து	5	3	25	75	100	4
114AQ1	துணைப்பாடம் I – தமிழக வரலாறும் பண்பாடும் - I	6	3	25	75	100	2
114EVS	பகுதி IV – Environmental Studies	2	2	50	--	50	2
	பருவம் - II						
214TA2	பகுதி I – தமிழ்த்தாள் – II	6	3	25	75	100	4
214EN2	பகுதி II – ஆங்கிலம் – II	6	3	25	75	100	4

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
214Q03	பகுதி III – முதன்மைப்பாடம் – III இக்கால இலக்கியம் II	5	3	25	75	100	4
214Q04	முதன்மைப்பாடம் IV இலக்கணம் II நன்னூல் - சொல்	5	3	25	75	100	4
214AQ2	துணைப்பாடம் II – தமிழக வரலாறும் பண்பாடும் - II	6	3	25	75	100	4
214VEC	பகுதி IV – Value Education	2	2	25	--	50	2
214ALQ	Advanced Learners Course –I பேச்சுக்கலை		3	-	100	100	3*
	பருவம் - III						
314TA3	பகுதி I – தமிழ்த்தாள் – III	6	3	25	75	100	4
314EN3	பகுதி II – ஆங்கிலம் – III	6	3	25	75	100	4
314Q05	பகுதி III – முதன்மைப்பாடம் – V பக்தி இலக்கியமும் சிற்றிலக்கியமும்	3	3	25	75	100	4
314Q06	முதன்மைப்பாடம் VI இலக்கணம் III யாப்பருங்கலக்காரிகையும் (ஒழிபியல் நீங்கலாக) தண்டியலங்காரமும்	4	3	25	75	100	4
314AQ3	துணைப்பாடம் III – தமிழ் இலக்கிய வரலாறு – I	6	3	25	75	100	4
314QS1	பகுதி IV – Skill Based Course I – மொழியியல்	3	3	75	--	75	3
314NNI	துறைசாரா சிறப்பு இலக்கியம் – I உடுமலை நாராயண கவி இலக்கியம்	2	2	75	--	75	2
	பருவம் -IV						
414TA4	பகுதி I – தமிழ்த்தாள் – IV	6	3	25	75	100	4
414EN4	பகுதி II – ஆங்கிலம் – IV	6	3	25	75	100	4
414Q07	பகுதி III – முதன்மைப்பாடம் – VII காப்பியங்கள்	4	3	25	75	100	4
414Q08	முதன்மைப்பாடம் – VIII – இலக்கணம் IV: நம்பியகப்பொருளும், புறப்பொருள் வெண்பாமாலையும்	4	3	25	75	100	4
414AQ4	துணைப்பாடம் IV – தமிழ் இலக்கிய வரலாறு – II	6	3	25	75	100	4
414QS2	பகுதி IV – Skill Based Course II – மொழிபெயர்ப்பியல்	3	3	75	--	75	3
414NGA	துறைசாரா சிறப்பு இலக்கியம் II General Awareness (Online)	--	1	50	--	50	2
414ALQ	Advanced Learners Course II திரைத்தமிழ்	--	--	--	100	100	3*

பாடக் குறியீட்டு எண்	பாடத் தலைப்புகள்	கற்பிக்கும் காலம் ஒரு வாரத்திற்கு	தேர்வு				தரப் புள்ளிகள்
			காலம்	அகமதிப்பீட்டுத் தேர்வு	புற மதிப்பீட்டு தேர்வு	மொத்த மதிப்பெண்	
	பருவம் - V						
514Q09	<mark>பகுதி III – முதன்மைப்பாடம் – IX அற இலக்கியம்</mark>	5	3	25	75	100	4
514Q10	முதன்மைப்பாடம் – X சங்க இலக்கியம் - அகம்	5	3	25	75	100	4
514Q11	முதன்மைப்பாடம் – XI தமிழ்மொழி வரலாறு	6	3	25	75	100	4
514Q12	முதன்மைப்பாடம் – XII இலக்கியத் திறனாய்வியல்	5	3	25	75	100	4
514QE1	சிறப்புப்பாடம் – I – இதழியல்	6	3	25	75	100	4
514QS3	பகுதி IV – Skill Based Course – III - இயற்கை மருத்துவம்	3	3	75	--	75	3
	பருவம் - VI						
614Q13	பகுதி III – முதன்மைப்பாடம் – XIII சங்க இலக்கியம் - புறம்	5	3	25	75	100	4
614Q14	முதன்மைப்பாடம் – XIV கால்டுவெல் ஒப்பிலக்கணம்	5	3	25	75	100	4
614Q15	முதன்மைப்பாடம் – XV தமிழின் செம்மொழிப் பண்புகள்	5	3	25	75	100	4
614QE2	சிறப்புப்பாடம் – II –சுற்றுலாவியல்	6	3	25	75	100	4
614QE3	சிறப்புப்பாடம் – III – கவின்கலைகள்	6	3	25	75	100	4
614QS4	பகுதி IV – Skill Based Course IV கல்வெட்டியல்	3	3	75	--	75	3
614EX1/ 614EX2/ 614EX3/ 614EX4/ 614EX5	பகுதி – V Extension	--	--	50	--	50	2
614ALQ	Advanced Learners Course - III போட்டித் தேர்வில் தமிழ்	--	--	--	100	100	3*
	Total Credits						140

இளங்கலை தமிழ் இலக்கியம்

இரண்டாமாண்டு - மூன்றாம் பருவம்

பகுதி –III முதன்மைப்பாடம் :V-பக்தி இலக்கியமும் சிற்றிலக்கியமும்   314Q05/315Q05

(2014 -2015 ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

(38 மணி)

நோக்கம் : ❖ பக்தி இலக்கியங்கள் வழி ஆன்மீக உணர்வூட்டல்

❖ நாயன்மார்கள், ஆழ்வார்களின் பக்தியையும், இறைவனின் அற்புதச் செயலையும் அறியச் செய்தல்

❖ சிற்றிலக்கியங்கள் வழி இடைக்காலத்திலும், பிற்காலத்திலும் நடந்த அரிய பல வரலாற்று நிகழ்வுகளை கற்பித்தல்

❖ பிள்ளைத்தமிழ், தூது, குறவஞ்சி, பள்ளு முதலிய சிற்றிலக்கியங்களின் இலக்கிய நயத்தை மாணவர்களுக்கு அறிவுறுத்தல்

அலகு 1 : **சைவம்**   (8 மணி)

9. திருஞான சம்பந்தர் – பொது
"வேயுறு தோளி பங்கன்" என்று தொடங்கும் 11 பாடல்கள்

10. திருநாவுக்கரசர் – திருவதிகை வீரட்டானத்துப் பதிகம்
"கூற்றாயின வாறு விலக்கலீர்" எனத் தொடங்கும் 10 பாடல்கள்

11. சுந்தரர் – அவிநாசி பதிகம் – "எற்றான் மறக்கோன்" எனத் தொடங்கும் 10 பாடல்கள்

12. மாணிக்கவாசகர் – திருஅம்மானைப் பதிகம் – "செங்கண் நெடுமாலும்" எனத் தொடங்கும் முதல் 10 பாடல்கள்

பார்வை நூல்கள்

1. அவ்வை சு. துரைசாமிப்பிள்ளை, **சைவமுரசு**, சைவ சித்தாந்த நூல் பதிப்புக் கழகம், 2003.

3. பானுமதி ரமேஷ், **சைவம் வளர்த்த தமிழ்**, நியூ செஞ்சுரி புக் ஹவுஸ், முதற்பதிப்பு 2011.

அலகு 2: **வைணவம்**   (8 மணி)

9. பெரியாழ்வார் – "ஆனிரை மேய்க்க நீ போதி" எனத் தொடங்கும் 10 பாடல்கள்

10. ஆண்டாள் – நாச்சியார் திருமொழி – சிற்றில் சிதையேல் நாமமாயிரம் "நாமமாயிர மேத்த நின்ற" எனத் தொடங்கும் 10 பாடல்கள்

11. குலசேகராழ்வார் – பெருமாள் திருமொழி – "ஆலை நீள் கரும்பு" எனத் தொடங்கும் பதிகம் 11 பாடல்கள்

12. நம்மாழ்வார் – திருவாய்மொழி – "வைகுந்தா! மணிவண்ணனே" எனத் தொடங்கும் 11 பாடல்கள்

பார்வை நூல்கள்

1. பேராசிரியர் ந. சுப்பு ரெட்டியார் - வைணவ உரைவளம், பாரி நிலையம், 1985.

2. பேராசிரியர் ந. சுப்பு ரெட்டியார் - ஆழ்வார்களின் ஆரா அமுது, ஐந்திணைப் பதிப்பகம், 1987.

அலகு 3: **கிறிஸ்தவமும் இஸ்லாமும்**   (7 மணி)

3. கண்ணதாசன் - இயேசு காவியம் - மகிமை (ஐந்தாம் பாகம்) (142-149)
                                                                                    8 தலைப்புகள்

2. உமறுப்புலவர் - சீறாப்புராணம் - தசைக் கட்டியைப் பெண்ணுரு அமைத்த படலம்   35 பாடல்கள்

பார்வை நூல்கள்

1. டேவிட் வில்சன், இயேசு காவியம் காப்பியப் பார்வை, 2008.

2. மயிலை சீனி. வேங்கடசாமி, கிறிஸ்தவமும் தமிழும், கழக வெளியீடு, 1936.

3. டாக்டர் முகமது உவைஸ், இஸ்லாமும் இன்பத்தமிழும், யுனிவர்சல் பப்ளிஷர்ஸ் வெளியீடு, 2008.

அலகு 4: சிற்றிலக்கியம் (7 மணி)

3. குமரகுருபரர் - மீனாட்சியம்மை பிள்ளைத் தமிழ் (தாலப் பருவம், சப்பாணிப் பருவம், முத்தப் பருவம், வருகைப் பருவம், அம்புலிப் பருவம்) – (5 பருவங்களிலும் முதல் 2 பாடல்கள்) 10 பாடல்கள்

2. பலபட்டடைச் சொக்கநாதப் புலவர் – அழகர் கிள்ளைவிடு தூது – (முழுவதும்)

அலகு 5 : சிற்றிலக்கியம் (8 மணி)

5. "திரிகூடராசப்பக கவிராயர் – திருக்குற்றாலக் குறவஞ்சி – இறைவனின் திருவுலா 18 பாடல்கள்

6. முக்கூடற்பள்ளு – ஏசல் நாட்டுவளம் 15 பாடல்

பாடநூல் : பாடங்கள் தொகுக்கப் பெற்று துறை வெளியீடு.

பார்வை நூல்கள்

11. டாக்டர் இரா. கண்ணன், சிற்றிலக்கிய ஆராய்ச்சி, 2002.
12. அருணாசலம். மு., பிரபந்த மரபியல், முதற்பதிப்பு 1976.
13. நா.வீ. ஜெயராமன், சிற்றிலக்கியச் செல்வங்கள், மணிவாசகர் நூலகம், சிதம்பரம், முதற்பதிப்பு 1967.
14. மு. சண்முகம்பிள்ளை, சிற்றிலக்கிய வளர்ச்சி, மணிவாசகர் நூலகம், சிதம்பரம், 1981.
15. நா.வீ. ஜெயராமன், சிற்றிலக்கிய திறனாய்வு, இலக்கியப் பதிப்பகம், சென்னை 1980.

தயாரிப்பு : சு. பிருந்தா
சரிபார்ப்பு : முனைவர் மு. ருக்மணி
மேற்பார்வை : முனைவர் ப. தமிழ்ப்பாவை
இளங்கலை தமிழ் இலக்கியம்
இரண்டாமாண்டு - நான்காம் பருவம்

பகுதி – III முதன்மைப்பாடம் -VII – காப்பியங்கள் 414Q07/415Q07

(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

(52 மணி)

நோக்கம் ❖ காப்பியங்களின் வழி நான்குவகை உறுதிப் பொருள்களின் தன்மையை உணரச் செய்தல்

❖ தனிமனிதனுடைய வீரம், அறப்பண்புகள், பற்றித் தெளிவுறுத்தல்

❖ இறையருளின் பேராற்றல் - இறையடியார்களின் பக்திச் சிறப்பினைப் புலப்படுத்துதல்

அலகு 1 : (10 மணி)

காப்பியம் எழுந்த காலம் - காப்பியம் என்றால் என்ன? – காப்பியத்தின் இலக்கணம் - காப்பியத்தின் பண்புகள் - சிறப்புகள்

அலகு 2 : (10 மணி)

சிலப்பதிகாரம் - அரங்கேற்றுக்காதை – மணிமேகலை – சிறைக்கோட்டத்தை அறக்கோட்டமாக்கிய காதை

அலகு 3 : (10 மணி)

சீவகசிந்தாமணி – நாமகள் இலம்பகம் (30 பாடல்கள்) – பெருங்கதை – கரடு பெயர்த்தது (முழுவதும்)

அலகு 4 : (11 மணி)

சூளாமணி – சுயம்வரச் சருக்கம் – 25 பாடல்கள்

தேம்பாவணி – வளன் சனித்த படலம் – 25 பாடல்கள்

கம்பராமாயணம் – வாலிவதைப் படலம் – 25 பாடல்கள்

அலகு 5 : (11 மணி)

கவிமணி – மருமக்கள் வழிமான்மியம்

கவிஞர் முடியரசன் - 'பூங்கொடி'

பாடநூல் : பாடத்திட்டப் பகுதிகளைத் தொகுத்து துறை வெளியீடு.

பார்வை நூல்கள்

9. இளவரசு, சோம., 'காப்பியத்திறன்', குமரன் பதிப்பகம், சிதம்பரம், 1973.

10. காசிராஜன், இரா., காப்பியத்தமிழ், அருள்நாதர் பதிப்பகம், மதுரை

11. சுப்பிரமணியன், ச.வே., காப்பியப்புனைதிறன், தமிழ்ப்பதிப்பகம், சென்னை, 1979.

12. காசிராஜன், இரா., காப்பிய தோற்றமும் வளர்ச்சியும், மதி பதிப்பகம், மதுரை, 2008.

தயாரிப்பு : ந. சாரதாமணி

சரிபார்ப்பு : முனைவர் மு.ருக்மணி

மேற்பார்வை : முனைவர் ப. தமிழ்ப்பாவை

இளங்கலை தமிழ் இலக்கியம்

மூன்றாமாண்டு – ஐந்தாம் பருவம்

பகுதி –III முதன்மைப்பாடம் –IX : அற இலக்கியம்   514Q09/515Q09

(2014-2015ஆம் கல்வியாண்டு முதல் பயிலும் மாணவியருக்குரியது)

(65 மணி)

நோக்கம்   : ❖   வாழ்வியல் மதிப்பீடுகளை மாணவியர் உணரச்செய்தல்

❖   அறச்சிந்தனைகளை மாணவியரிடையே விதைத்தல்

❖   அறத்தின்வழிப்பட்ட வாழ்வினை வாழ அறிவுறுத்தல்

அலகு 1 :   திருக்குறள் – அறத்துப்பால் முதல் 10 அதிகாரம்   (13 மணி)

அலகு 2 : ஆசாரக்கோவை முதல் 20 பாடல்கள்   (1-20)   (13 மணி)

அலகு 3 : இனியவை நாற்பது முதல் 20 பாடல்கள் (1-20)   (13 மணி)

அலகு 4 : நாலடியார் – பொருட்பால் 5 அதிகாரங்கள்   (13 மணி)
          (கல்வி, குடிப்பிறப்பு மேன்மக்கள், நல்லினம் சேர்தல், தாளாண்மை)

அலகு 5 : உலகநீதி முழுமையும் (13 பாடல்கள்)   (13 மணி)

பாடநூல் :
2. பாடங்கள் தொகுக்கப்பெற்று தமிழ்த்துறை வெளியீடு.

பார்வை நூல்கள்
4. ந. சுப்ரமண்யன்,   திருக்குறட்கட்டுரைகள்,   என்னெஸ்   ப்பளிகேஷன்ஸ்,
    உடுமலை, முதற்பதிப்பு 2004.

5. மு. மரியதெரசா, திருக்குறள் சிறுகதைகள், விஜயா பதிப்பகம், முதற்பதிப்பு
    2010.
6. மு. சற்குணவதி, அறவியல் சிந்தனைகளும் வாழ்வியல் சிந்தனைகளும், 2008.
          தயாரிப்பு : முனைவர் ப.தமிழ்ப்பாவை

          சரிபார்ப்பு: முனைவர் சு.சசிகலா

          மேற்பார்வை: சு. பிருந்தா

DEPARTMENT OF ENGLISH AIDED

LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Year	Course Code	Name of the course	Description
2017-18	615L14	New Literatures	To expose the learners to the problems of the diasporicliterature.To promote the universal brotherhood
	615L13	Indian Writing in English	To impart knowledge of Indian culture& tradition.To derive an insight from the works of Literary giants
	515L12	Classics in World Literature	To inculcate moral, spiritual values and social values of immortal epics world literature
	515L11	Intensive Study of an author	To instil moral values through select literary pieces of great personalities
	315L05	Women's Writings	1. To create an awareness of class, race and gender as social constructs and how they influence women's lives. 2.To facilitate effective communication about gender issues in both writing and speech
	217L04	Fiction	life oriented values and aesthetic values are imparted through novels of great writers
	217VEC	Value Education	To create an awareness to conserve and preserve nature and ecosystem.
	117EVS	Environmental Studies	To inculcate life oriented skills and societal values
Year	**Course Code**	**Name of the course**	**Description**
2016-17	512L12	Indian Writing in English	To impart knowledge of Indian culture& tradition.To derive an insight from the works of Literary giants
	512L11	Intensive Study of an Author	To impart the personal values practised by great personalities in their lives and to take them as role models
	512L10	New Literatures	To inculcate moral and social values. To expose the learners to the problems of the diasporicliterature.To promote the universal brotherhood
	315L05	Women's Writings	To create an awareness of class, race and gender as social constructs and how they influence women's lives. 2.To facilitate effective communication about gender issues in both writing and speech
	215L04	Fiction	life oriented values and aesthetic values are imparted through novels of great writers
	215VEC	Value Education	To inculcate life oriented skills and societal values
	115EVS	Environmental Studies	To create an awareness to conserveand preserve nature and ecosystem.

Year	Course Code	Name of the course	Description
2015-16	512L12	Indian Writing in English	To impart knowledge of Indian culture&tradition. To derive an insight from the works of Literary giants
	512L11	Intensive Study of an Author	To impart the personal values practised by great personalities in their lives and to take them as role models
	512L10	New Literatures	To inculcate moral and social values
	312L05	Women's Writings	1. To create an awareness of class, race and gender as social constructs and how they influence women's lives. 2.To facilitate effective communication about gender issues in both writing and speech
	215L04	Fiction	life oriented values and aesthetic values are imparted through novels of great writers
	115L01	Poetry I	To impart aesthetic values
	215VEC	Value Education	To inculcate life oriented skills and societal values
	115EVS	Environmental Studies	To create an awareness to conserve and preserve nature and ecosystem.
Year	Course Code	Name of the course	Description
2014-15	612L13	Shakespeare II	To impart an insight to practice human values on all occasionsTo impart an insight to promote universality of theatrical art
	512L09	Shakespeare I	To impart an insight to practice human values on all occasionsTo impart an insight to promote universality of theatrical art
	312L05	Women's Writings	1. To create an awareness of class, race and gender as social constructs and how they influence women's lives. 2.To facilitate effective communication about gender issues in both writing and speech
	212L03	Fiction	life oriented values and aesthetic values are imparted through novels of great writers
	112L01	Poetry I	To imbibe aesthetic values
	212VEC	Value Education	To inculcate life oriented skills and societal values
	112EVS	Environmental Studies	To create an awareness to conserve and preserve nature and ecosystem.
Year	Course Code	Name of the course	Description
2013-15	511L09	Shakespeare II	To impart an insight to practice human values on all occasionsTo impart an insight to promote universality of theatrical art
	611L13	Shakespeare I	To impart an insight to practice human values on all occasionsTo impart an insight to promote universality of theatrical art

	312L05	Women's Writings	1. To create an awareness of class, race and gender as social constructs and how they influence women's lives. 2.To facilitate effective communication about gender issues in both writing and speech
	112L01	Poetry I	To imbibe aesthetic values
	212VEC	Value Education	To inculcate life oriented skills and societal values
	112EVS	Environmental Studies	To create an awareness to conserve and preserve nature and ecosystem

	Curriculum Design							
	Sri G.V.G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)							
	Affiliated to Bharathiar University							
	Department of English							
	Scheme of Examination – CBCS Pattern							
	Programme - B.A. English Literature							
	(For the Students admitted from the academic year 2017-2018 onwards)							

Course Code	Course Title	Ins Hrs/Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
Semester I							
117 TA1/ 117 MY1 / 117 HD 1/ 117 FR1/	**Part I -** Language I	6	3	25	75	100	4
117 EN1	**Part II -** English I	6	3	25	75	100	4
	Part III						
117 L01	Core I - Poetry I	5	3	25	75	100	4
117 L02	Core II - Prose	5	3	25	75	100	4
117 AL1	Allied I - Literary Forms I	6	3	25	75	100	4
117EVS	**Part IV -** Environmental Studies	2	2	50	-	50	2
Semester II							
217 TA2/ 217 MY2/ 217 HD2/ 217 FR2/	**Part I -** Language II	6	3	25	75	100	4
217 EN2	**Part II -** English II	6	3	25	75	100	4
	Part III						
217 L03	Core III - English for Employability	5	3	25	75	100	4
217 L04	Core IV - Fiction	5	3	25	75	100	4
217 AL2	Allied II - Literary Forms II	6	3	25	75	100	4
217VEC	**Part IV -** Value Education	2	2	50	-	50	2

Course Code	Course Title	Ins Hrs/Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
Semester III							
317 TA3/ 317 MY3/ 317 HD3/ 317 FR3/	**Part I -** Language III	6	3	25	75	100	4
317 EN3	**Part II -** English III	6	3	25	75	100	4
	Part III						
317 L05	Core V - Women's Writings	3	3	25	50	75	3
318 L06	Core VI - Drama	4	4	25	75	100	4

Course Code	Course Title	Ins Hrs/Week	Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
317 AL3	Allied III - Social History of England	6	3	25	75	100	4
	Part IV						
317 LS1	Skill Enhancement Course I : English Language Teaching - I	3	3	75	-	75	3
317NEC	Non-Major Elective - English for Competitive Examinations	2	2	50	-	50	2
	Semester IV						
417 TA4/ 417 MY4 / 417 HD4/ 417 FR4	**Part I -** Language IV	6	3	25	75	100	4
417 EN4	**Part II -** English IV	6	3	25	75	100	4
	Part III						
417 L07	Core VII - Poetry II	4	3	25	75	100	4
417 L08	Core VIII - English for Career Development	3	3	25	50	75	3
417 AL4	Allied IV - History of English Literature	6	3	25	75	100	4
	Part IV						
417LS2	Skill Enhancement Course II : English Language Teaching -II	3	3	75	-	75	3
417NGA	General Awareness(online)	-	1	50	-	50	2
417GIS	Information Security	2	2	50	-	Grade	Grade
417 ALL	Advanced Learners' Course I - Literature and Theatre Arts	-	3	-	100	100	4*

Course Code	Course Title	Ins Hrs/Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
	Semester V						
	Part III						
517 L09	Core IX - Shakespeare	6	3	25	75	100	4
517 L10	Core X - American Literature	6	3	25	75	100	4
517 L11	Core XI – Indian Writing in English	5	3	25	75	100	4
517 L12	Core XII - English for Business Correspondence	5	3	25	75	100	4
517 LE 1/ 517 LE 2	Elective I- Principles of Literary Criticism/ Approaches to Literature	5	3	25	75	100	4
	Part IV						
517 LS3	Skill Enhancement Course III : English Language Teaching-III	3	3	75	-	75	3
	Semester VI						
	Part III						
617 L13	Core XIII - Intensive Study of an Author (Tagore)	6	3	25	75	100	4
617 L14	Core XIV - New Literatures	6	3	25	75	100	4
617 L15	Core XV - Classics in World Literature	5	3	25	75	100	4

617 LE3/ 617 LE4	Elective II - Translation / Comparative Literature	5	3	25	75	100	4
617 LE5/ 617 LE 6	Elective III - Journalism / Mass Communication	5	3	25	75	100	4
Part IV							
617 LS4	Skill Enhancement Course IV : English Language Teaching - IV (Project & Viva Voce)	3	3	75	-	75	3
Part V							
617EX1/ 617EX2/ 617 EX3/ 617EX4/ 617EX5	Extension Activity			50		50	2
617ALL	Advanced Learners' Course II - Eminent Essayists	-	3	-	100	100	4*

*Starred Credits are treated as additional credits which are optional.

B. A. English Literature
Semester II

Part III - Core IV- Fiction   **217L04**

(For the students admitted from the academic year 2017-2018 onwards)

Hours: 65

Course Objectives:
- To impart knowledge of the culture and life style of people in a particular age
- To comprehend the aesthetic and ethical value of the text
- To facilitate an understanding of the narrative techniques
- To develop vocabulary and power of expression
- To provide an insight for creative writing

Unit I   Sense and Sensibility   Jane Austen   (13 hrs)
Unit II   Tale of Two Cities   Charles Dickens   (13 hrs)
Unit III Tale of Two Cities   Charles Dickens   (13 hrs)
Unit IV   Mill on the Floss   George Eliot   (13 hrs)
Unit V   Lord of the Flies   William Golding   (13 hrs)

Books Prescribed:

Austen, Jane. *Sense and Sensibility*. Wordsworth Editions Limited Cumberland House,1992.
Dickens, Charles.*Tale of Two Cities*. London: Prestwick House, 2005.
Eliot, George. *Mill on the Floss* Oxford: Oxford University Press, 2000.
Golding, William. *Lord of the Flies*. Oxford: Oxford University press, 1999.

Reference Books:

Fergus, Jan. "The Professional Woman Writer." The Cambridge Companion to Jane Austen. Eds. Edward Copeland and Juliet McMaster. Cambridge: Cambridge University Press, 1997. 12-31. Print.
Gay, Penny. "Pasttimes." Jane Austen in Context. Ed. Janet Todd. New York: Cambridge University Press, 2005. 337-345. Print.
Grant, Allen. A Preface to Dickens. London: Longman.1984.

B. A. English Literature
Semester III
Part III-Core V- Women's Writings   **317L05**
(For the students admitted from the academic year 2017-2018 onwards)
Hours: 38
Course Objectives:
- To provide fundamental knowledge of the basic terms and concepts related to women studies
- To introduce the development of women's writing in various countries
- To create an awareness of class, race and gender as social constructs and how they influence women's lives
- To facilitate effective communication about gender issues in both writing and speech
- To evaluate literary works from a feminist perspective

Unit I Poetry		(8 hrs)
Casuarina Tree	Toru Dutt	
The Old Play House	Kamala Das	
Still I Rise	Maya Angelou	
I am not that woman	Kishwar Naheed	
Uphill	Christina Georgina Rossetti	
Love and Death	Sarojini Naidu	
Woman	Nikki Giovanni	

Unit II Prose		(8 hrs)
A Room of One's Own Chapter 1& 2	Virginia Woolf	
The Sky is the Limit	Kalpana Chawla	

Unit III Fiction		(8 hrs)
The Dark Holds No Terror	Sashi Deshpande	
Difficult Daughters	Manju Kapur	

Unit IV Drama		(7 hrs)
A Raisin in the Sun	Lorraine Hansberry	

Unit-V Short Story		(7 hrs)
A Cup of Tea	Catherine Mansfield	
A Wife's Story	Bharati Mukherjee	

Books Prescribed:

Sashi Deshpande. *The Dark Holds No Terror* Penguin Books, 2003
Manju Kapur. *Difficult Daughters,* Oxford : OUP,2000
 Lorraine Hansberry: *A Raisin in the Sun, Unabridged. 2016.*
Bharati Mukherjee : *A Wife's Story*, Penguin Books Ltd . 1989.

Reference Books:

Walker, G. Barbara. *The Woman's Encyclopedia of Myths and Secrets*. Paper Back 2014.
Rossetti, Linda. *Women and Transition.* Paper back, 2015.

Ledoux, Denis. *Turning Memories Into Memoirs: A Handbook for Writing Life stories.*Oxford: Oxford University press, 2014.

	Curriculum Design						
	Sri G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)						
	Affiliated to Bharathiar University						
	Department of English						
	Scheme of Examination – CBCS Pattern						
	Programme - B.A. English Literature						
	(For the Students admitted from the academic year 2015-2016 onwards)						

Course Code	Course Title	Ins Hrs/Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
Semester I							
115 TA 1/ 115 MY1 / 115 HD 1/ 115 FR 1/	**Part I -** Language I	6	3	25	75	100	4
115 EN1	**Part II -** English I	6	3	25	75	100	4
	Part III						
115 L01	Core I - Poetry I	5	3	25	75	100	4
115 L02	Core II - Prose	5	3	25	75	100	4
115 AL1	Allied I - Literary Forms I	6	3	25	75	100	4
115EVS	**Part IV -** Environmental Studies	2	2	50	-	50	2
Semester II							
215 TA 2/ 215 MY2/ 215 HD 2/ 215 FR 2/	**Part I -** Language II	6	3	25	75	100	4
215 EN 2	**Part II -** English II	6	3	25	75	100	4
	Part III						
215 L03	Core III - English for Employability	5	3	25	75	100	4
215 L04	Core IV - Fiction	5	3	25	75	100	4
215 AL2	Allied II - Literary Forms II	6	3	25	75	100	4
215VEC	**Part IV -** Value Education	2	2	50	-	50	2
Semester III							
315 TA 3/ 315 MY3 / 315 HD 3/ 315 FR 3/	**Part I -** Language III	6	3	25	75	100	4
315 EN 3	**Part II -** English III	6	3	25	75	100	4
	Part III						
315 L05	Core V - Women's Writings	3	3	25	50	75	3
315 L06	Core VI - Drama	4	3	25	75	100	4
315 AL3	Allied III - Social History of England	6	3	25	75	100	4
	Part IV						
315 LS1	Skill Based Course I: English Language Teaching – I	3	3	75	-	75	3
315NEC	Non-Major Elective Course I - English for Competitive Examinations	2	2	50	-	50	2
Semester IV							
415 TA 4/	**Part I -** Language IV	6	3	25	75	100	4

Code	Course						
415 MY4 / 415 HD 4/ 415 FR 4 415 EN 4	**Part II -** English IV	6	3	25	75	100	4
415 L07	Core VII - Poetry II	4	3	25	75	100	4
415 L08	Core VIII - Career English	3	3	25	50	75	3
415 AL4	Allied IV - History of English Literature	6	3	25	75	100	4
	Part IV						
415 LS2	Skill Based Course II: English Language Teaching – II	3	3	75	-	75	3
415NGA	Non - Major Elective Course II: General Awareness (online)	-	1	50	-	50	2
415GIS	Information Security	2	2	50	-	Grade	Grade
415 ALL	Advanced Learners Course I - Literature and Theatre Arts	-	-	-	100	100	4*
	Semester V						
	Part III						
515 L09	Core IX - Shakespeare	6	3	25	75	100	4
515 L10	Core X - American Literature	6	3	25	75	100	4
515 L11	Core XI - Intensive Study of an Author (Tagore)	5	3	25	75	100	4
515 L12	Core XII - Classics in World Literature	5	3	25	75	100	4
515 LE 1	Elective I - Principles of Literary Criticism	5	3	25	75	100	4
	Part IV						
515 LS3	Skill Based Course III: English Language Teaching – III	3	3	75	-	75	3
	Semester VI						
	Part III						
615 L13	Core XIII - Indian writing in English	6	3	25	75	100	4
615 L14	Core XIV - New Literatures	6	3	25	75	100	4
615 L15	Core XV - English for Business Correspondence	5	3	25	75	100	4
615 LE2	Elective II - Translation	5	3	25	75	100	4
615 LE 3	Elective III - Journalism and Mass Communication	5	3	25	75	100	4
	Part IV						
615 LS4	Skill Based Course IV: English Language Teaching – IV (Project & Viva Voce)	3	-	-	-	75	3
	Part V						
615EX1/ 615EX2/ 615 EX3/ 615EX4/ 615EX5	Extension Activities			50		50	2
615ALL	Advanced Learners Course II - Eminent Essayists	-	-	-	100	100	4*

*Starred Credits are treated as additional credits which are optional.

Semester III

Part III -Core V -Women's Writings   315L05

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 38**

- To acquaint the students with the kaleidoscopic vision of women writers
- To understand the artistic and aesthetic approach of women's expressions

UNIT I	**Poetry**		**(8 hrs)**
	The Lotus	Toru Dutt	
	The Queen's Rival	Sarojini Naidu	
	After great pain a formal feeling come	Emily Dickinson	
	Daddy	Sylvia Plath	
	Uphill	Christina Rossetti	
UNIT II	**Prose**		**(8 hrs)**
	Professions for Women	Virginia Woolf	
	Women and Ecology	Carolyne Merchant	
	The Sky is the Limit	Kalpana Chawla	
UNIT III	**Drama**		**(7 hrs)**
	A Raisin in the Sun	Lorraine Hansberry	
UNIT IV	**Fiction**		**(8 hrs)**
	Voices in the City	Anita Desai	
	Thousand Faces of Night	Gita Hariharan	
UNIT V	**Biography**		**(7 hrs)**
	Kiran Bedi	Paramesh Dangwal	
	Marie Curie	Colin Swatridge	

B.A. English Literature

Semester V

Part III - Core XI – Intensive Study of an Author (Rabindranath Tagore) 515L11

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 65**

- To introduce the students to an in depth study of a particular author
- To facilitate Research

UNIT I	**Poetry**	Gitanjali (First 50 Verses)	**(13 hrs)**
UNIT II	**Prose**	Construction vs Creation	**(13 hrs)**
		What is Art?	
		Nationalism in India	
UNIT III	**Drama**	Mukta-Dhara	**(13 hrs)**
UNIT IV	**Fiction**	The Home and the World	**(13 hrs)**
UNIT IV	**Short stories**	The Post Master	**(13 hrs)**
		Raja and Rani	
		Glimpses of Bengal	
		Selections from the letters of Tagore (Letters 1-10)	

B.A. English Literature

Semester VI

Part III - Core XIII - Indian Writing in English   615L13

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 75**

- To help the students gain better insight into Indian Writings
- To enable them to appreciate various genres

UNIT I	Poetry	The Lotus	Toru Dutt	(15 hrs)
		The Bangle Sellers	Sarojini Naidu	
		Night of the Scorpion	Nissim Ezekiel	
		A River	A.K.Ramanujam	
		A Tribute to Pappa	Mamtha Khalia	
		The Teacher	P.Seshadri	
UNIT II	Prose	Vibhishana	V.S.Srinivasa Sastri	(15 hrs)
		The Secret of Work	Swami Vivekananda	
		Students and their duties	Gokhalae	
UNIT III	Drama	Kanyadhan	Vijay Tendulkar	(15 hrs)
UNIT IV	Fiction	The Hungry Tide	Amitav Ghosh	(15 hrs)
UNIT V	Short Stories	Interpreter of Maladies	Jhumpa Lahiri	(15 hrs)
		A Temporary Matter	Jhumpa Lahiri	
		Old Man and his God	Sudha Moorthy	
		Wise and otherwise	Sudha Moorthy	

Course Designed by Mrs. T. Amuthavalli

Course Reviewed by Dr. D. Anusuya

Course Checked by Mrs.T.Amuthavalli

B.A. English Literature

Semester VI

Part III - Core XIV - New Literatures   615L14

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 75**

- To introduce the students to different genres of Literatures in English
- To promote a multicultural, pluralistic approach

UNIT I	Poetry	Australia	A. D. Hope	(15 hrs)
		Telephonic Conversation	Wole Soyinka	
		First Neighbours	P.K.Page	
		Africa Speaks	Michael de Anang	
UNIT II	Prose	The Novelist as a Teacher	Chinua Achebe	(15 hrs)
		My Early Days	Abdul Kalam	
UNIT III	Drama	Dreams of Tippu Sultan	Girish Karnad	(15 hrs)
		Indians	George Ryga	
UNIT IV	Fiction	Azadi	Chaman Nahal	(15 hrs)

UNIT V	**Short Stories**	The Blind dog	R.K.Narayan	**(15 hrs)**
		The Lost Show	Geetha Goswami	
		The Nosegay	Rajagopalachari	

Books Prescribed :

An Anthology of Commonwealth Poetry,Ed G. D. Narasimhaiah,Macmillan, 2011

Readings in Common Wealth Literature – Ed WilliamWalsh, Clarondon Press, oxford

The Ecstasy of Rita Joe and other plays George Ryga, General publishing, 1971

Girish karnad - Dreams of Tipu Sultan Manimekala publishing House, 2009

Stories from Many Contries - Ed. K. Gunasekaran and R. Ganesan, New Century, 2004

B.A. English Literature

Semester I

Part III - Core I - Poetry I   115L01

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 65**

- To understand the matchless poetic art of Shakespeare, Wordsworth and a score of others.
- To help them learn the rhythm, stress and intonation.
- To refine their aesthetic sense, individual taste and expression.

UNIT I   **(13 hrs)**

Sonnet – XVIII	William Shakespeare
Elegy Written in a Country Churchyard	Thomas Gray
The Good Morrow	John Donne

UNIT II   **(13 hrs)**

Tintern Abbey	William Wordsworth
Ode on a Grecian Urn	John Keats

UNIT III   **(13 hrs)**

Ode to a Nightingale	John Keats
Ode to the West Wind	P.B.Shelley

UNIT IV   **(13 hrs)**

Rugby Chapel	Matthew Arnold
Tithonus	Alfred Tennyson
My Last Duchess	Robert Browning

UNIT V   **(13 hrs)**

Prayer for my Daughter	W.B.Yeats
God's Grandeur	G.M. Hopkins
Journey of the Magi	T.S.Eliot

Book Prescribed:

One Tongue Many Voices I (Compiled by Department of English)

B.A. English Literature

Semester II

Part III -Core IV – Fiction   215L04

(For the students admitted from the academic year 2015-2016 onwards)

Objectives: **Total Hours: 65**

- To understand the lives of the people in a particular period of history
- To understand the patterns of life
- To study novel as a literary genre

UNIT I	Oliver Twist	Charles Dickens	**(13 hrs)**
UNIT I	Oliver Twist	Charles Dickens	**(13 hrs)**
UNIT II	Oliver Twist	Charles Dickens	**(13 hrs)**
UNIT III	The Mayor of Casterbridge	Thomas Hardy	**(13 hrs)**
UNIT IV	Pride and Prejudice	Jane Austen	**(13 hrs)**
UNIT V	Animal Farm	George Orwell	**(13 hrs**

BA English Literature

Semester wise Distribution with Scheme of Examination

(For students admitted during the academic year 2012-2013&onwards)

Part	Course Title	Ins.hrs/	Exam CIA	Exam Uni.	Exam Total	Cred
	SEMESTER I					
I	Language –I	5	25	75	100	3
II	English –I	5	25	75	100	3
III	Core course I Poetry	6	25	75	100	5
III	Core course II Prose	5	25	75	100	4
III	Allied paper I Literary forms I	5	25	75	100	4
IV	Environmental studies (part IV)	2	-	50	50	2
	SEMESTER II					
I	Language-II	6	25	75	100	3
II	English –II	6	25	75	100	3
III	Core course III English for Employability I	6	25	75	100	5
III	Core course IV Fiction I	5	25	75	100	4
III	Allied paper II Literary forms II	5	25	75	100	4
IV	Value Education – Human Rights 3 (Part IV)	2	-	50	50	2
III	Advanced Learner's Course-I Fiction	-	-		100	3
	SEMESTER III					
I	Language III	5	25	75	100	3
II	English III	5	25	75	100	3
III	Core course V Women's Writings	5	25	75	100	4
III	Core course VI Drama	5	25	75	100	4
III	Allied paper III Social History of England	5	25	75	100	4
IV	Skill based Diploma	3	25	75	100	3
IV	Non-Major Elective-I English for Competitive Examinations	2	25	75	100	2
	SEMESTER IV					
I	Language – IV	5	25	75	100	3

II	English – IV	5	25	75	100	3
III	Core course VII Poetry II	6	25	75	100	5
III	Core course VIII English for Employability II	4	25	75	100	4
III	Allied paper IV History of English Literature	5	25	75	100	4
IV	Skill Based Diploma II	3	25	75	100	3
IV	Non-Major Elective- II General Awareness	2	25	75	100	2
III	Advanced Learners Course - Drama				100	3
	SEMESTER V					
II	Core course IX Shakespeare I	6	25	75	100	5
III	Core course X New Literature	5	25	75	100	4
III	Core course XI Intensive Study of an Author	5	25	75	100	4
III	Core course XII Indian Writing in English	5	25	75	100	4
III	Elective course- I Principles of Literary Criticism	5	25	75	100	4
IV	Skill Based Diploma III	3	25	75	100	3
	SEMESTER VI					
III	Core course XIII Shakespeare II	6	25	75	100	5
III	Core course XIV American Literature	6	25	75	100	5
III	Core course XV English for Employability III	5	25	75	100	4
III	Elective course– II Translation	5	25	75	100	4
III	Elective course – III English for Journalism	5	25	75	100	4
IV	Skill Based Diploma IV	3	25	75	100	3
III	Advanced Learner's Course-Prose				100	3
V	Extension Activities	-		-	100	1
	Total				3600	140

B.A English Literature
Semester I - Part III Core Course I – Poetry I
(For students admitted from 2012– 2013 and onwards)
Objectives:
- To understand the matchless poetic art of Shakespeare, Wordsworth and a score of others.
- To help them learn the rhythm, Stress and intonation.
- To refine their aesthetic sense, individual taste and expression.

Credits: 5   **Total No of Hours: 75**
UNIT I: (15 hrs)
   1. Sonnet XVIII   Shakespeare
   2. A Hymn to God the Father   John Donne
   3. Virtue   George Herbert

UNIT II: (15 hrs)
  4. Elegy written in a country churchyard   Thomas Gray
  5. Songs of Innocence and Songs of Experience   William Blake
  6. Tintern Abbey   William Wordsworth
UNIT III: (15 hrs)
  7. Kubla Khan   Coleridge
  8. Ode to a Skylark   P.B. Shelley
  9. Ode on a Grecian Urn   Keats
UNIT IV: (15hrs)
  10. My Last Duchess   Robert Browning
  11. Tithonus   Alfred Tennyson
  12. The Forsaken Merman   Mathew Arnold
UNIT V: (15hrs)
  13. God's Grandeur   Hopkins
  14. Prayer for my Daughter   W.B.Yeats
  15. Journey of the Magi   T.S. Eliot
    Book Prescribed:
    The Winged Word, Ed. David Green, Macmillan, Chennai

BA English Literature
Semester II - Part III - Core Course III - Fiction I Sub Code: 212 L03
(For students admitted from 2012 – 2013 and onwards)

Objectives:
- To understand the lives of the people in a particular period of history
- To understand the patterns of life,
- To learn to use the language in a variety of contexts, and to study novel as a literary genre.

Credits: 4   **Total No of Hours: 65**

UNIT I	:	Great Expectations - Charles Dickens	(13hrs)
UNIT II	:	Great Expectations - Charles Dickens	(13hrs)
UNIT III:		Wuthering Heights - Emily Bronte	(13hrs)
UNIT IV	:	Mansfield Park-Jane Austen	(13hrs)
UNIT V	:	Animal Farm – George Orwell	(13 hrs)

Sub Code: 312 L05

BA English Literature
Semester III
Part III Core Course V - Women's Writings
(For students admitted from 2012-2013 and onwards)

Objectives:
- To acquaint the students with the kaleidoscopic life as expressed by novelists.
- To understand the artistic and aesthetic approach of the women writers.

Credits:4   **Total no of hours: 65**

UNIT I : Poetry

The Gift of India	Sarojini Naidu	
Pretty	Stevie Smith	(13hrs)
Gift	Alice Walker	
Sita	Toru Dutt	

UNIT II : Prose

Men and Women	Virginia Wolf	
Women and Ecology	Carolyne Merchant	(13hrs)
The Sky is the Limit	Kalpana Chawla	

UNIT III: Novel

Ladies Coupe'	Anita Nair	
The Grass is singing	Doris Lessing	(13hrs)

UNIT IV: Drama

Mother of 1084	Maha sweta Devi	(13hrs)

UNIT V: Biography

Kiran Bedi	Paramesh Dangwal	
Marie Curie	Colin Swatridge	(13hrs)

Suggested Reading:

English Prose Collections- Dr.K Gunasekaran, New Century Book House,Chennai.

Panaroma Emerald Publishers, 2007

The English Tradition Prentice Hll, New Jersey 1991

Popular Plays Ed Biyot K Tirupathy OUP,1992

English for Excellence, Short stories & Biographies,Lalitha Natarajan & Sasikal Natesan

Anuradha Publications, Chennai, 2006

B.A. English Literature
Semester V
Part III Core Course IX –Shakespeare I   Sub Code : 512L09
(For Students admitted from 2012-2013 & onwards)

Objectives:

- To expose the students to the universality of the art and Philosophy of the English bard, Shakespeare.
- To sharpen the aesthetic sense of the students.

Credits: 5   **Total No of Hours: 75**

UNIT I:	As you like it	(15 hrs)
UNIT II:	Merchant of Venice	(15 hrs)
UNIT III &IV	King Lear	(25 hrs)
UNIT V :	Othello	(20 hrs)

Suggested Reading:

Shakespeare, his Mind and Art – Edward Dowden

The Crown of Life – Wilson Knight

Shakespeare Tragedy – A.C. Bradley

B.A. English Literature
Semester VI
Part III Core Course XIII – Shakespeare II Sub.Code: 612 L13
(For students admitted from 2011-2012 & onwards)

Objectives:

- To strengthen the experience of learning Shakespeare.
- To appreciate the works of the bard.

Credits: 5   **Total No of Hours: 75**

UNIT I:	Winter's Tale	(15hrs)
UNIT II:	The Tempest	(15hrs)
UNITIII:	Henry IV – Part I	(15hrs)
UNIT IV:	Antony and Cleopatra	(15hrs)
UNIT V:	Antony and Cleopatra	(15hrs)

Suggested Reading:

Shakespeare's History Plays – E.M.W. Tillyard

Shakespeare Tragic Heroes   – Campbell, Lilly.B

Shakespearean Comedy   – Sen Gupta

DEPARTMENT OF ENGLISH SF
LIST OF VALUE ADDED COURSES-WITH EXPLANATION
2017-2018

semester	Course code	Course	Description
I	17MV04	Core IV– Soft Skills Through Shakespeare	To use characters from classics/their behaviour as parallels to reflect and introspect on their own behaviour.
II	17MVE3	Women in Development	This course aims to expose students to a substantial body of knowledge about the social construction of gender in various cultural contexts from a variety of disciplinary perspectives.
II	17MGCS	Cyber security	Develop an understanding of information assurance as practiced in computer operating systems, disturbed systems, networks and representations.

SEMESTER I
CORE IV– SOFT SKILLS THROUGH SHAKESPEARE   17MV04
[For students admitted from the academic year 2017 – 2018 onwards]

Objectives: **Total Hours: 75**

- To train the students in study of character / human behaviour
- To train them in the use of characters/interactions from literature and other areas listed as case studies.

Unit I	Self Esteem	Coriolanus in *Coriolanus*	**20hrs.**
Unit II	Integrity	Enoborbus in *Antony and Cleopatra*	**15 hrs.**
Unit III	Managerial Ability	Portia in *Merchant of Venice*	**15 hrs.**
Unit IV	Sociability	Rosalind in *As You Like It*	**15 hrs.**
*Unit V	Shakespearean Sonnets, Shakespearean Heroines, Supernatural Elements, Shakespearean Theatre		**10 hrs.**

* Starred unit is a Self Study unit

Course Designed by :   Mrs. P. Rajeswari
Course Reviewed by :   Dr. J.Vijayalakshmi
Course Checked by :   Mrs. P. Rajeswari

Elective II -Women in Development   **17MVE3**
(For the students admitted from the academic year 2017-2018 onwards)

Credits: 4   **Hours: 52**

Course Objectives:

The course aims to

- know the status of women and their education in India
- comprehend the concepts related to health intervention
- bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women
- understand women and personal development.

Unit I   **(11 Hours)**

Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II   **(11 Hours)**

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III   **(10 Hours)**

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others.

Unit IV   **(10 Hours)**

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V   **(10 Hours)**

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization.

Books for Reference:

- Janet Momsen, Gender and Developmnet, Routledge, New Delhi, 2010
- Sharma, Women and Education, Commonwealth Publications, 2005
- Uzma Parveen, Women and Environmental Management, Women Press, 2009
- Bijli K. Heena, Women and Health, Intersectional Issues and Social Constraints, Author Press, New Delhi, 2012
- Pulla Rao, Women Entrepreneurs and Socio-economic Development, Serials Publications, New Delhi, 2011.

2016-2017

semester	Course code	Course	Description
I	15MV04	Core IV– Soft Skills Through Shakespeare	To use characters from classics/their behaviour as parallels to reflect and introspect on their own behaviour.
II	15MVE3	Women in Development	This course aims to expose students to a substantial body of knowledge about the social construction of gender in various cultural contexts from a variety of disciplinary perspectives.
II	15MGCS	Cyber security	Develop an understanding of information assurance as practiced in computer operating systems, disturted systems, networks and representations.

SEMESTER I
CORE IV– SOFT SKILLS THROUGH SHAKESPEARE
16MV04
   [For students admitted from the academic year 2016 – 2017 onwards]

Objectives: **Total Hours: 75**

- To train the students in study of character / human behaviour
- To train them in the use of characters/interactions from literature and other areas listed as case studies.

Unit I	Self Esteem	Coriolanus in *Coriolanus*	**20hrs.**
Unit II	Integrity	Enoborbus in *Antony and Cleopatra*	**15 hrs.**
Unit III	Managerial Ability	Portia in *Merchant of Venice*	**15 hrs.**
Unit IV	Sociability	Rosalind in *As You Like It*	**15 hrs.**
*Unit V	Shakespearean Sonnets, Shakespearean Heroines, Supernatural Elements, Shakespearean Theatre		**10 hrs.**

* Starred unit is a Self Study unit

Course Designed by :   Mrs. P. Rajeswari
Course Reviewed by :   Dr.   J.Vijayalakshmi
Course Checked   by :   Mrs. P. Rajeswari

Semester II
Elective II - Women in Development   15MVE2
(For the students admitted from the academic year 2016-2017 onwards)

Credits: 4   **Hours: 75**

Preamble:

The course aims to

- know the status of women and their education in India.
- comprehend the concepts related to health intervention.
- bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women.
- understand women and personal development.

Unit I   (15 Hours)

Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II   (15 Hours)

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III   (13 Hours)

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others

Unit IV   (15 Hours)

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V   (17 Hours)

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professionals and Entrepreneurs.

Books for Reference:

- Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.
- Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995   .
- Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications Pvt. Ltd., Delhi, 2000
- Jeyapalan. N, Women's Studies, N.S Publications, Madras, 1998
- Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, Delhi, 1997

semester	Course code	Course	Description
I	15ML04	Core IV– Soft Skills Through Shakespeare	To use characters from classics/their behaviour as parallels to reflect and introspect on their own behaviour
II	15MLE3	Women in Development	This course aims to expose students to a substantial body of knowledge about the social construction of gender in various cultural contexts from a variety of disciplinary perspectives.

SEMESTER I
CORE IV– SOFT SKILLS THROUGH SHAKESPEARE   15ML04
[For students admitted from the academic year 2015 – 2016 onwards]
Objectives: **Total Hours: 75**
- To train the students in study of character / human behaviour
- To train them in the use of characters/interactions from literature and other areas listed as case studies.

Unit I	Self Esteem	Coriolanus in *Coriolanus*	**20hrs.**
Unit II	Integrity	Enoborbus in *Antony and Cleopatra*	**15 hrs.**
Unit III	Managerial Ability	Portia in *Merchant of Venice*	**15 hrs.**
Unit IV	Sociability	Rosalind in *As You Like It*	**15 hrs.**
*Unit V	Shakespearean Sonnets, Shakespearean Heroines, Supernatural Elements, Shakespearean Theatre		**10 hrs.**

* Starred unit is a Self Study unit

    Course Designed by :   Mrs. P. Rajeswari
    Course Reviewed by :   Dr.   J.Vijayalakshmi
    Course Checked   by :   Mrs. P. Rajeswari

M.A. Economics
Semester II
Elective II - Women in Development   15MLE2
(For the students admitted from the academic year 2015-2016 onwards)
Credits: 4   **Hours: 75**
Preamble:
The course aims to
- know the status of women and their education in India.
- comprehend the concepts related to health intervention.

- bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women.
- understand women and personal development.

Unit I   (15 Hours)

Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II   (15 Hours)

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III   (13 Hours)

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others

Unit IV   (15 Hours)

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V   (17 Hours)

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professionals and Entrepreneurs.

Books for Reference:

- Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.
- Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995   .
- Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications Pvt. Ltd., Delhi, 2000
- Jeyapalan. N, Women's Studies, N.S Publications, Madras, 1998
- Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, Delhi, 1997

Semester	Course Code	Course	Description
I	14MGS1	Gender Studies I -Introduction to Gender Studies	Gender studies is a field for interdisplinary study to devoted to gender identity.
II	14MGS2	Gender Studies II -Feminism	Feminism is the belief and aim that women should have the same rights, power.
III	14MGS3	Gender Studies III -Project and viva voce	This project should entail a sound theoretical basic as well as applied case study.
IV	14MGS4	Gender Studies IV -Women in Development	Women in development is a theoretical and practical approach to development

Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course I- I- Introduction to Gender Studies   14MGS1
(For Students admitted from 2014-2015)

Credits: 2

Preamble:

The aim of the course is

- to understand the status of women
- to make the women aware of their rights and privileges
- to enable them to develop resistance against challenges.

Unit I Introduction

Meaning and Definition of Women's Studies - Need for Women's Studies - Scope for Women's Studies - Sex Vs Gender , Equality versus equity, Gender Roles, Stereo types and Inequalities, Approaches to Gender Development(WID,WAD and GAD) – Feminism-UGC Centre for Women's studies.

Unit II Social Empowerment

Empowerment- meaning- importance and framework. Gender and Demography, Education, Health and Nutrition, Environment, violence against women, problems and rights of girl child, media, science and technology, women in difficult circumstances.

Unit III Economic Empowerment

Women and Domestic work, home based work, work in organised sector and Unorganized sector - Women in agriculture, industry and service sector- women entrepreneurs, women self- help groups (micro credit)- women and globalization- Gender and economic empowerment.

Unit IV Political Empowerment

Need of women in politics, dominant women in politics, barriers of participation of women in politics, women in local self governments - reservation policy for women in politics- legal empowerment.

Unit V Government **policies and programmes for women**

National policy for Empowerment of Women 2001 – Women and Five year plans-World conferences on women- committees, departments and institution for women's development.

Books for Reference:

- Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.
- Antony M.J, Women's Rights, Hind Pocket Books,New Delhi,1995.
- Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications Pvt Ltd., New   Delhi,2000
- Jeyapalan.N, Women's Studies, N.S Publications,Madras, 1998.
- Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, New Delhi, 1997

<center>
Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course II - Feminism   14MGS2
(For Students admitted from 2014-2015)
</center>

Credits: 2
Preamble:

- It aims at providing a theoretical framework to Feminism
- It enlightens the origin, growth and development of women's movements in various countries
- It gives an opportunity to study the impact of these movements on society in general and women in particular

Unit I- Theories of Feminism

- Liberal feminism
- Marxist Feminism
- Radical Feminism
- Socialist Feminism

Unit II First Wave Feminism in USA, UK and France since 18th Century

Enlightenment- Republicanism and Evangelicalism- American War of Independence- French Revolution- Anti- Slavery Campaign- Suffrage Movement- Campaign for Equal Rights.

Unit III- Second Wave Feminism in USA and UK 1960's

Emergence- Course- Trade Union Movement- Civil Rights Movement- Protective Legislation- Peace Movement and Eco- Feminism- Decline.

Unit IV- Feminism in the Socialists Countries

Position of women in early China and Russia- Women in the Russian Revolution- Its impact of women- May 4th revolution in China and its impact on women- women in the cultural revolution- modernization trends- women's movement- equal rights legislations.

Unit V- Women's Movement in India

Position of women in Ancient and Medieval India- I Phase, Social Reform Movement and Social Reform Legislations in the 19th century- II Phase, National Movement- III Phase, Women's movement in the post independent Era to till date.

Books for Reference:

Alastair Mc Auley   : Women's work and wages in the Soviet Union (London: George Allen &

                        Unwin, `1981)

David Bouchier   : The Feminist Challenge (London-Press)

Jane Rendall   : The Origin of Modern Feminism: Women in Britain,
                        France and United   States 1780-1860 Modern Ideology:
                        Feminism (London J.M.Dent & Sons)

John Charvet   : Modern Ideology: Feminism (London J.M.Dent & Sons)

Kawhik, Susheela   : Women's Oppression: Patterns and Perspective

(Delhi: Shakthi Books)

Man Mohan Kaur Bombay:	: Women in India's Freedom Struggle: Women in Modern India(
	Vora &Co, 1977)
Neera Desai	: The Unfinished Liberation of Chinese
Phyllis Andors	: Women `1949-1980 (Bloomington: India University Press, 1983)
Susan Bassnett	: Feminist Experiences:The Women's Movement in Four Cultures(London: Allen and Unwin, 1986)

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Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course III - Women in Development   **14MGS3**
(For Students admitted from 2014-2015)

</div>

Credits: 3
Preamble:
- to know the status of women and their education in India.
- to understand the concepts related to health intervention.
- to understand the Indian Constitution, Indian Law and role of Legislation in the betterment of Women.
- to understand women and their personal development.

Unit I

Women in Development process- Women in Development (WID), Women and Development (WAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals.

Women and Environment: CHIPKO Movement – Narmada Bachao Pandolar- Neer Patent Victory- Women's Environment and Development Organization (WEDO).

Unit III

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAI and others.

Unit IV

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professional & Entrepreneurs.

Books for Reference:

Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.
Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995.
Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications
              Pvt Ltd., New Delhi, 2000
Jeyapalan.N, Women's Studies, N.S Publications, Madras, 1998.

Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, NewDelhi, 1997.

2013-2014
Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course I- I- Introduction to Gender Studies   12MGS1
(For Students admitted from 2009-2010 & onwards) Credits: 2

Preamble:

The aim of the course is
- to understand the status of women
- to make the women aware of their rights and privileges
- to enable them to develop resistance against challenges.

Unit I Introduction

Meaning and Definition of Women's Studies - Need for Women's Studies - Scope for Women's Studies - Sex Vs Gender , Equality versus equity, Gender Roles, Stereo types and Inequalities, Approaches to Gender Development(WID,WAD and GAD) – Feminism- UGC Centre for Women's studies.

Unit II Social Empowerment

Empowerment- meaning- importance and framework. Gender and Demography, Education, Health and Nutrition, Environment, violence against women, problems and rights of girl child, media, science and technology, women in difficult circumstances.

Unit III Economic Empowerment

Semester	Course Code	Course	Description
I	12MGS1	Gender Studies I -Introduction to Gender Studies	Gender studies is a field for interdisplinary study to devoted to gender identity.
II	12MGS2	Gender Studies II -Feminism	Feminism is the belief and aim that women should have the same rights, power.
III	12MGS3	Gender Studies III -Project and viva voce	This project should entail a sound theoretical basic as well as applied case study.
IV	12MGS4	Gender Studies IV -Women in Development	Women in development is a theoretical and practical approach to development

Women and Domestic work, home based work, work in organised sector and Unorganized sector - Women in agriculture, industry and service sector- women entrepreneurs, women self- help groups (micro credit)- women and globalization- Gender and economic empowerment.

Unit IV Political Empowerment

Need of women in politics, dominant women in politics, barriers of participation of women in politics, women in local self governments - reservation policy for women in politics- legal empowerment.

Unit V Government **policies and programmes for women**

National policy for Empowerment of Women 2001 - Women and Five year plans- World conferences on women- committees, departments and institution for women's development.

Books for Reference:
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- Antony M.J, Women's Rights, Hind Pocket Books,New Delhi,1995.
- Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications Pvt Ltd., New   Delhi,2000
- Jeyapalan.N, Women's Studies, N.S Publications,Madras, 1998.
- Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, New Delhi, 1997

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Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course II - Feminism   12MGS2
(For Students admitted from 2009-2010 & onwards) Credits: 2

</div>

Preamble:
- It aims at providing a theoretical framework to Feminism
- It enlightens the origin, growth and development of women's movements in various countries
- It gives an opportunity to study the impact of these movements on society in general and women in particular

Unit I- Theories of Feminism
- Liberal feminism
- Marxist Feminism
- Radical Feminism
- Socialist Feminism

Unit II First Wave Feminism in USA, UK and France since 18th Century

Enlightenment- Republicanism and Evangelicalism- American War of Independence- French Revolution- Anti- Slavery Campaign- Suffrage Movement- Campaign for Equal Rights.

Unit III- Second Wave Feminism in USA and UK 1960's

Emergence- Course- Trade Union Movement- Civil Rights Movement- Protective Legislation- Peace Movement and Eco- Feminism- Decline.

Unit IV- Feminism in the Socialists Countries

Position of women in early China and Russia- Women in the Russian Revolution- Its impact of women- May 4th revolution in China and its impact on women- women in the cultural revolution- modernization trends- women's movement- equal rights legislations.

Unit V- Women's Movement in India

Position of women in Ancient and Medieval India- I Phase, Social Reform Movement and Social Reform Legislations in the 19th century- II Phase, National Movement- III Phase, Women's movement in the post independent Era to till date.

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                          Unwin, `1981)
David Bouchier   : The Feminist Challenge (London-Press)
Jane Rendall   : The Origin of Modern Feminism: Women in Britain,
                         France and United   States 1780-1860 Modern Ideology:
                         Feminism (London J.M.Dent & Sons)
John Charvet   : Modern Ideology: Feminism (London J.M.Dent & Sons)
Kawhik, Susheela   : Women's Oppression: Patterns and Perspective
                          (Delhi: Shakthi Books)
Man Mohan Kaur   : Women in India's Freedom Struggle: Women in Modern India(Bombay: Vora &Co, 1977)
Neera Desai   : The Unfinished Liberation of Chinese

Phyllis Andors : Women `1949-1980 (Bloomington: India University Press, 1983)
Susan Bassnett : Feminist Experiences:The Women's Movement in Four Cultures(
London: Allen and Unwin, 1986)

Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course III - Women in Development
12MGS3
(For Students admitted from 2009-2010 & onwards) Credits: 3

Preamble:
- to know the status of women and their education in India.
- to understand the concepts related to health intervention.
- to understand the Indian Constitution, Indian Law and role of Legislation in the betterment of Women.
- to understand women and their personal development.

Unit I

Women in Development process- Women in Development (WID), Women and Development (WAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals.

Women and Environment: CHIPKO Movement – Narmada Bachao Pandolar- Neer Patent Victory- Women's Environment and Development Organization (WEDO).

Unit III

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAI and others.

Unit IV

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professional & Entrepreneurs.

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Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications
              Pvt Ltd., New Delhi, 2000
Jeyapalan.N, Women's Studies, N.S Publications, Madras, 1998.
Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers,
NewDelhi, 1997.

Department of Economics
LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Year	Program code	Value added courses	Total Number of courses	Explanation
2017-18	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics

SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Programme - B.A. Economics
Scheme of Examination – CBCS Pattern
(For the Students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
117TA1/ 117MY1/ 117HD1/ 117FR1	**Semester I** **Part I** – Language I	6	3	25	75	100	4
117EN1	**Part II** English I	6	3	25	75	100	4
117E01	**Part III** Core I - Micro Economics I	5	3	25	75	100	4
117E02	Core II - Agricultural Economics	5	3	25	75	100	4
117AE1	Allied I - Principles of Management	6	3	25	75	100	4
117EVS	**Part IV** Environmental Studies	2	2	50	-	50	2
217TA2/ 217MY2/ 217HD2/ 217FR2	**Semester II** **Part I** – Language II	6	3	25	75	100	4
217EN2	**Part II** English II	6	3	25	75	100	4
217E03	**Part III** Core III – Micro Economics II	5	3	25	75	100	4
217E04	Core IV – Demography	5	3	25	75	100	4
217AE2	Allied II – Principles of Accountancy	6	3	25	75	100	4
217VEC	**Part IV** Value Education	2	2	50	-	50	2
317TA3/ 317MY3/ 317HD3/ 317FR3	**Semester III** **Part I** – Language III	6	3	25	75	100	4
317EN3	**Part II** English III	6	3	25	75	100	4
317E05	**Part III** Core V– Urban Economics	4	3	25	75	100	4

317E06	Core VI – Economics of Marketing	3	3	25	50	75	3
317AE3	Allied III – Mathematical Methods	6	3	25	75	100	4
317NHE	**Part IV** Non Major Elective – Home Economics	2	2	50	-	50	2
317ES1	Skill Enhancement Course I – Communication Skills for Business	3	3	75	-	75	3
417TA4/ 417MY4/ 417HD4/ 417FR4	**Semester IV** **Part I** – Language IV	6	3	25	75	100	4
417EN4	**Part II** English IV	6	3	25	75	100	4
417E07	**Part III** Core VII – Macro Economics I	4	3	25	75	100	4
417E08	Core VIII – Economic Doctrines	3	3	25	50	75	3
417AE4	Allied IV – Statistics	6	3	25	75	100	4
417NGA	**Part IV** General Awareness	**-**	1	50	-	50	2
417ES2	Skill Enhancement Course II – Tally Accounting Programme-Practical	3	3	75	-	75	3
417GIS	Information Security	2	2	50	-	Grade	Grade
417ALE	**ALC I** Subject Viva Voce	-	-	-	100	100	4*

B.A. Economics
Semester I
Part III – Core II – Agricultural Economics   117E02
(For the students admitted from the academic year 2017-2018 onwards)
Credits: 4   **Hours: 65**
Course Objectives:
   ❖ Basic economic Principles applied in agricultural production and marketing.
   ❖ Efficient organization of scarce resources and factors of agricultural production.
Unit I: (13 Hours)
       Introduction: Agriculture- Meaning- Importance of Agriculture- Special features and problems of Agriculture - Causes for low productivity in agriculture.
Unit II: (13 Hours)
       Land Utilization in India - Agricultural Holdings – Land Reforms: Sub- division and Fragmentation of Holdings- Effects. Cropping Pattern – Factors influencing Cropping Pattern.

Unit III: (13 Hours)

Agricultural Inputs - Irrigation – Types. HYV Seeds, Fertilizers and Manures, implements and machinery. Sources of Agricultural Finance. New Agricultural Strategy and Green Revolution- Effects. A Brief Note on Need for Second Green Revolution

Unit IV: (13 Hours)

Post Green Revolution Developments-Contract Farming - Organic Farming – Precision Farming-Sustainable Agriculture-Food Security in India.

Unit V: (13 Hours)

Agriculture Marketing and Price - Defects of Agricultural Marketing-Measures taken to improve Agricultural Marketing - Fluctuations in Agricultural Prices- Reasons-Agricultural Price Policy in India- Public Distribution System- Objectives- Defects

Book for Study:
1. S. Sankaran, Agricultural Economy of India, Margham Publications, Chennai, 2015.

Books for Reference:
1. Ruddar Dutt & K.P.M. Sundaram, Indian Economy, S. Chand & Co Ltd, New Delhi, 2016.
2. S.K. Misra & Puri.V. Indian Economy- Its Development Experience, Himalaya Publishing House, Mumbai, 2015.

Course Outcomes:

On the successful completion of the course, students will be able to

CO1 Understand the basic economic concepts and principles necessary for economic analysis of agriculture sector.

CO2 Know the inputs and strategies related to green revolution.

CO3 Recognize the drivers of change in the growth of agricultural sector.

CO4 Realize the importance of agriculture and thereby economic consciousness.

Mapping with Programme Outcomes

PO \ CO	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	H	H	H	M	H	L	K
CO2	H	H	H	H	M	M	A
CO3	H	H	H	H	M	H	A
CO4	H	H	H	H	H	M	A

B.A. Economics
Semester I
Part III – Allied I – Principles of Management   117AE1
(For the students admitted from the academic year 2017 -2018 onwards)
Credits: 4   Hours: 75
Course Objectives:
❖ To explore the basic concepts and functions of management.
❖ To understand how managers manage business organizations in the dynamic global environment.

❖ To examine how business decisions are made using various tools and techniques to maintain the competitive advantage.

Unit I: (15 Hours)

Management: Definition – Features – Functions – Importance - Administration and Management - Manager: Functions – Role – Responsibilities - Entrepreneur and Manager.

Unit II: (15 Hours)

Planning: Definition – Characteristics – Objectives - Advantages and Limitations - Steps in Planning Process - Management by Objectives (MBO) - Decision Making - Decision Making Process.

Unit III: (15 Hours)

Organisation: Functions – Nature – Importance - Classification of Organisation: Formal and Informal Organisation - Difference between Formal and Informal Organisation - Directing: Meaning and Principles.

Unit IV: (15 Hours)

Delegation: Elements – Principles – Types – Advantages - Problems. Decentralization – Advantages – Disadvantages - Departmentation: Need – Factors - Basis.

Unit V: (15 Hours)

Controlling – Steps - Requirements of Effective Control System – Features - Need – Advantages – Limitations - Coordination - Features – Importance – Types - Problems- Steps for effective Co-ordination.

Book for Study:

1. T. Ramasamy, Principles of Management, Himalaya Publishing House, Mumbai, 2016.

Book for Reference:

1. P.C Tripathi & P.N Reddy, Principles of Management, Tata McGraw Hill Ltd., New Delhi, 2014.

Course Outcomes:

On the successful completion of the course, students will be able to

CO1 Equip with the basic knowledge of managing a business unit.
CO2 Inculcate managerial skills.
CO3 Provide the capacity to apply theoretical knowledge in stimulated and real-life settings.
CO4 Identify and analyse both qualitative and quantitative information to solve the issues and formulate best control methods.

Mapping with Programme Outcomes

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	H	H	H	H	M	H	K
CO2	H	H	M	M	H	M	A
CO3	H	H	H	H	M	H	A
CO4	M	H	M	M	H	H	A

Year	Program code	Value added courses	Total Number of courses	Explanation
2017-18	ME	Core IV- Human Resource Management		Enable the students to know about the importance of investment in health and education.
		Core V - Management of Small Business		To enhance the entrepreneurial and business communicative skill
		Elective I- Soft Skills		To develop and use soft skills for effective performance in today's environment
		Elective II- Women in Development		To know the status of women and their education in India.
		Core XV- Environmental Economics		To inculcate an awareness among the students about the economic aspects of environmental issues

Post Graduate & Research Department of Economics
Scheme of Examination – CBCS Pattern
Programme: M.A. Economics
(For the Students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
17ME01	Core I – Advanced Micro Economics	6	3	25	75	100	4
17ME02	Core II – Mathematical Techniques for Economic Analysis	6	3	25	75	100	4
17ME03	Core III - Research Methodology in Economics	6	3	25	75	100	4
17ME04	Core IV - Human Resource Management	4	3	25	75	100	4
17ME05	Core V - Management of Small Business	4	3	25	75	100	4
17MEE1/ 17MEE2	Elective I- Soft Skills / Industrial Economics	4	3	25	75	100	4
Semester II							
17ME06	Core VI- Advanced Macro Economics	6	3	25	75	100	4
17ME07	Core VII-Public Economics	6	3	25	75	100	4
17ME08	Core VIII- Economics of Human Resources	6	3	25	75	100	4
17ME09	Core IX- Econometrics	6	3	25	75	100	4
17MEE3/ 17MEE4	Elective II- Women in Development / World Prominent Personalities	4	3	25	75	100	4
17MEIS	Internship	-	-	50	-	50	2
17MGCS	Cyber Security - Level I	2	2	50	-	Grade	Grade
17MEA1	Advanced Learners Course I– Subject Viva Voce	-	-	-	100	100	4*
Semester III							
17ME10	Core X- Economics of Money and Financial Institutions	6	3	25	75	100	4
17ME11	Core XI-Operations Research	6	3	25	75	100	4
17ME12	Core XII-Economics of Growth and Development	6	3	25	75	100	4
17ME13	Core XIII – Statistical Techniques for Economic Analysis	6	3	25	75	100	4
17MEE5/ 17MEE6	Elective III- Computer Application Techniques-Practical / Labour Economics	6	3	40/25	60/75	100	4
Semester IV							
17ME14	Core XIV - Export Procedures						

	and Documentation	6	3	25	75	100	4
17ME15	Core XV- Environmental Economics	6	3	25	75	100	4
17ME16	Core XVI – Statistical Packages for Data Analysis - Practical	6	3	40	60	100	4
17MEE7/ 17MEE8	Elective IV- Health Economics /Marketing Management	6	3	25	75	100	4
17MEPV	Project and Viva Voce	6	-	-	200	200	8
17MEA2	Advanced Learners Course –II Subject Viva Voce	-	-	-	100	100	4*
	TOTAL					**2250**	**90**

Single Starred credits are treated as additional credits which are optional.

M.A. Economics
Semester I
Core IV- Human Resource Management   17ME04
(For the students admitted from the academic year 2017-2018 onwards)

Credits: 4   **Hours: 52**

Course Objectives:

  The aim of the course is to
  ❖ equip the students with the basic human resource management skills.
  ❖ develop the managerial skills for business management.
  ❖ have a good understanding of nature of e-HRM and its different dimensions.

Unit I   (10 Hours)

  Human Resource Management: Definition, meaning and concepts. Objectives and responsibilities, the need, approaches towards Human resources, Functions of Human Resource Management. Human Resource Planning – Steps involved.

Unit II   (10 Hours)

  Career Planning and Development: Meaning, objectives, Factors affecting and Tips for individual career planning. Recruitment, Screening and Selection Process – Orientation – Placement, Promotion, Transfer, and Training.

Unit III   (10 Hours)

  Job Analysis: Usefulness, Methods. Performance appraisal: Objectives, Methods and Requirements of a Good Appraisal System. Labour Turn over costs – effects on employees and workers, Causes of Labour Turn Over and Control of turnover.

Unit IV   (10 Hours)

  Wages and Salary Administration: Definition and Concepts, Objectives, Factors affecting wage and salary. Wage Incentives: Importance and Types, Pre-requisites for an Effective Incentive System. Systems of Wage Payment: Time Wage and Piece Wage.

Unit V   (12 Hours)

  Morale and Productivity: Meaning, Relation between Morale and Productivity. Principles and Concepts of TQM – HRM and TQM -.EHR: Nature – e-Recruitment, e-Selection, e-Performance Management, e-Learning and e-Compensation. Recent techniques in HRM: Employees for Lease, Moon lighting by employees, Flexi time and Flexi work.

Books for Reference

1. K. Aswathappa, Human Resource and Personnel Management Text Cases, Tata McGraw–Hill Publishing Co Limited, Delhi 2013.
2. P. Subba Rao, Personnel and Human Resource Management, Himalaya Publishing House, Mumbai, 2014.
3. C.B. Gupta, Human Resource Management, S. Chand & Sons, Delhi, 2010.

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M.A. Economics
Semester I
Core V– Management of Small Business   17ME05
(For the students admitted from the academic year 2017-2018 onwards)

</div>

Credits: 4   **Hours: 52**

Course Objectives:

The course would equip the students with
❖ organization skills in the setting up and managing of the various aspects of a small business unit.
❖ entrepreneurial skill and business communicative skills.

Unit I   (12 Hours)

Definition, classification of a small scale industry. Forms of organization: sole – proprietorship, partnership, joint – stock companies and co–operatives, line organization and functional organization. Old business, New Business and Franchise.

Unit II   (10 Hours)

Procedural aspects: Rules and regulations governing a small scale industry, Taxation benefits and incentives for the promotion of small scale industries. Project classification and identification. Project objectives, Constraints and Format for a report.

Unit III   (10 Hours)

Institutional assistance to small scale industry: need for institutional support, Institutions supporting and assisting small scale industries: SIDCO, DIC, NSIC, SFC, SIDBI, IFCI, IDBI, EXIM, Women Entrepreneurs: Type of Industries suitable for women entrepreneurs.

Unit IV   (10 Hours)

Production Planning: Production Channel and Control, Methods of Marketing, Incentives and subsidies schemes available for export.

Unit V   (10 Hours)

Business Correspondence: Banking, Insurance, Agency. Drafting the structure of business letters, Sales and Trade letters and Electronic Communication methods.

Books for Reference:

1. Vasant Desai, Management of a Small Scale Industry, Himalaya Publishing House, Delhi, 2015.
2. Bhawna Bhatnagar & Ankur Budhiraja, Entrepreneurship Development & Small Business Management, Vayu Education of India, New Delhi, 2011.
3. Ruddar Dutt &K. M. Sundaram, Indian Economy, S. Chand & Co., Ltd., Delhi, 2016

Elective I - Soft Skills   **17MEE1**

(For the students admitted from the academic year 2017-2018 onwards)

Credits: 4   **Hours: 52**

Course Objectives:

- ❖ To develop and use soft skills for effective performance in today's environment.
- ❖ To help the students to learn and improve the art of Group Discussion and preparatory steps for interview.
- ❖ To equip the students to face the competitive examinations and placements.

Unit I   **(10 Hours)**

Soft Skills: Meaning, Importance, Characteristics, Soft Skills Training – Practicing Soft Skills. Life Skills: Attitude: Meaning – Features – Formation of Attitude – Positive Attitude: Benefits – Developing Positive Attitude – Obstacles – Staying Positive. Communication: Definition – Process – Channels – Importance - Barriers – Overcoming Barriers.

Unit II   **(11 Hours)**

Communication Skills: Art of Listening – Kinds of Listening – Poor Listening Habits – Advantages of Active Listening. Speaking Skills: Benefits. Art of Writing: Importance – Writing Tips – Drawbacks of Written Communication. E-mail etiquette: Need – Rules.

Unit III   **(11 Hours)**

Group Discussion: Meaning – Need – Characters Tested in GD – Types – Consequences – Behaviour in a GD – Do's and Don'ts. Interview Skills: Meaning – Types – Traits Tested – Types of Questions asked - Reasons for Selecting or Rejecting a Candidate – Do's: On the day of Interview – On the Interview Table – Don'ts. Preparing CV/ Resume: Meaning – Purpose – Types of Resumes – CV Writing Tips – Do's and Don'ts.

Unit IV   **(10 Hours)**

Body Language – Meaning – Forms – Uses – Interpreting Body Language – Developing Confidence with correct Body Language. Etiquette: Benefits – Classification: Personal – Business Meeting – Social – Interview – Telephone interview – Professional – Work etiquettes.

Unit V   **(10 Hours)**

Time Management: The 80:20 rule – Sense of Time Management – Feature - Secrets of Time Management - Time Management Matrix – Steps for successful Time Management – Difficulties. Stress Management: Meaning – Effects of Stress – Kinds of Stress – Sources – Stress management tips.

Books for Reference:

1. Alex. K. Soft Skills- Know yourself and know the world, S. Chand & Company Pvt. Ltd, New Delhi, 2014.

2. Hariharan. S, Sundararajan. N & Shanmugapriya S.P. Soft Skills, MJP Publishers, Chennai, 2010.

M.A. Economics
Semester II

Elective II -Women in Development   **17MEE3**

(For the students admitted from the academic year 2017-2018 onwards)

Credits: 4   **Hours: 52**

Course Objectives:

The course aims to

- ❖ know the status of women and their education in India

- ❖ comprehend the concepts related to health intervention
- ❖ bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women
- ❖ understand women and personal development.

Unit I (11 Hours)

Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II (11 Hours)

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III (10 Hours)

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others.

Unit IV (10 Hours)

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V (10 Hours)

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.Women and Technology: Modernization, Industrialization.

Books for Reference:
1. Janet Momsen, Gender and Developmnet, Routledge, New Delhi, 2010
2. Sharma, Women and Education, Commonwealth Publications, 2005
3. Uzma Parveen, Women and Environmental Management, Women Press, 2009
4. Bijli K. Heena, Women and Health, Intersectional Issues and Social Constraints, Author Press, New Delhi, 2012
5. Pulla Rao, Women Entrepreneurs and Socio-economic Development, Serials Publications, New Delhi, 2011.

M.A. Economics
Semester IV
Core XV - Environmental Economics 17ME15
(For the students admitted from the academic year 2017-2018 onwards)
Credits: 4 **Hours: 75**
Course Objectives:
This course aims
- ❖ to inculcate an awareness among the students about the economic aspects of environmental issues.
- ❖ to know the regulatory activities and environmental laws in the context of India and the World.

Unit I (15 Hours)

Basic Concepts: Definition –Scope and Significance of Environmental Economics – Relationship between Environment and Economic Systems – The Material Balance Model – Basic

Theory of environmental Economics: market failure and externalities – meaning of market failure, kinds and measurement of externalities – solution for externalities, pollution externalities and economic efficiency.

Unit II (15 Hours)

Pollution: Types and Consequences**:** Pollution – Meaning – Types of pollution – Water, Air, Noise, Radio- active, Thermal – Consequences of Pollution: Deforestation, soil degradation and land use - Global Warming – Green House effect, Ozone depletion, Acid rain and ecological disturbance – Environment and Health hazards.

Unit III (15 Hours**)**

Pollution Control**:** Pollution as an Economic Problem – Optimum level of pollution control – Pollution control model – Methods of pollution control: Moral Suasion, Regulation, Prohibition, and Fiscal techniques.

Unit IV (15 Hours**)**

Economic Growth, Environmental Planning and Management: Environmental Cost of Economic Growth: Environment vs. Economic Growth, Zero Economic Growth, Opportunity Cost of Economic Growth, Cost – Benefit Analysis– Limits to Growth. Environmental Planning and Management-Importance- Role of the Government in Environmental Management.

Unit V (15 Hours**)**

Environmental Policy and Performance: Constitutional Protection against Environmental Pollution– The Environment (Protection) Act,1986- Features- National Environment Policy 2006 (NEP). International Action- Kyoto Protocol, Carbon Credits and Carbon Trading. Environmental Education and Training– Formal and Non Formal Environmental Education.

Books for Reference:

1. T. Eugine   : Environmental Economics, Vrinda Publications (P) Ltd., Delhi, 2004.
2. Ishwar, C. Dhingra: The Indian Economy, Environment and Policy, Sultan Chand
    and Sons, Delhi, 2014.
3. S. Sankaran, Environmental Economics, Margham Publications, Chennai, 2010.

Year	Program code	Value added courses	Total Number of courses	Explanation
2016-17	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics
		v.Consumerism		Educate the students about their rights and responsibilities as consumers and way to settle the consumer disputes

Post Graduate & Research Department of Economics
Scheme of Examination – CBCS Pattern
Programme - B.A. Economics
(For the Students admitted from the academic year 2015-2016 &2016-17 only)

Course Code	Course Title	Ins. Hrs/week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
115TA1/ 115MY1/ 115HD1/ 115FR1/ 115EN1	**Part I** – Language I	6	3	25	75	100	4
115EN1	**Part II** – English I	6	3	25	75	100	4
	Part III						
115E01	Core I - Micro Economics I	5	3	25	75	100	4
115E02	Core II - Agricultural Economics	5	3	25	75	100	4
115AE1	Allied I - Principles of Management	6	3	25	75	100	4
115EVS	**Part IV** – Environmental Studies	2	2	50	-	50	2
	Semester II						
215TA2/ 215MY2/ 215HD2/ 215FR2/ 215EN2	**Part I** – Language II	6	3	25	75	100	4
215EN2	**Part II** – English II	6	3	25	75	100	4
	Part III						
215E03	Core III–Micro Economics II	5	3	25	75	100	4
215E04	Core IV – Demography	5	3	25	75	100	4
215AE2	Allied II – Statistics	6	3	25	75	100	4
215VEC	**Part IV** – Value Education	2	2	50	-	50	2
	Semester III						
315TA3/ 315MY3/ 315HD3/ 315FR3/ 315EN3	**Part I** – Language III	6	3	25	75	100	4
315EN3	**Part II** – English III	6	3	25	75	100	4

Code	Course						
	Part III						
315E05	Core V– Economics of Investment Management	4	3	25	75	100	4
315E06	Core VI – Economics of Marketing	3	3	25	50	75	3
315AE3	Allied III – Mathematical Methods	6	3	25	75	100	4
315ES1	**Part IV** Skill Based Course I – Communication Skills for Business	3	3	75	-	75	3
315NCM	Non Major Elective Course I – Consumerism	2	2	50	-	50	2
	Semester IV						
415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I** – Language III	6	3	25	75	100	4
415EN4	**Part II** – English III	6	3	25	75	100	4
	Part III						
415E07	Core VII – Urban Economics	4	3	25	75	100	4
415E08	Core VIII – Economic Doctrines	3	3	25	50	75	3
415AE4	Allied IV – Services Marketing	6	3	25	75	100	4
415ES2	**Part IV** Skill Based Course II – Management Information System	3	3	75	-	75	3
415NGA	Non Major Elective Course II General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	50	-	Grade	Grade
415EX1/ 415EX2/ 414EX4/ 414EX5	**Part V** - Extension	-	-	50	-	50	2
415ALE	**ALC I -** Subject Viva Voce	-	-	-	100	100	4*
	Semester V						
	Part III						
515E09	Core IX –Macro Economics	6	3	25	75	100	4
515E10	Core X–Monetary Economics	6	3	25	75	100	4
515E11	Core XI – Entrepreneurship Development	5	3	25	75	100	4
515E12	Core XII – Economics of						

Code	Title						
	Tourism	5	3	25	75	100	4
515EE1	Elective I – Principles of Insurance	5	3	25	75	100	4
515ES3	**Part IV** Skill Based Course III – Computer Applications in Business - Practical	3	3	75	-	75	3
	Semester VI						
	Part III						
615E13	Core XIII–Fiscal Economics	6	3	25	75	100	4
615E14	Core XIV – International Economics	5	3	25	75	100	4
615E15	Core XV– Indian Economic Development	5	3	25	75	100	4
615EE2	Elective II – Banking Practices	5	3	25	75	100	4
615EE3	Elective III – Retail Business Management	6	3	25	75	100	4
615ES4	**Part IV** Skill Based Course IV – Tally Accounting Programme - Practical	3	3	75	-	75	3
615EX3	**Part V -** Extension	-	-	50	-	50	2
615ALE	**ALC II**- Subject Viva Voce	-	-	-	100	100	4*
	TOTAL					3500	140

Starred Credits are treated as additional credits which are optional.

B.A. Economics
Semester I
Part III – Core II – Agricultural Economics   115E02
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 65**

Preamble:
    The aim of the course is to equip the students with the
- ❖ importance of agriculture in an economy
- ❖ issues related to agricultural sector

Unit I   (13 Hours)
    Introduction: Agriculture- Meaning- Importance of Agriculture- Agricultural in Indian Economy- Causes for low productivity in agriculture.

Unit II   (13 Hours)
    Land Utilization in India- Agricultural Holdings- Sub- division and Fragmentation of Holdings- Effects. Cropping Pattern – Factors influencing Cropping Pattern.

Unit III (13 Hours)

Agricultural Inputs- Irrigation – Types. HYV Seeds, Fertilizers and Manures, implements and machinery. Sources of Agricultural Finance. New Agricultural Strategy and Green Revolution- Effects. A Brief Note on Need for Second Green Revolution.

Unit IV (13 Hours)

Post Green Revolution Developments-Contract Farming-Organic Farming –Precision Farming-Sustainable Agriculture-Food Security in India.

Unit V (13 Hours)

Agriculture Marketing and Price- Defects of Agricultural Marketing-Measures taken to improve Agricultural Marketing (in brief) - Fluctuations in Agricultural Prices- Reasons--Agricultural Price Policy in India- Public Distribution System- Objectives- Defects

Book for Study:

2. S. Sankaran, Agricultural Economy of India, Margham Publications, Chennai, 2012

Books for Reference:

3. Ruddar Dutt & K.P.M. Sundaram, Indian Economy, S. Chand & Co Ltd, New Delhi, 2012
4. S.K.Misra & Puri.V. Indian Economy- Its Development Experience, Himalaya Publishing House, Mumbai, 2012.

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B.A. Economics
Semester I
Part III – Allied I – Principles of Management   115AE1
(For the students admitted from the academic year 2015-2016 onwards)

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Credits: 4   Hours: 75

Preamble:

This course endeavours to impart the basic knowledge of organizing and managing a firm in an efficient manner.

Unit I: Management and Manager (15 Hours)

Management: Definition – Features – Functions – Importance - Administration and Management - Manager: Functions – Role – Responsibilities - Entrepreneur and Manager.

Unit II: Planning and Decision Making (15 Hours)

Planning: Definition – Characteristics – Objectives - Advantages and Limitations - Steps in Planning Process - Management by Objectives (MBO) - Decision Making - Decision Making Process

Unit III: Organisation and Directing (15 Hours)

Organisation: Functions – Nature – Importance - Classification of Organisation: Formal and Informal Organisation - Difference between Formal and Informal Organisation - Directing: Meaning and Principles.

Unit IV: Delegation and Decentralisation (15 Hours)

Delegation: Elements – Principles – Types – Advantages - Problems. Decentralization – Advantages – Disadvantages - Departmentation: Need – Factors - Basis.

Unit V: Controlling and Co-ordination (15 Hours)

Controlling – Steps - Requirements of Effective Control System – Features - Need – Advantages – Limitations - Coordination - Features – Importance – Types - Problems- Steps for effective Co-ordination.

Book for Study:

2. T. Ramasamy, Principles of Management, Himalaya Publishing House, Mumbai, 2010

Books for Reference:

2. P.C Tripathi & P.N Reddy, Principles of Management, Tata McGraw Hill Ltd., New Delhi, 2008
3. Dinkar Pagare, Principles of Management, Sultan Chand & Sons, Delhi, 2003

B.A. Economics
Semester III
Part IV – Non Major Elective Course I – Consumerism   315NCM
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 2   **Hours: 25**

Preamble:

The aim of the course is to educate the students about
- ❖ their rights as consumers and
- ❖ the settlement of consumer disputes

Unit I   **(5 Hours)**

Consumerism- Meaning- Consumer- Concept- Definitions according to the Consumer Protection Act- Consumer Protection Act in USA and UK.

Unit II   **(5 Hours)**

Expectations of the consumers- Techniques used by the business community- objectives- motives- business tactics- Techniques that cheat consumers.

Unit III   **(5 Hours)**

Consumer Protection Act 1986- Rights and remedies available under the Act- Consumer Protection (Amendment) Act 1993

Unit IV   **(5 Hours)**

The role of consumer protection councils (Central and State) - The District Forum, The State Commission and the National Commission- Complaint procedures.

Unit V   **(5 Hours)**

Consumer Education- Need – Role of State Agencies, Consumer Organizations, Consumer Advocates- Consumer Movement- Media in consumer education.

Books for Reference:

1. Deepa Sharma, Consumer Grievance Redressal under the Consumer Protection Act, New Century Publications, New Delhi, 2002
2. Gurjeet Singh, The Law and Consumer Protection in India, Deep & Deep Publications, Delhi, 2000
3. Sanjay Kaptan, Consumer Movement in India - Issues and Problems, Sarup & Sons, Delhi, 2003
4. Memoria, C.B, Social Problems and Social Disorganization in India, Narosa Book Distribution

Year	Program code	Value added courses	Total Number of courses	Explanation
2016-17	ME	Core IV- Human Resource Management		Enable the students to know about the importance of investment in health and education.
		Core V - Management of Small Business		To enhance the entrepreneurial and business communicative skill
		Elective I- Soft Skills		To develop and use soft skills for effective performance in today's environment
		Elective II- Women in Development		To know the status of women and their education in India.
		Core XV- Environmental Economics		To inculcate an awareness among the students about the economic aspects of environmental issues

Scheme of Examination – CBCS Pattern
Programme: M.A. Economics
(For the Students admitted from the academic year 2015-2016 &2016-17only)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
15ME01	Core I – Advanced Micro Economics	6	3	25	75	100	4
15ME02	Core II – Mathematical Techniques for Economic Analysis	6	3	25	75	100	4
15ME03	Core III - Research Methodology in Economics	6	3	25	75	100	4
15ME04	Core IV - Human Resource Management	4	3	25	75	100	4
15ME05	Core V - Management of Small Business	4	-	25	75	100	4
15MEE1	Elective I- Soft Skills	4	3	25	75	100	4
	Semester II						
15ME06	Core VI- Advanced Macro Economics	6	3	25	75	100	4
15ME07	Core VII-Public Economics	6	3	25	75	100	4
15ME08	Core VIII- Economics of Human Resources	6	-	25	75	100	4
15ME09	Core IX- Econometrics	6	3	25	75	100	4
15MEE2	Elective II – Women in Development	6	3	25	75	100	4
15MEIS	Internship	-	-	50	-	50	2
15MGCS	Cyber Security - Level I	2	2	50	-	Grade	Grade
15MESVI	Advanced Learners Course I– Subject Viva Voce	-	-	100	-	100	4*
	Semester III						
15ME10	Core X- Economics of Money and Financial Institutions	5	3	25	75	100	4
15ME11	Core XI-Operations Research	6	3	25	75	100	4

Code	Title						
15ME12	Core XII-Industrial Economics	5	3	25	75	100	4
15ME13	Core XIII – Marketing Management	4	-	25	75	100	4
15MEE3	Elective III – Statistical Packages for Data Analysis - Practical	6	3	40	60	100	4
	Semester IV						
15ME14	Core XIV - Export Procedures and Documentation	6	3	25	75	100	4
15ME15	Core XV- Environmental Economics	6		25	75	100	4
15ME16	Core XVI – Health Economics**	6	-	60	40	100	4
15MEE4	Elective IV- Computer Application Techniques- PageMaker & Corel Draw - Practical	6	3	40	60	100	4
15MEPV	Project and Viva Voce	6	-	100	100	200	8
15MESVII	Advanced Learners Course –II Subject Viva Voce	-	-	100	-	100	4*
	TOTAL					2250	90

Single Starred credits are treated as additional credits which are optional.

Double Starred Papers are self learning papers.

M.A. Economics
Semester I
Core IV- Human Resource Management   15ME04
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 52**

Preamble:

The aim of the course is to
- ❖ equip the students with the basic human resource management skills.
- ❖ develop the managerial skills for business management.

Unit I   (10Hours)

Human Resource Management – Definition – concept, meaning. Objectives and responsibilities – the need, approaches towards Human resources – Functions of Human Resource Management.

Unit II   (10Hours)

Human Resource Planning – Steps involved – Problems in Human Resource Management – Recruitment, Screening and Selection Process – Orientation – Placement, Promotion, Transfer, and Training

Unit III (10 Hours)

Job Analysis – Usefulness, Methods – Performance appraisal – Objectives, Methods and Requirements of a Good Appraisal System – Labour Turn over costs – effects on employees and workers, Causes of Labour Turn Over- Control of turnover.

Unit IV (10Hours)

Wages and Salary Administration – Principles of Wage Administration – Wage and Salary Policies – Incentive Payments – Importance – Types of Incentives – Pre-requisites for an Effective Incentive System – Systems of Wage Payment – Time Wage and Piece Wage.

Unit V (12 Hours)

Morale and Productivity Relation between Morale and Productivity – Impact of Globalization on Employment, Wages and Benefit, Trade Unions, Collective Bargaining and Participative Managements and Quality Circles – Total Quality and Human Resource Management – Principles and Concepts of TQM – HRM and TQM.

Books for Reference
4. L.M. Prasad, Human Resource Management, S Chand & Sons, Delhi, 2006.
5. T.N. Chhabra, Human Resource Management, concepts & issues, S . Chand & sons, Delhi 2000.
6. P.C. Tripathi, Human Resource Management, S Chand & Sons, Delhi, 2005.
7. E.A.Ramaswamy, Managing Human Resources A Contemporary Text, OUP, Delhi 2000.
8. P. Subba Rao, Essentials of Human Resource Management and Industrial Relations. (Text, cases and Games) Himalaya Publishing House, Delhi, 2006.
9. K. Aswathappa, Human Resource and Personnel Management Text Cases, Tata McGraw–Hill Publishing Co Limited, Delhi 2010
10. Gary Dessler, Human Resource Management, Dorling Kindersley Pvt. Ltd, Delhi, 2006
11. Radha, Human Resource Management Prasanna & Co., Chennai, 2005
12. C.B. Gupta, Human Resource Management, S Chand & Sons, Delhi, 2010
13. Baskar Chatterjee, Human Resource Management – A Contemporary Text, Sterling Publishers Pvt. Ltd, Delhi, 2009.

M.A. Economics
Semester I
Core V– Management of Small Business   15ME05
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 52**

Preamble:

The course would equip the students with
- ❖ organization skills in the setting up and managing of the various aspects of a small business unit.
- ❖ entrepreneurial skill and business communicative skills.

Unit I (12 Hours)

Definition and Legal frame work – classification – selection of a small scale industry – forms of organization – sole – proprietorship, partnership, joint – stock companies, The co–operatives – line organization & functional organization – old business – New Business – Franchise.

Unit II (10 Hours)

Procedural aspects – Rules and regulations governing a small scale industry – Taxation benefits and incentives for the promotion of small scale industries - Project classification & identification, Project objectives – Constraints – format for a report.

Unit III (10 Hours)

Institutional assistance to small scale industry – need for institutional support – Institutions supporting and assisting small scale industries - SIDCO, DIC, NSIC, SFC, SIDBI, IFCI, IIBI, EXIM - Women entrepreneurs - Type of Industries suitable for women entrepreneurs.

Unit IV (10 Hours)

Production Planning – Production Channel and Control – Methods of Marketing – Incentives and subsidies schemes available for export

Unit V (10 Hours)

Business Correspondence – Banking – Insurance – Agency – Drafting the structure of business letters – Sales & Trade letters – Electronic Communication methods.

Books for Reference:

4. Vasant Desai, Management of a Small Scale Industry, Himalaya Publishing House, Delhi, 2003.
5. G.K. Patia & Prakash, Institutional Financing for Small Scale Industries, Discovery Publishing House, Delhi, 2003   .
6. V.S Datey, Taxman's Practice Manual to Small Scale Industries, Taxman Allied Services (P) Ltd., New Delhi, 1999.
7. M.V. Sonalker & Kaveri, Financial Management for Small Enterprises, Authors Press, New Delhi, 2003.
8. Nirmal, K. Gupta, Small Industry –Challenges & Perspectives, Anmol Publications, Delhi, 1992.
9. Ruddar Datt & K. M. Sundaram, Indian Economy, S. Chand & Co., Ltd., Delhi, 2006
10. Philip Kotler, Marketing Management – Analysis, Planning Implementation and Control Practice Hall of India P. Ltd, Delhi 1998.

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M.A. Economics
Semester I
Elective I - Soft Skills   **15MEE1**
(For the students admitted from the academic year 2015-2016 onwards)

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Credits: 4   **Hours: 52**

Preamble:

❖ To help the students to learn and improve the art of Group Discussion and preparatory steps for interview.

❖ To equip the students to face the competitive examinations and placements.

❖ To suggest good business meeting protocol.

Unit I: Effective Communication & Resume Writing (12 Hours)

Communication: Definition, Process, Barriers, Non-Verbal Communication, Johari Window, The Art of Listening, Production of Speech, Organisation of Speech, Modes of Delivery, Conversation Techniques, Dialogue, Good Manners and Etiquettes. Resume: Types-Chronological, Functional and Hybrid- Contents of a Good Resume.

Unit II: Group Discussion, Interview Skills and Team Building (12 Hours)

Group Discussion: Process, Purpose, Aspects – Role of GD in Selection Procedure – Do's and Don'ts of GD - GD Topics for Practice. Interview: Objectives, Importance, Types, Techniques, Appearing for an Interview- Mock Interviews.

Unit III: Personality Development, Attitude & Motivation (12 Hours)

Self-Awareness, Assertiveness, Goal Setting, Problem-solving, Conflict and Stress Management, Decision-Making Skills, Positive and Creative Thinking, Lateral Thinking, Time Management. Attitude: Concept, Significance, Factors affecting attitudes, Positive Attitude-Advantages, Negative Attitude- Disadvantages. Motivation: Concept, Significance, Internal and External Motives, Importance of Self-motivation, Factors leading to demotivation.

Unit IV: English for Competitive Examinations (8 Hours)
- Comprehending Passages
- Sentence Completion
- Voice
- Composition – Paragraph Writing only
- Precis Writing

Unit V: Test of Reasoning (8 Hours)
   Verbal Reasoning
- Series Completion, Analogy
- Data sufficiency
- Logical Deduction – Logic and Theme Detection only

   Non-Verbal Reasoning
- Series
- Mirror Images, Completion of Incomplete Pattern

Books for Reference:
1. Aggarwal, R.S. Quantitative Aptitude, S. Chand & Sons, 20
2. Aggarwal, R.S, A Modern Approach to Non-Verbal Reasoning, S.Chand & Co, Delhi, 2004
3. Hari M.Prasad& Rajnish M, How to prepare for Group Discussion and Interview, Tata McGraw Hill, Delhi, 2005
4. Mandal S.K, How to succeed in Group Discussions and personal Interviews, Jaico Publishing House, Mumbai, 2005
5. Kay DuPont, Business Etiquette and Professionalism, Viva Books Pvt. Ltd., Chennai, 2004
6. Parul Singh, Handbook of Writing Effective Resume for Job Applications, Excel Books, Delhi, 2007

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M.A. Economics
Semester II
Elective II - Women in Development   **15MEE2**
(For the students admitted from the academic year 2015-2016 onwards)
</div>

Credits: 4   **Hours: 75**
Preamble:
The course aims to
- know the status of women and their education in India.
- comprehend the concepts related to health intervention.
- bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women.
- understand women and personal development.

Unit I (15   Hours)
    Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II (15 Hours)
    Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III   (13 Hours)
      Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others

Unit IV   (15 Hours)
      Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V   (17 Hours)
      Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.
      Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.
      Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professionals and Entrepreneurs.

Books for Reference:

6. Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.
7. Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995   .
8. Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications Pvt. Ltd., Delhi, 2000
9. Jeyapalan. N, Women's Studies, N.S Publications, Madras, 1998
10. Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, Delhi, 1997

M.A. Economics
Semester IV
Core XV - Environmental Economics   15ME15
(For the students admitted from the academic year 2015-2016 onwards)
Credits: 4   **Hours: 75**
Preamble:
This course aims
   ❖ to inculcate an awareness among the students about the economic aspects of environmental issues.
   ❖ to know the regulatory activities and environmental laws in the context of India and the World.

Unit I   (15 Hours)
      Basic Concepts: Definition –Scope and Significance of Environmental Economics – Relationship between Environment and Economic Systems – The Material Balance Model – Basic Theory of environmental Economics: market failure and externalities – meaning of market failure, kinds and measurement of externalities – solution for externalities, pollution externalities and economic efficiency.

Unit II   (15 Hours)
      Pollution: Types and Consequences**:** Pollution – Meaning – Types of pollution – Water, Air, Noise, Radio- active, Thermal – Consequences of Pollution: Deforestation, soil degradation and land use - Global Warming – Green House effect, Ozone depletion, Acid rain and ecological disturbance – Environment and Health hazards.

Unit III (15 Hours)

Pollution Control**:** Pollution as an Economic Problem – Optimum level of pollution control – Pollution control model – Methods of pollution control: Moral Suasion, Regulation, Prohibition, and Fiscal techniques.

Unit IV (15 Hours)

Economic Growth and Sustainable Development: Environmental Cost of Economic Growth: Environment vs. Economic Growth, Zero Economic Growth, Opportunity Cost of Economic Growth, Cost – Benefit Analysis– Limits to Growth – Environmental Security and Sustainable Development: Concept of Sustainable Development – Its measures and strategies.

Unit V (15 Hours)

National and International Law and Conventions: Law and Environmental Protection in India – Environmental Education in India – International Environmental Policy: Pollution as a Transfrontier problem –, Basel Convention on Hazardous Waste 1989 – Kyto Protocol- Earth summit at Rio De Janeiro 1992, Hague Conference 2000, Doha Conference 2001- Copenhagen Summit 2009 – Carbon Trading (in brief)

Books for Reference:
4. Lingamurthy & others, Environmental Concerns of Economic Development Serials
5. Publications, Delhi, 2008
6. Madhumitha Biswas, Environmental Economics, Mittal Publications, Delhi, 2007.
7. Madhu Raj, Environmental Economics, IVY Publishing House, Delhi, 2001
8. Radha &others, Environmental Challenges of the 21st Century, Deep & Deep, Delhi, 2002
9. Srivastava S.C. & Sangya Srivastava, Economics of Social Sector and Environment, Anmol Publications Ltd., Delhi, 2006   .
10. U Sankar, Environmental Economics, Oxford   University Press, Delhi, 2002

Year	Program code	Value added courses	Total Number of courses	Explanation
2015-16	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics
		v.Consumerism		Educate the students about their rights and responsibilities as consumers and way to settle the consumer disputes

Post Graduate & Research Department of Economics
Scheme of Examination – CBCS Pattern
Programme - B.A. Economics
(For the Students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
115TA1/ 115MY1/ 115HD1/ 115FR1/ 115EN1	**Part I** – Language I	6	3	25	75	100	4
115EN1	**Part II** – English I	6	3	25	75	100	4
	Part III						
115E01	Core I - Micro Economics I	5	3	25	75	100	4
115E02	Core II - Agricultural Economics	5	3	25	75	100	4
115AE1	Allied I - Principles of Management	6	3	25	75	100	4
115EVS	**Part IV** – Environmental Studies	2	2	50	-	50	2
	Semester II						
215TA2/ 215MY2/ 215HD2/ 215FR2/ 215EN2	**Part I** – Language II	6	3	25	75	100	4
215EN2	**Part II** – English II	6	3	25	75	100	4
	Part III						
215E03	Core III–Micro Economics II	5	3	25	75	100	4
215E04	Core IV – Demography	5	3	25	75	100	4
215AE2	Allied II – Statistics	6	3	25	75	100	4
215VEC	**Part IV** – Value Education	2	2	50	-	50	2
	Semester III						
315TA3/ 315MY3/ 315HD3/ 315FR3/ 315EN3	**Part I** – Language III	6	3	25	75	100	4
315EN3	**Part II** – English III	6	3	25	75	100	4

Code	Course						
	Part III						
315E05	Core V– Economics of Investment Management	4	3	25	75	100	4
315E06	Core VI – Economics of Marketing	3	3	25	50	75	3
315AE3	Allied III – Mathematical Methods	6	3	25	75	100	4
315ES1	**Part IV** Skill Based Course I – Communication Skills for Business	3	3	75	-	75	3
315NCM	Non Major Elective Course I – Consumerism	2	2	50	-	50	2
	Semester IV						
415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I** – Language III	6	3	25	75	100	4
415EN4	**Part II** – English III	6	3	25	75	100	4
	Part III						
415E07	Core VII – Urban Economics	4	3	25	75	100	4
415E08	Core VIII – Economic Doctrines	3	3	25	50	75	3
415AE4	Allied IV – Services Marketing	6	3	25	75	100	4
415ES2	**Part IV** Skill Based Course II – Management Information System	3	3	75	-	75	3
415NGA	Non Major Elective Course II General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	50	-	Grade	Grade
415EX1/ 415EX2/ 414EX4/ 414EX5	**Part V** - Extension	-	-	50	-	50	2
415ALE	**ALC I -** Subject Viva Voce	-	-	-	100	100	4*
	Semester V						
	Part III						
515E09	Core IX –Macro Economics	6	3	25	75	100	4
515E10	Core X–Monetary Economics	6	3	25	75	100	4
515E11	Core XI – Entrepreneurship Development	5	3	25	75	100	4
515E12	Core XII – Economics of						

	Tourism	5	3	25	75	100	4
515EE1	Elective I – Principles of Insurance	5	3	25	75	100	4
	Part IV						
515ES3	Skill Based Course III – Computer Applications in Business - Practical	3	3	75	-	75	3
	Semester VI						
	Part III						
615E13	Core XIII–Fiscal Economics	6	3	25	75	100	4
615E14	Core XIV – International Economics	5	3	25	75	100	4
615E15	Core XV– Indian Economic Development	5	3	25	75	100	4
615EE2	Elective II – Banking Practices	5	3	25	75	100	4
615EE3	Elective III – Retail Business Management	6	3	25	75	100	4
615ES4	**Part IV** Skill Based Course IV – Tally Accounting Programme - Practical	3	3	75	-	75	3
615EX3	**Part V -** Extension	-	-	50	-	50	2
615ALE	**ALC II**- Subject Viva Voce	-	-	-	100	100	4*
	TOTAL					3500	140

Starred Credits are treated as additional credits which are optional.

B.A. Economics
Semester I
Part III – Core II – Agricultural Economics   115E02
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 65**
Preamble:
> The aim of the course is to equip the students with the
> ❖ importance of agriculture in an economy
> ❖ issues related to agricultural sector

Unit I   (13 Hours)
> Introduction: Agriculture- Meaning- Importance of Agriculture- Agricultural in Indian Economy- Causes for low productivity in agriculture.

Unit II   (13 Hours)
> Land Utilization in India- Agricultural Holdings- Sub- division and Fragmentation of Holdings- Effects. Cropping Pattern – Factors influencing Cropping Pattern.

Unit III (13 Hours)

Agricultural Inputs- Irrigation – Types. HYV Seeds, Fertilizers and Manures, implements and machinery. Sources of Agricultural Finance. New Agricultural Strategy and Green Revolution- Effects. A Brief Note on Need for Second Green Revolution.

Unit IV (13 Hours)

Post Green Revolution Developments-Contract Farming-Organic Farming –Precision Farming-Sustainable Agriculture-Food Security in India.

Unit V (13 Hours)

Agriculture Marketing and Price- Defects of Agricultural Marketing-Measures taken to improve Agricultural Marketing (in brief) - Fluctuations in Agricultural Prices- Reasons-- Agricultural Price Policy in India- Public Distribution System- Objectives- Defects

Book for Study:

3. S. Sankaran, Agricultural Economy of India, Margham Publications, Chennai, 2012

Books for Reference:

5. Ruddar Dutt & K.P.M. Sundaram, Indian Economy, S. Chand & Co Ltd, New Delhi, 2012
6. S.K.Misra & Puri.V. Indian Economy- Its Development Experience, Himalaya Publishing House, Mumbai, 2012.

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B.A. Economics
Semester I
Part III – Allied I – Principles of Management   115AE1
(For the students admitted from the academic year 2015-2016 onwards)
</div>

Credits: 4 **Hours: 75**

Preamble:

This course endeavours to impart the basic knowledge of organizing and managing a firm in an efficient manner.

Unit I: Management and Manager (15 Hours)

Management: Definition – Features – Functions – Importance - Administration and Management - Manager: Functions – Role – Responsibilities - Entrepreneur and Manager.

Unit II: Planning and Decision Making (15 Hours)

Planning: Definition – Characteristics – Objectives - Advantages and Limitations - Steps in Planning Process - Management by Objectives (MBO) - Decision Making - Decision Making Process

Unit III: Organisation and Directing (15 Hours)

Organisation: Functions – Nature – Importance - Classification of Organisation: Formal and Informal Organisation - Difference between Formal and Informal Organisation - Directing: Meaning and Principles.

Unit IV: Delegation and Decentralisation (15 Hours)

Delegation: Elements – Principles – Types – Advantages - Problems. Decentralization – Advantages – Disadvantages - Departmentation: Need – Factors - Basis.

Unit V: Controlling and Co-ordination (15 Hours)

Controlling – Steps - Requirements of Effective Control System – Features - Need – Advantages – Limitations - Coordination - Features – Importance – Types - Problems- Steps for effective Co-ordination.

Book for Study:

3. T. Ramasamy, Principles of Management, Himalaya Publishing House, Mumbai, 2010

Books for Reference:

4. P.C Tripathi & P.N Reddy, Principles of Management, Tata McGraw Hill Ltd., New Delhi, 2008
5. Dinkar Pagare, Principles of Management, Sultan Chand & Sons, Delhi, 2003

B.A. Economics
Semester III
Part IV – Non Major Elective Course I – Consumerism   315NCM
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 2   **Hours: 25**

Preamble:

The aim of the course is to educate the students about
- ❖ their rights as consumers and
- ❖ the settlement of consumer disputes

Unit I   (5 Hours)

Consumerism- Meaning- Consumer- Concept- Definitions according to the Consumer Protection Act- Consumer Protection Act in USA and UK.

Unit II   (5 Hours)

Expectations of the consumers- Techniques used by the business community- objectives- motives- business tactics- Techniques that cheat consumers.

Unit III   (5 Hours)

Consumer Protection Act 1986- Rights and remedies available under the Act- Consumer Protection (Amendment) Act 1993

Unit IV   (5 Hours)

The role of consumer protection councils (Central and State) - The District Forum, The State Commission and the National Commission- Complaint procedures.

Unit V   (5 Hours)

Consumer Education- Need – Role of State Agencies, Consumer Organizations, Consumer Advocates- Consumer Movement- Media in consumer education.

Books for Reference:

5. Deepa Sharma, Consumer Grievance Redressal under the Consumer Protection Act, New Century Publications, New Delhi, 2002
6. Gurjeet Singh, The Law and Consumer Protection in India, Deep & Deep Publications, Delhi, 2000
7. Sanjay Kaptan, Consumer Movement in India - Issues and Problems, Sarup & Sons, Delhi, 2003
8. Memoria, C.B, Social Problems and Social Disorganisation in India, Narosa Book Distribution

Year	Program code	Value added courses	Total Number of courses	Explanation
2015-16	ME	Core IV- Human Resource Management		Enable the students to know about the importance of investment in health and education.
		Core V - Management of Small Business		To enhance the entrepreneurial and business communicative skill
		Elective I- Soft Skills		To develop and use soft skills for effective performance in today's environment
		Elective II- Women in Development		To know the status of women and their education in India.
		Core XV- Environmental Economics		To inculcate an awareness among the students about the economic aspects of environmental issues

Programme: M.A. Economics

(For the Students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
15ME01	Core I – Advanced Micro Economics	6	3	25	75	100	4
15ME02	Core II – Mathematical Techniques for Economic Analysis	6	3	25	75	100	4
15ME03	Core III - Research Methodology in Economics	6	3	25	75	100	4
15ME04	Core IV - Human Resource Management	4	3	25	75	100	4
15ME05	Core V - Management of Small Business	4	-	25	75	100	4
15MEE1	Elective I- Soft Skills	4	3	25	75	100	4
	Semester II						
15ME06	Core VI- Advanced Macro Economics	6	3	25	75	100	4
15ME07	Core VII-Public Economics	6	3	25	75	100	4
15ME08	Core VIII- Economics of Human Resources	6	-	25	75	100	4
15ME09	Core IX- Econometrics	6	3	25	75	100	4
15MEE2	Elective II – Women in Development	6	3	25	75	100	4
15MEIS	Internship	-	-	50	-	50	2
15MGCS	Cyber Security - Level I	2	2	50	-	Grade	Grade
15MESVI	Advanced Learners Course I– Subject Viva Voce	-	-	100	-	100	4*
	Semester III						
15ME10	Core X- Economics of Money and Financial Institutions	5	3	25	75	100	4
15ME11	Core XI-Operations Research	6	3	25	75	100	4

15ME12	Core XII-Industrial Economics	5	3	25	75	100	4
15ME13	Core XIII – Marketing Management	4	-	25	75	100	4
15MEE3	Elective III – Statistical Packages for Data Analysis - Practical	6	3	40	60	100	4
	Semester IV						
15ME14	Core XIV - Export Procedures and Documentation	6	3	25	75	100	4
15ME15	Core XV- Environmental Economics	6	3	25	75	100	4
15ME16	Core XVI – Health Economics**	6	-	60	40	100	4
15MEE4	Elective IV- Computer Application Techniques-PageMaker & Corel Draw - Practical	6	3	40	60	100	4
15MEPV	Project and Viva Voce	6	-	100	100	200	8
15MESVII	Advanced Learners Course –II Subject Viva Voce	-	-	100	-	100	4*
	TOTAL					**2250**	**90**

Single Starred credits are treated as additional credits which are optional.

Double Starred Papers are self learning papers.

M.A. Economics
Semester I
Core IV- Human Resource Management   15ME04
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 52**

Preamble:
   The aim of the course is to
   ❖ equip the students with the basic human resource management skills.
   ❖ develop the managerial skills for business management.

Unit I   (10Hours)
        Human Resource Management – Definition – concept, meaning. Objectives and responsibilities – the need, approaches towards Human resources – Functions of Human Resource Management.

Unit II   (10Hours)
        Human Resource Planning – Steps involved – Problems in Human Resource Management – Recruitment, Screening and Selection Process – Orientation – Placement, Promotion, Transfer, and Training

Unit III (10 Hours)

Job Analysis – Usefulness, Methods – Performance appraisal – Objectives, Methods and Requirements of a Good Appraisal System – Labour Turn over costs – effects on employees and workers, Causes of Labour Turn Over- Control of turnover.

Unit IV (10Hours)

Wages and Salary Administration – Principles of Wage Administration – Wage and Salary Policies – Incentive Payments – Importance – Types of Incentives – Pre-requisites for an Effective Incentive System – Systems of Wage Payment – Time Wage and Piece Wage.

Unit V (12 Hours)

Morale and Productivity Relation between Morale and Productivity – Impact of Globalization on Employment, Wages and Benefit, Trade Unions, Collective Bargaining and Participative Managements and Quality Circles – Total Quality and Human Resource Management – Principles and Concepts of TQM – HRM and TQM.

Books for Reference

14. L.M. Prasad, Human Resource Management, S Chand & Sons, Delhi, 2006.
15. T.N. Chhabra, Human Resource Management, concepts & issues, S . Chand & sons, Delhi 2000.
16. P.C. Tripathi, Human Resource Management, S Chand & Sons, Delhi, 2005.
17. E.A.Ramaswamy, Managing Human Resources A Contemporary Text, OUP, Delhi 2000.
18. P. Subba Rao, Essentials of Human Resource Management and Industrial Relations. (Text, cases and Games) Himalaya Publishing House, Delhi, 2006.
19. K. Aswathappa, Human Resource and Personnel Management Text Cases, Tata McGraw– Hill Publishing Co Limited, Delhi 2010
20. Gary Dessler, Human Resource Management, Dorling Kindersley Pvt. Ltd, Delhi, 2006
21. Radha, Human Resource Management Prasanna & Co., Chennai, 2005
22. C.B. Gupta, Human Resource Management, S Chand & Sons, Delhi, 2010
23. Baskar Chatterjee, Human Resource Management – A Contemporary Text, Sterling Publishers Pvt. Ltd, Delhi, 2009.

M.A. Economics
Semester I
Core V– Management of Small Business   15ME05
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4 **Hours: 52**

Preamble:

The course would equip the students with

❖ organization skills in the setting up and managing of the various aspects of a small business unit.

❖ entrepreneurial skill and business communicative skills.

Unit I (12 Hours)

Definition and Legal frame work – classification – selection of a small scale industry – forms of organization – sole – proprietorship, partnership, joint – stock companies, The co–operatives – line organization & functional organization – old business – New Business – Franchise.

Unit II (10 Hours)

Procedural aspects – Rules and regulations governing a small scale industry – Taxation benefits and incentives for the promotion of small scale industries - Project classification & identification, Project objectives – Constraints – format for a report.

Unit III (10 Hours)

Institutional assistance to small scale industry – need for institutional support – Institutions supporting and assisting small scale industries - SIDCO, DIC, NSIC, SFC, SIDBI, IFCI, IIBI, EXIM - Women entrepreneurs - Type of Industries suitable for women entrepreneurs.

Unit IV   (10 Hours)

Production Planning – Production Channel and Control – Methods of Marketing – Incentives and subsidies schemes available for export

Unit V   (10 Hours)

Business Correspondence – Banking – Insurance – Agency – Drafting the structure of business letters – Sales & Trade letters – Electronic Communication methods.

Books for Reference:

11. Vasant Desai, Management of a Small Scale Industry, Himalaya Publishing House, Delhi, 2003.
12. G.K. Patia & Prakash, Institutional Financing for Small Scale Industries, Discovery Publishing House, Delhi, 2003   .
13. V.S Datey, Taxman's Practice Manual to Small Scale Industries, Taxman Allied Services (P) Ltd., New Delhi, 1999.
14. M.V. Sonalker & Kaveri, Financial Management for Small Enterprises, Authors Press, New Delhi, 2003.
15. Nirmal, K. Gupta, Small Industry –Challenges & Perspectives, Anmol Publications, Delhi, 1992.
16. Ruddar Datt & K. M. Sundaram, Indian Economy, S. Chand & Co., Ltd., Delhi, 2006
17. Philip Kotler, Marketing Management – Analysis, Planning Implementation and Control Practice Hall of India P. Ltd, Delhi 1998.

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M.A. Economics
Semester I
Elective I - Soft Skills   15MEE1
(For the students admitted from the academic year 2015-2016 onwards)

</div>

Credits: 4   **Hours: 52**

Preamble:

❖ To help the students to learn and improve the art of Group Discussion and preparatory steps for interview.
❖ To equip the students to face the competitive examinations and placements.
❖ To suggest good business meeting protocol.

Unit I: Effective Communication & Resume Writing   (12 Hours)

Communication: Definition, Process, Barriers, Non-Verbal Communication, Johari Window, The Art of Listening, Production of Speech, Organisation of Speech, Modes of Delivery, Conversation Techniques, Dialogue, Good Manners and Etiquettes.

Resume: Types- Chronological, Functional and Hybrid- Contents of a Good Resume.

Unit II: Group Discussion, Interview Skills and Team Building   (12 Hours)

Group Discussion: Process, Purpose, Aspects – Role of GD in Selection Procedure – Do's and Don'ts of GD - GD Topics for Practice.   Interview: Objectives, Importance, Types, Techniques, Appearing for an Interview- Mock Interviews.

Unit III: Personality Development, Attitude & Motivation   (12 Hours)

Self-Awareness, Assertiveness, Goal Setting, Problem-solving, Conflict and Stress Management, Decision-Making Skills, Positive and Creative Thinking, Lateral Thinking, Time Management. Attitude: Concept, Significance, Factors affecting attitudes, Positive Attitude-Advantages, Negative Attitude- Disadvantages.   Motivation: Concept, Significance, Internal and External Motives, Importance of Self-motivation, Factors leading to demotivation.

Unit IV: English for Competitive Examinations (8 Hours)
- Comprehending Passages
- Sentence Completion
- Voice
- Composition – Paragraph Writing only
- Precis Writing

Unit V: Test of Reasoning (8 Hours)

Verbal Reasoning
- Series Completion, Analogy
- Data sufficiency
- Logical Deduction – Logic and Theme Detection only

Non-Verbal Reasoning
- Series
- Mirror Images, Completion of Incomplete Pattern

Books for Reference:

7. Aggarwal, R.S. Quantitative Aptitude, S. Chand & Sons, 20
8. Aggarwal, R.S, A Modern Approach to Non-Verbal Reasoning, S.Chand & Co, Delhi, 2004
9. Hari M.Prasad& Rajnish M, How to prepare for Group Discussion and Interview, Tata McGraw Hill, Delhi, 2005
10. Mandal S.K, How to succeed in Group Discussions and personal Interviews, Jaico Publishing House, Mumbai, 2005
11. Kay DuPont, Business Etiquette and Professionalism, Viva Books Pvt. Ltd., Chennai, 2004
12. Parul Singh, Handbook of Writing Effective Resume for Job Applications, Excel Books, Delhi, 2007

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M.A. Economics
Semester II
Elective II - Women in Development   15MEE2
(For the students admitted from the academic year 2015-2016 onwards)
</div>

Credits: 4 **Hours: 75**
Preamble:
The course aims to
- know the status of women and their education in India.
- comprehend the concepts related to health intervention.
- bring out the Indian Constitution, Indian Law and the role of legislation in the betterment of women.
- understand women and personal development.

Unit I (15 Hours)
Women in Development Process- Women in Development (WID), Women and Development (WAD), Gender and Development (GAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II (15 Hours)
Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals. Women and Environment: CHIPKO Movement – Green Belt Movement – Navdanya Movement - Women's Environment and Development Organization (WEDO).

Unit III   (13 Hours)

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAL and others

Unit IV   (15 Hours)

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V   (17 Hours)

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet. Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj. Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professionals and Entrepreneurs.

Books for Reference:

11. Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.

12. Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995   .

13. Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications
      Pvt. Ltd., Delhi, 2000

14. Jeyapalan. N, Women's Studies, N.S Publications, Madras, 1998

15. Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, Delhi, 1997

M.A. Economics
Semester IV
Core XV - Environmental Economics   15ME15
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 4   **Hours: 75**

Preamble:

This course aims

❖ to inculcate an awareness among the students about the economic aspects of environmental issues.

❖ to know the regulatory activities and environmental laws in the context of India and the World.

Unit I   (15 Hours)

Basic Concepts: Definition –Scope and Significance of Environmental Economics – Relationship between Environment and Economic Systems – The Material Balance Model – Basic Theory of environmental Economics: market failure and externalities – meaning of market failure, kinds and measurement of externalities – solution for externalities, pollution externalities and economic efficiency.

Unit II   (15 Hours)

Pollution: Types and Consequences**:** Pollution – Meaning – Types of pollution – Water, Air, Noise, Radio- active, Thermal – Consequences of Pollution: Deforestation, soil degradation and land use - Global Warming – Green House effect, Ozone depletion, Acid rain and ecological disturbance – Environment and Health hazards.

Unit III   (15 Hours**)**

Pollution Control**:** Pollution as an Economic Problem – Optimum level of pollution control – Pollution control model – Methods of pollution control: Moral Suasion, Regulation, Prohibition, and Fiscal techniques.

Unit IV (15 Hours)

Economic Growth and Sustainable Development: Environmental Cost of Economic Growth: Environment vs. Economic Growth, Zero Economic Growth, Opportunity Cost of Economic Growth, Cost – Benefit Analysis– Limits to Growth – Environmental Security and Sustainable Development: Concept of Sustainable Development – Its measures and strategies.

Unit V (15 Hours)

National and International Law and Conventions: Law and Environmental Protection in India – Environmental Education in India – International Environmental Policy: Pollution as a Transfrontier problem –, Basel Convention on Hazardous Waste 1989 – Kyto Protocol- Earth summit at Rio De Janeiro 1992, Hague Conference 2000, Doha Conference 2001- Copenhagen Summit 2009 – Carbon Trading (in brief)

Books for Reference:
11. Lingamurthy & others, Environmental Concerns of Economic Development Serials
12. Publications, Delhi, 2008
13. Madhumitha Biswas, Environmental Economics, Mittal Publications, Delhi, 2007.
14. Madhu Raj, Environmental Economics, IVY Publishing House, Delhi, 2001
15. Radha &others, Environmental Challenges of the 21st Century, Deep & Deep, Delhi, 2002
16. Srivastava S.C. & Sangya Srivastava, Economics of Social Sector and Environment, Anmol Publications Ltd., Delhi, 2006   .
17. U Sankar, Environmental Economics, Oxford   University Press, Delhi, 2002

Year	Program code	Value added courses	Total Number of courses	Explanation
2014-15	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics
		v.Consumerism		Educate the students about their rights and responsibilities as consumers and way to settle the consumer disputes

B.A. Economics
Semester wise Distribution with Scheme of Examination
(For the candidates admitted during the academic year 2014-2015 & onwards)

Semester	Course	Credits	Duration of Exam Hrs (ESE)	CIA	ESE	Total
I	Part I – Language I	3	3	25	75	100
	Part II – English I	3	3	25	75	100
	Part III – Core I – Micro Economics I	4	3	25	75	100
	Core II – Demography	4	3	25	75	100
	Allied I – Principles of Management	5	3	25	75	100
	Part IV – Environmental Studies	2	3	-	50	50
II	Part I – Language II	3	3	25	75	100
	Part II – English II	3	3	25	75	100
	Part III – Core III – Micro Economics II	4	3	25	75	100
	Core IV – Agricultural Economics	4	3	25	75	100
	Allied II – Statistics	5	3	25	75	100
	Part IV – Value Education	2	3	-	50	50
	Advanced Learners Course I – Business Environment	3[*]	3	-	100	100
III	Part I – Language III	3	3	25	75	100
	Part II – English III	3	3	25	75	100
	Part III – Core V– Macro Economics	4	3	25	75	100
	Core VI – Economics of Marketing	4	3	25	75	100
	Allied III – Mathematical Methods	5	3	25	75	100
	Skill Based Course I – Introduction to Retailing	3	3	100	-	100
	Part IV – Non Major Elective Course I	2	3	75	-	75
IV	Part I – Language IV	3	3	25	75	100

	Course	Credit	Hours	Int.	Ext.	Total
	Part II – English IV	3	3	25	75	100
	Part III – Core VII – Monetary Economics	4	3	25	75	100
	Core VIII – Economic Doctrines	4	3	25	75	100
	Allied IV – Tally Accounting Programme	5	3	40	60	100
	Part IV– Skill Based Course II – Retail Merchandising Management &Retail Pricing	3	3	100	-	100
	Non Major Elective II – General Awareness	2	3	75	-	75
	Advanced Learners Course II – Quantitative Techniques	3*	3	-	100	100
V	Part III – Core IX – Fiscal Economics	4	3	25	75	100
	Core X – International Economics	4	3	25	75	100
	Core XI – Economics of Investment Management	4	3	25	75	100
	Core XII – Entrepreneurship Development	4	3	25	75	100
	Elective I – Principles of Insurance	5	3	25	75	100
	Skill Based Course III – Retail Business Management	3	3	100	-	100
VI	Part III – Core XIII – Indian Economic Development	4	3	25	75	100
	Core XIV – Economics of Tourism	4	3	25	75	100
	Core XV– Urban Economics	4	3	25	75	100
	Elective II – Computer Applications in Business – Practical	5	3	40	60	100
	Elective III – Banking Practices	5	3	25	75	100
	Part IV– Skill Based Course IV – Retail Store Planning & Design Layout	3	3	100	-	100
	Extension Activities	1	-	50	-	50
	Advanced Learners Course III – Economics of Infrastructure	3*	3	-	100	100

Single Starred Credits are treated as additional credits, which are optional.
Department offers the following:

❖ **Consumerism** as Non- Major Elective Course I

B.A. Economics
Semester I
Part III – Allied I – Principles of Management
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 5   **Hours: 75**

Preamble:

This course endeavors to impart the basic knowledge of organizing and managing a firm in an efficient manner.

Module I: Management and Manager

Management: Definition – Features- Functions- Importance- Administration and Management- Manager: Functions- Role- Responsibilities- Entrepreneur and Manager.   (15 Hours)

Module II: Planning and Decision Making

Planning: Definition- Characteristics- Objectives- Advantages and Limitations - Steps in Planning Process- Management by Objectives (MBO) - Decision Making- Decision Making Process. (15 Hours)

Module III: Organisation and Directing

Organisation: Functions- Nature- Importance- Classification of Organisation: Formal and Informal Organisation- Difference between Formal and Informal Organisation- Directing: Meaning and Principles.   (15 Hours)

Module IV: Delegation and Decentralisation

Delegation: Elements- Principles- Types- Advantages- Problems- Effective Delegation. Decentralization-Advantages- Disadvantages- Departmentation: Need- Factors- Basis.   (15 Hours)

Module V: Controlling and Co-ordination

Controlling- Scope- Steps- Requirements of Effective Control System- Features- Need – Advantages- Limitations- Coordination - Features – Importance- Principles- Types- Problems- Steps for effective Co-ordination.   (15 Hours)

Book for Study:

T. Ramasamy   : Principles of Management, Himalaya Publishing House, Mumbai, 2010

Books for Reference:

P.C Tripathi &   : Principles of Management, Tata Mc-Graw-Hill Publishing Co.
P.N Reddy   Ltd, New Delhi, 2008
Dinkar Pagare   : Principles of Management, Sultan Chand & Sons, Delhi, 2003

Starred and underlined portions are for self-study

B.A. Economics
Semester II
Part III – Core IV – Agricultural Economics
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 4   **Hours: 65**

Preamble:

The aim of the course is to equip the students with the
❖ Importance of agriculture in an economy
❖ Issues related to agricultural sector

Module I:

Introduction: Agriculture- Meaning- Importance of Agriculture*- Agricultural in an Indian Economy*- Present position of Indian agriculture- Causes for low productivity in agriculture. (13 Hours)

Module II:

Land Utilization in India- Agricultural Holdings- Sub- division and Fragmentation of Holdings- Effects. Cropping Pattern – Factors influencing Cropping Pattern.   (13 Hours)

Module III:

Land Reforms-Objectives of Land Reforms, Measures- Abolition of Intermediaries – Tenancy Reforms- Ceiling on Land Holdings- Co-operative Farming.   (12 Hours)

Module IV:

Agricultural Inputs- Irrigation – Types*. HYV Seeds, Fertilizers and Manures, implements and machinery. Sources of Agricultural Finance. New Agricultural Strategy and Green Revolution- Effects. A Brief Note on Need for Second Green Revolution.   (13 Hours)

Module V:

Agriculture Marketing and Price- Defects of Agricultural Marketing-Measures taken to improve Agricultural Marketing (in brief) - Fluctuations in Agricultural Prices- Reasons- Commission for Agricultural Cost and Prices- Agricultural Price Policy in India- Public Distribution System- Objectives- Defects.   (14 Hours)

Book for Study:

Dr. S. Sankaran   : Agricultural Economy of India, Margham Publications, Chennai, 2006

Books for Reference:

Ruddar Dutt &   : Indian Economy, S. Chand & Co Ltd, New Delhi, 2006
K.P.M. Sundaram

S.K.Misra & Puri.V.   : Indian Economy- Its Development Experience, Himalaya Publishing House, Mumbai, 2010.

Starred and underlined portions are for self-study

B.A. Economics
Semester III
Part IV – Non Major Elective Course I - Consumerism
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 2   **Hours: 25**

Preamble:

The aim of the course is to educate the students about

- their rights as consumers and
- the settlement of consumer disputes

Module I:

Consumerism- Meaning- Consumer- Concept- Definitions according to the Consumer Protection Act- Consumer Protection Act in USA and UK.   (5 Hours)

Module II:

Expectations of the Consumers- Techniques used by the Business Community- Objectives- Motives- Business Tactics- Techniques that cheat consumers.   (5 Hours)

Module III:

Consumer Protection Act 1986- Rights and remedies available under the Act- Consumer Protection (Amendment) Act 1993.   (5 Hours)

Module IV:

The role of Consumer Protection Councils (Central and State) - The District Forum, The State Commission and the National Commission- Complaint Procedures.   (5 Hours)

Module V:

Consumer Education- Need for it – Role of State Agencies, consumer Organizations, Consumer Advocates- Consumer Movement- Media in consumer education. (5 Hours)

Books for Reference:

Deepa Sharma   : Consumer Grievance Redressal under the Consumer Protection Act,
New Century Publications, New Delhi, 2002.

Gurjeet Singh   : The Law and Consumer Protection in India, Deep and Deep
Publications, New Delhi, 2000.

Sanjay Kaptan   : Consumer Movement in India- Issues and Problems, Sarup and Sons,
New Delhi, 2003

Year	Program code	Value added courses	Total Number of courses	Explanation
2014-15	ME	Elective I - Management of Small Business		To enhance the entrepreneurial and business communicative skill
		Diploma I- Introduction to Gender Studies		To understand the status of women, aware of their rights and privileges and to develop resistance against challenges
		Diploma II - Feminism		To know the impact of women movements on society in general and women in particular
		Diploma III - Women in Development		To know the status of women and their education, the role of legislation in the betterment of women in India.
		Core XII- Human Resource Management		Enable the students to know about the importance of investment in health and education.
		Core XIII - Environmental Economics		To inculcate an awareness among the students about the economic aspects of environmental issues

M.A. Economics
Semester Wise Distribution with Scheme of Examination
(For the candidates admitted during the academic year 2014-2015 and onwards)

Semester	Course	Credits	Duration of Exam Hrs(ESE)	Marks CIA	Marks ESE	Total
I	Core I – Advanced Micro Economics	6	3	25	75	100
	Core II – Mathematical Techniques for Economic Analysis	5	3	25	75	100
	Core III- Research Methodology in Economics	5	3	25	75	100
	Elective I - Management of Small Business	3	3	25	75	100
	Diploma I-Introduction to Gender Studies	2	3	25	75	100
II	Core IV - Advanced Macro Economics	5	3	25	75	100
	Core V - Econometrics	6	3	25	75	100
	Core VI - Statistical Techniques for Economic Analysis	4	3	25	75	100
	Statistical Techniques for Economic Analysis - Practical	2	3	40	60	100
	Elective II – Industrial Economics	3	3	25	75	100
	Diploma II - Feminism	2	3	25	75	100
	Advanced Learners Course I – Logistics Management	4*	3	-	-	100
III	Core VII - Economics of Money and Financial Institutions	5	3	25	75	100
	Core VIII - Public Economics	5	3	25	75	100
	Core IX - Economics of Growth and Development	5	3	25	75	100
	Core X – Operations Research	5	3	25	75	100
	Elective III - Health Economics	3	3	25	75	100
	Diploma III - Women in Development	3	3	25	75	100
IV	Core XI- Export Procedures and Documentation	5	3	25	75	100
	Core XII – Human Resource Management	5	3	25	75	100
	Core XIII- Environmental Economics	5	3	25	75	100
	Elective IV- Marketing Management	3	3	25	75	100
	Diploma IV- Project	3	-	50	50	100
	Advanced Learners Course II – Communication Skills for Business Management	4*	3	-	-	100

Starred Credits are treated as additional Credits

Semester I
Elective I – Management of Small Business
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 3   **Hours: 75**

Preamble:

The Course would equip the students with
- ❖ organization skills in the setting up and managing of the various aspects of a small business unit.
- ❖ entrepreneurial skill and business communicative skills.

Module I:

Definition and Legal Frame work – Classification – Selection of a Small Scale Industry – Forms of Organization – Sole-Proprietorship, Partnership, Joint – Stock Companies, The Co–operatives – Line Organization & Functional Organization – Old Business – New Business – Franchise.   (16 Hours)

Module II:

Procedural Aspects – Rules and Regulations Governing a Small Scale Industry – Taxation Benefits and Incentives for the Promotion of Small Scale Industries - Project Classification & Identification, Project Objectives – Constraints – Format for a Report.
                                                                        (16 Hours)

Module III:

Institutional Assistance to Small Scale Industry – Need for Institutional Support – Institutions Supporting and Assisting Small Scale Industries - SIDCO, DIC, NSIC, SFC, IDBI, IFCI, IIBI, EXIM - Women Entrepreneurs - Type of Industries Suitable for Women Entrepreneurs.   (13 Hours)

Module IV:

Production Planning – Production Channel and Control – Methods of Marketing – Incentives and Subsidies Schemes Available for Export   (15 Hours)

Module V:

Business Correspondence – Banking – Insurance – Agency – Drafting the Structure of Business Letters – Sales & Trade Letters – Electronic Communication Methods.   (15 Hours)

Books for Reference:

Vasant Desai   :Small Scale Industries & Entrepreneurship, Himalaya Publishing House, New Delhi, 1996.

Vasant Desai   :Management of a Small Scale Industry, Himalaya Publishing House, New Delhi, 1996.

G.K. Patia &   :Institutional Financing for Small Scale Industries, Discovery Prakash Misra   Publishing House, New Delhi, 2003

M.V. Sonalker   : Financial Management for Small Enterprises, Authors Press &V.S. Kaveri   New Delhi, 2003.

Ruddar Datt &   : Indian Economy, S. Chand & Co., Ltd., Delhi, 2011.
K. M. Sundaram

Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course I- I- Introduction to Gender Studies   12MGS1
(For Students admitted from 2009-2010 & onwards)

Credits: 2

Preamble:

The aim of the course is
- ❖ to understand the status of women
- ❖ to make the women aware of their rights and privileges

❖ to enable them to develop resistance against challenges.

Unit I Introduction

Meaning and Definition of Women's Studies - Need for Women's Studies - Scope for Women's Studies - Sex Vs Gender , Equality versus equity, Gender Roles, Stereo types and Inequalities, Approaches to Gender Development(WID,WAD and GAD) – Feminism- UGC Centre for Women's studies.

Unit II Social Empowerment

Empowerment- meaning- importance and framework. Gender and Demography, Education, Health and Nutrition, Environment, violence against women, problems and rights of girl child, media, science and technology, women in difficult circumstances.

Unit III Economic Empowerment

Women and Domestic work, home based work, work in organised sector and Unorganized sector - Women in agriculture, industry and service sector- women entrepreneurs, women self- help groups (micro credit)- women and globalization- Gender and economic empowerment.

Unit IV Political Empowerment

Need of women in politics, dominant women in politics, barriers of participation of women in politics, women in local self governments - reservation policy for women in politics- legal empowerment.

Unit V Government **policies and programmes for women**

National policy for Empowerment of Women 2001 - Women and Five year plans- World conferences on women- committees, departments and institution for women's development.

Books for Reference:

1. Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur,   2001.
2. Antony M.J, Women's Rights, Hind Pocket Books,New Delhi,1995.
3. Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep   Publications Pvt Ltd., New   Delhi,2000
4. Jeyapalan.N, Women's Studies, N.S Publications,Madras, 1998.
5. Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers,   New Delhi, 1997

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Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course II - Feminism   12MGS2
(For Students admitted from 2009-2010 & onwards)

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Credits: 2

Preamble:

➢ It aims at providing a theoretical framework to Feminism
➢ It enlightens the origin, growth and development of women's movements in various countries
➢ It gives an opportunity to study the impact of these movements on society in general and women in particular

Unit I- Theories of Feminism

➢ Liberal feminism
➢ Marxist Feminism
➢ Radical Feminism
➢ Socialist Feminism

Unit II First Wave Feminism in USA, UK and France since 18th Century

Enlightenment- Republicanism and Evangelicalism- American War of Independence- French Revolution- Anti- Slavery Campaign- Suffrage Movement- Campaign for Equal Rights.

Unit III- Second Wave Feminism in USA and UK 1960's

Emergence- Course- Trade Union Movement- Civil Rights Movement- Protective Legislation- Peace Movement and Eco- Feminism- Decline.

Unit IV- Feminism in the Socialists Countries

Position of women in early China and Russia- Women in the Russian Revolution- Its impact of women- May 4th revolution in China and its impact on women- women in the cultural revolution- modernization trends- women's movement- equal rights legislations.

Unit V- Women's Movement in India

Position of women in Ancient and Medieval India- I Phase, Social Reform Movement and Social Reform Legislations in the 19th century- II Phase, National Movement- III Phase, Women's movement in the post independent Era to till date.

Books for Reference:

Alastair Mc Auley   : Women's work and wages in the Soviet Union (London: George Allen & Unwin, `1981)

David Bouchier   : The Feminist Challenge (London-Press)

Jane Rendall   : The Origin of Modern Feminism: Women in Britain, France and United   States 1780-1860 Modern Ideology: Feminism (London J.M.Dent & Sons)

John Charvet   : Modern Ideology: Feminism (London J.M.Dent & Sons)

Kawhik, Susheela   : Women's Oppression: Patterns and Perspective   (Delhi: Shakthi Books)

Man Mohan Kaur   : Women in India's Freedom Struggle: Women in Modern India(Bombay: Vora &Co, 1977)

Neera Desai   : The Unfinished Liberation of Chinese

Phyllis Andors   : Women `1949-1980 (Bloomington: India University Press, 1983)

Susan Bassnett   : Feminist Experiences:The Women's Movement in Four Cultures(London: Allen and Unwin, 1986)

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Diploma Course in Gender Studies

(For Post-Graduate Students)

Diploma Course III - Women in Development   12MGS3

(For Students admitted from 2009-2010 & onwards)

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Credits: 3

Preamble:
- ❖ to know the status of women and their education in India.
- ❖ to understand the concepts related to health intervention.
- ❖ to understand the Indian Constitution, Indian Law and role of Legislation in the betterment of Women.
- ❖ to understand women and their personal development.

Unit I

Women in Development process- Women in Development (WID), Women and Development (WAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II

Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals.

Women and Environment: CHIPKO Movement – Narmada Bachao Pandolar- Neer Patent Victory- Women's Environment and Development Organization (WEDO).

Unit III

Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAI and others.

Unit IV

Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V

Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professional & Entrepreneurs.

Books for Reference:

Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.

Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995.

Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications
　　　　　　Pvt Ltd., New Delhi, 2000

Jeyapalan.N, Women's Studies, N.S Publications, Madras, 1998.

Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, NewDelhi, 1997

M.A. Economics
Semester IV
Core XII- Human Resource Management
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 5   **Hours: 75**

Preamble:

The aim of the Course is to
- ❖ equip the students with the basic human resource management skills.
- ❖ develop the managerial skills for business management.

Module I:

Human Resource Management – Definition – concept, meaning. Objectives and responsibilities – the need, approaches towards Human resources – Functions of Human Resource Management.   (15 Hours)

Module II:

Human Resource Planning – Steps involved – Problems in human resource management – Recruitment, Screening and Selection Process – Orientation – Placement, Promotion , Transfer, and Training   (15 Hours)

Module III:

Job Analysis – Usefulness, Methods – Performance appraisal – Objectives, Methods and Requirements of a Good Appraisal System – Labour Turn over costs – effects on employees and workers, Causes of Labour Turn Over- Control of turnover.   (15 Hours)

Module IV:

Wages and Salary Administration – Principles of Wage Administration – Wage and Salary Policies – Incentive Payments – Importance – Types of Incentives – Pre-requisites for an Effective Incentive System – Systems of Wage Payment – Time Wage and Piece Wage.
                                                                        (15 Hours)

Module V:

Morale and Productivity Relation between Morale and Productivity – Impact of Globalization on Employment, Wages and Benefit, Trade Unions, Collective Bargaining

and Participative Managements and Quality Circles – Total Quality and Human Resource Management – Principles and Concepts of TQM – HRM and TQM.   (15 Hours)

Books for Reference

L.M.Prasad   : Human Resource Management, S Chand & Sons, Delhi,2006.

T.N. Chhabra   :Human Resource Management, concepts & issues, Sultan   Chand & sons, New Delhi 2000.

P.C. Tripathi   : Human Resource Management, S Chand & Sons, Delhi, 2005.

E.A. Ramaswamy   : Managing Human Resources A Contemporary Text, Oxford University Press, New Delhi 2000.   .

P. Subba Rao   : Essentials of Human Resource Management and Industrial Relations. (Text, cases and Games) Himalaya   Publishing House, Delhi, 2006.

K. Aswathappa   : Human Resource and Personnel Management Text Cases, Tata Mc Graw–Hill Publishing Co Limited, Delhi 2010

Gary Dessler   :Human   Resource   Management   .Dorling   Kindersley (India) Pvt. Ltd., Delhi 2006.

Dr. Radha   : Human Resource Management Prasanna & Co., Chennai, 2005.

C.B.Gupta   : Human Resource Management, S Chand & Sons, Delhi, 2010.

Baskar Chatterjee   : Human Resource Management – A Contemporary Text, Sterling Publishers Pvt Ltd, Delhi, 2009.

Year	Program code	Value added courses	Total Number of courses	Explanation
2013-14	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics
		v.Consumerism		Educate the students about their rights and responsibilities as consumers and way to settle the consumer disputes
Year	Program code	Value added courses	Total Number of courses	Explanation
2013-14	BE	i.Agricultural Economics,	4	Students realise the importance of agriculture and thereby economic consciousness
		ii.Principles of Management		Equip the students with the basic knowledge of managing a business unit
		iii.Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		iv.Value Education		Impart human values, family values, social values, national values and professional ethics
		v.Consumerism		Educate the students about their rights and responsibilities as consumers and way to settle the consumer disputes

B.A Economics
Semester wise Distribution with Scheme of Examination
(For the Candidates admitted During the Academic Year 2012-2013 & onwards)

Semester	Course	Credits	Duration of Exam Hrs (ESE	CIA	ESE	Total
I	Part I-Tamil Course I	3	3	25	75	100
	Part II-English Course I	3	3	25	75	100
	Part III – Core Course I- Micro Economics I	4	3	25	75	100
	Part III – Core Course II – Demography	4	3	25	75	100
	Part III-Allied Course I- Principles of Management	5	3	25	75	100
	Part IV- Environmental Studies	2	3	-	50	50
II	Part I-Tamil Course II	3	3	25	75	100
	Part II- English Course II	3	3	25	75	100
	Part III-Core Course III Micro Economics –II	4	3	25	75	100
	Part III- Core Course IV-Agricultural Economics	4	3	25	75	100
	Part III – Allied Course II Statistics	5	3	25	75	100
	Part IV- Value Education	2	3	-	50	50
	Advanced Learners Course I Business Environment	3*	3	-	100	100
III	Part I – Tamil Course III	3	3	25	75	100
	Part II – English Course III	3	3	25	75	100
	Part III – Core Course V Macro Economics	4	3	25	75	100
	Core-VI-Economics of Marketing	4	3	25	75	100
	Allied Course III Mathematical Methods-I	5	3	25	75	100
	Skill Based Subject-I Introduction to Retailing	3	3	25	75	100
	Part III –Non-Major Elective Course -I Consumerism	2	3	-	75	75
IV	Part I- Tamil Course IV	3	3	25	75	100
	Part II-English Course IV	3	3	25	75	100
	Part III – Core Course VII Monetary Economics	4	3	25	75	100
	Part III – Core Course VIII Economic Doctrines	4	3	25	75	100
	Allied Course IV- Tally Accounting Programme	5	3	40	60	100
	Part IV-Skill Based Course-II- Paper II-Retail Merchandising Management &Retail Pricing	3	3	25	75	100
	Non-Major Elective –II					

	General Awareness	2	3	-	75	75
	Advanced Learners Course –II Quantitative Techniques	3*	3	-	-	100
V	Part III – Core Course IX Fiscal Economics	4	3	25	75	100
	Part III- Core Course X International Economics	4	3	25	75	100
	Part III- Core Course XI- Economics of Investment	4	3	25	75	100
	Part III – Core Course XII – Entrepreneurship Development	4	3	25	75	100
	Elective -I Principles of Insurance	5	3	25	75	100
	Skill Based Subject-III Paper III-Retail Business Management	3	3	25	75	100
VI	Part III- Core Course XIII Indian Economic Development	4	3	25	75	100
	Core Course XIV –Economics of Tourism	4	3	25	75	100
	Core Course-XV-Urban Economics	4	3	25	75	100
	Elective Course II Computer Applications in Business	5	3	25	75	100
	Elective Course III– Banking Practices	5	3	40	60	100
	Part IV-Skill Based Course IV Retail Store Planning &Design	3	3	25	75	100
	Extension Activities	1	-	50	-	50
	Advanced Learners Course-III Economics of Infrastructure	3*	3	-	-	100

Single Starred Credits are treated as additional credits, which are optional

Department offers the following:
❖ **Consumerism** as Non- Major Elective Course I

B.A. Economics

Semester I
Part III – Allied Course I– Principles of Management
(For Student admitted from 2012-2013 and onwards)

Credits: 5   **Hours: 75**
Preamble:
        This paper endeavours to impart the basic knowledge of organizing and managing a firm in an efficient manner.
ModuleI: Management and Manager
        Management: Definition – Features- Functions- Importance- Administration and Management- Manager: Functions- Role- Responsibilities- Entrepreneur and Manager.
                                                        (15 Hours)

ModuleII: Planning and Decision Making

Planning: Definition- Characteristics- Objectives- Nature- Importance- Advances and Limtations- Steps in planning process- Management by Objectives (MBO)- Decision making- Decision making process   (15 Hours)

ModuleIII: Organisation and Directing

Organisation: Functions- Principles- Nature- Importance- Classification of Organisation: Formal and informal Organisation- Difference between formal and informal Organisation- Directing: Meaning and Principles   (15 Hours)

Module IV: Delegation and Decentralisation

Delegation: Elements- Priniciples- Types- Advantages- Problems- Effective Delegation. Decentralisation-Advantages- Disadvantages- Departmentation: Need- Factors- Basis
                                                                             (15 Hours)

Module V: Controlling and Co-ordination

Controlling- Scope- Steps- Requirements of Effective Control System- Techniques- Features- Need – Advantages- Limitations- Features – Importance- Principles- Techniques – Types- Problems- Steps for effective Co-ordination   (15 Hours)

Book for Study:

T.Ramasamy   :Principles of Management, Himalaya Publishing House, Mumbai
                         2009

Books for Reference:

P.C Tripathi &P.N Reddy   :PrinciplesofManagement,TataMc-Graw-Hill Publishing
                          Co.Ltd., New Delhi,2008
Dinkar Pagare   : Principles of Management, Sultan Chand & Sons, Delhi,2003

B.A. Economics
Semester II
Part III – Core Course IV– Agricultural Economics
(For Student admitted from 2012-2013 and onwards)

Credits: 4   **Hours: 75**
Preamble:

The aim of the course is to equip the students with the
❖ Importance of agriculture in an economy
❖ Issues related to agricultural sector

Module I:

Introduction: Agriculture- Meaning- Importance of Agriculture*- Agricultural in an Indian economy*- Present position of Indian agriculture- Causes for low productivity in agriculture.   (12 Hours)

ModuleII:

Land utilization in India- Agricultural holdings- Sub- division and fragmentation of holdings- effects. Cropping pattern – Factors influencing cropping pattern.   (12 Hours)

ModuleIII:

Land Reforms-Objectives of land reforms, measures- abolition of intermediaries – Tenancy reforms- Ceiling on land holdings- Co- operative farming.   (17 Hours)

ModuleIV:

Agricultural Inputs- Irrigation – types*. HYV Seeds, fertilizers and manures, implements and machinery. Sources of agricultural finance. New Agricultural Strategy and Green Revolution- effects.   (17 Hours)

ModuleV:

      <u>Agriculture Marketing and Price</u>- Defects of agricultural marketing-Measures taken to improve agricultural marketing (in brief) - Fluctuations in agicultural prices- reasons- Commission for Agricultural Cost and Prices- Agricultural Price Policy in India- Public Distribution System- Objectives- defects.   (17 Hours)

Book for Study:

Dr.S.Sankaran   :AgriculturalEconomy of India, Margham Publications, Chennai,
                      2006

Books for Reference:

Ruddar Dutt &   : Indian Economy,S.Chand & Co Ltd,New Delhi,2006
K.P.M. Sundaram
S.K.Misra & Puri.V.   : Indian Economy- Its Development Experience,Himalaya
                      Publishing House, Mumbai, 2010.

Starred and Underlined portions are for self-study

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B.A. Economics
Semester III
Part III –Non Major Elective Course I - Consumerism
(For Student admitted from 2012-2013 and onwards)

</div>

Credits: 2   **Hours: 30**

Preamble:

      The aim of the course is to educate the students about
- their rights as consumers and
- the settlement of consumer disputes

Module I:

      Consumerism- Meaning- Consumer- Concept- Definitions according to the Consumer Protection Act- Consumer Protection Act in USA and UK.   (5 Hours)

Module II:

      Expectations of the consumers- Techniques used by the business community- objectives- motives- business tactics- Techniques that cheat consumers.   (7 Hours)

Module III:

      Consumer Protection Act 1986- Rights and remedies available under the Act- Consumer Protection (Amendment)Act 1993.   (7Hours)

Module IV:

      The role of consumer protection councils(Central and State)- The District Forum, The State Commission and the National Commission- Complaint procedures.   (5 Hours)

Module V:

      Consumer Education- Need for it – Role of State Agencies, consumer Organizations, Consumer Advocates- Consumer Movement- Media in consumer education.   (6 Hours)

Books for Reference:

Deepa Sharma : Consumer Grievance Redressal under the Consumer Protection Act,
               New Century Publications, New Delhi, 2002.
Gurjeet Singh : The Law and Consumer Protection in India, Deep and Deep
               Publications, New Delhi,1996.
Sanjay Kaptan : Consumer Movement in India- Issues and Problems, Sarup and Sons,
               New Delhi, 2003
Memoria. C.B : Social Problems and Social Disorganisation in India, Narosa Book
               Distribution.

Year	Program code	Value added courses	Total Number of courses	Explanation
2013-14	ME	Elective I - Management of Small Business		To enhance the entrepreneurial and business communicative skill
		Diploma I- Introduction to Gender Studies		To understand the status of women, aware of their rights and privileges and to develop resistance against challenges
		Diploma II - Feminism		To know the impact of women movements on society in general and women in particular
		Diploma III - Women in Development		To know the status of women and their education, the role of legislation in the betterment of women in India.
		Core XII- Human Resource Management		Enable the students to know about the importance of investment in health and education.
		Core XIII - Environmental Economics		To inculcate an awareness among the students about the economic aspects of environmental issues

M.A Economics

Semester Wise Distribution with Scheme of Examination
(For the Candidates admitted during the Academic Year 2012-2013 & onwards)

Semester	Course	Credits	Duration of Exam Hrs(ESE)	Marks		Total
				CIA	ESE	
I	Core Course I – Advanced Micro Economics	5	3	25	75	100
	Core Course II – Mathematical Techniques for Economic Analysis	5	3	25	75	100
	Core Course III- Advanced Macro Economics	4	3	25	75	100
	Elective Course I- Management of Small Business	4	3	25	75	100
	Diploma Course Paper I- Introduction to Gender Studies	2	3	25	75	100
II	Core Course IV- Economics of Money and Financial Institutions	5	3	25	75	100
	Core Course V - Public Economics	5	3	25	75	100
	Core Course VI- Econometrics	4	3	25	75	100
	Core Course VII- Economics of Growth and Development	5	3	25	75	100
	Elective Course II –Health Economics	4	3	25	75	100
	Diploma Course Paper II- Feminism	2	3	25	75	100
	Advanced Learners Course I – Logistics Management	4**	3	-	-	100
III	Core Course VIII- Research Methodology in Economics	5	3	25	75	100
	Core Course IX- Statistical Techniques for Economic Analysis	4	3	25	75	100
	Statistical Techniques for Economic Analysis- Practical	2	3	40	60	100
	Core Course X – Operations Research	5	3	25	75	100
	Elective Course III Industrial Economics	4	3	25	75	100
	Diploma Course Paper III- Women in development	3	3	25	75	100
IV	Core Course XI- Export Procedures and Documentation	5	3	25	75	100
	Core Course XII – Human Resource Management	5	3	25	75	100
	Core Course XIII- Environmental Economics	5	3	25	75	100

Elective Course IV- Marketing Management	4	3	25	75	100
Diploma Course Paper IV- Project	3	-	50	50	100
Advanced Learners Course II – Communication Skills for Business Management	4**	3	-	-	100

Starred Credits are treated as additional Credits

M.A. Economics
Semester I
Elective Course I – Management of Small Business
(For the Candidates admitted during the academic year 2012-2013 & onwards)

Credits: 4   **Hours: 75**
Preamble:
       The course would equip the students with
    ❖ organization skills in the setting up and managing of the various aspects of a small business unit.
    ❖ entrepreneurial skill and business communicative skills.

Module I:
       Definition and Legal frame work – classification – selection of a small scale industry – forms of organization – sole – proprietorship, partnership, joint – stock companies, The co–operatives – line organization & functional organization – old business – New Business – Franchise.   (16 Hours)

Module II:
       Procedural aspects – Rules and regulations governing a small scale industry – <u>Taxation benefits and incentives for the promotion of small scale industries *</u> - Project classification & identification, Project objectives – Constraints – format for a report.   (16 Hours)

Module III:
       Institutional assistance to small scale industry – need for institutional support – <u>Institutions supporting and assisting small scale industries</u> - <u>SIDCO, DIC, NSIC, SFC, IDBI, IFCI, IIBI, EXIM -</u> Women entrepreneurs - Type of Industries suitable for women entrepreneurs.   (13 Hours)

Module IV:
       Production Planning – Production Channel and Control – Methods of Marketing – <u>Incentives and subsidies schemes available for export *</u>   (15 Hours)

Module V:
       Business Correspondence – Banking – Insurance – Agency – Drafting the structure of business letters – Sales & Trade letters – Electronic Communication methods.   (15 Hours)

Books for Reference:

Vasant Desai	: Small Scale Industries & Entrepreneurship, Himalaya Publishing House, New Delhi, 1996.
Vasant Desai	: Management of a Small Scale Industry, Himalaya Publishing House, New Delhi, 1996.
G.K. Patia & Prakash ch. Mis	: Institutional Financing for Small Scale Industries, Discovery Publishing House, New Delhi, 2003 .
V.S .Datey	:Taxman's Practice Manual to Small Scale Industries, Taxman Allied Services (P) Ltd., New Delhi, 1999.
M.V. Sonalker & V.S. Kaveri	: Financial Management for Small Enterprises, Authors Press, New Delhi, 2003.

Nirmal, K. Gupta	: Small Industry – Challenges & Perspectives, Anmol Publications, New Delhi, 1992.
P. Subba Rao & V.S.P. Rao	: Personnel/ Human Resources Management, Konark Publishers Pvt., Ltd., New Delhi, 1990.
Gopal Swaroop	: Advances to Small Industries & Small Borrowers (A Practice Guide), Sultan Chand & Sons, New Delhi, 1993.
G.D. Sharma	: How to Start your Own Small Scale Industry, Orient Paper backs, New Delhi, 1989.
Ruddar Datt & K. M. Sundaram	: Indian Economy, S. Chand & Co., Ltd., New Delhi, 2006.
Philip Kotler	: Marketing Management – Analysis, Planning Implementation and Control Practice – Hall of India P. Ltd, New Delhi – 1998.

Starred and underlined portions are for self-study.

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Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course I- I- Introduction to Gender Studies   12MGS1
(For Students admitted from 2009-2010 & onwards)

</div>

Credits: 2
Preamble:

The aim of the course is

- ❖ to understand the status of women
- ❖ to make the women aware of their rights and privileges
- ❖ to enable them to develop resistance against challenges.

Unit I Introduction

Meaning and Definition of Women's Studies - Need for Women's Studies - Scope for Women's Studies - Sex Vs Gender , Equality versus equity, Gender Roles, Stereo types and Inequalities, Approaches to Gender Development(WID,WAD and GAD) – Feminism- UGC Centre for Women's studies.

Unit II Social Empowerment

Empowerment- meaning- importance and framework. Gender and Demography, Education, Health and Nutrition, Environment, violence against women, problems and rights of girl child, media, science and technology, women in difficult circumstances.

Unit III Economic Empowerment

Women and Domestic work, home based work, work in organised sector and Unorganized sector - Women in agriculture, industry and service sector- women entrepreneurs, women self- help groups (micro credit)- women and globalization- Gender and economic empowerment.

Unit IV Political Empowerment

Need of women in politics, dominant women in politics, barriers of participation of women in politics, women in local self governments - reservation policy for women in politics- legal empowerment.

Unit V Government **policies and programmes for women**

National policy for Empowerment of Women 2001 - Women and Five year plans- World conferences on women- committees, departments and institution for women's development.

Books for Reference:

6. Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur,   2001.
7. Antony M.J, Women's Rights, Hind Pocket Books,New Delhi,1995.

8. Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep   Publications Pvt Ltd., New   Delhi,2000
9. Jeyapalan.N, Women's Studies, N.S Publications,Madras, 1998.
10.   Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, New Delhi, 1997

Diploma Course in Gender Studies
(For Post-Graduate Students)
Diploma Course II - Feminism   **12MGS2**
(For Students admitted from 2009-2010 & onwards)

Credits: 2

Preamble:
- It aims at providing a theoretical framework to Feminism
- It enlightens the origin, growth and development of women's movements in various countries
- It gives an opportunity to study the impact of these movements on society in general and women in particular

Unit I- Theories of Feminism
- Liberal feminism
- Marxist Feminism
- Radical Feminism
- Socialist Feminism

Unit II First Wave Feminism in USA, UK and France since 18th Century

Enlightenment- Republicanism and Evangelicalism- American War of Independence- French Revolution- Anti- Slavery Campaign- Suffrage Movement- Campaign for Equal Rights.

Unit III- Second Wave Feminism in USA and UK 1960's

Emergence- Course- Trade Union Movement- Civil Rights Movement- Protective Legislation- Peace Movement and Eco- Feminism- Decline.

Unit IV- Feminism in the Socialists Countries

Position of women in early China and Russia- Women in the Russian Revolution- Its impact of women- May 4th revolution in China and its impact on women- women in the cultural revolution- modernization trends- women's movement- equal rights legislations.

Unit V- Women's Movement in India

Position of women in Ancient and Medieval India- I Phase, Social Reform Movement and Social Reform Legislations in the 19th century- II Phase, National Movement- III Phase, Women's movement in the post independent Era to till date.

Books for Reference:

Alastair Mc Auley   : Women's work and wages in the Soviet Union (London: George Allen & Unwin, `1981)
David Bouchier   : The Feminist Challenge (London-Press)
Jane Rendall   : The Origin of Modern Feminism: Women in Britain, France and United   States 1780-1860 Modern Ideology: Feminism (London J.M.Dent & Sons)
John Charvet   : Modern Ideology: Feminism (London J.M.Dent & Sons)
Kawhik, Susheela   : Women's Oppression: Patterns and Perspective (Delhi: Shakthi Books)
Man Mohan Kaur   : Women in India's Freedom Struggle: Women in Modern India(Bombay: Vora &Co, 1977)
Neera Desai   : The Unfinished Liberation of Chinese
Phyllis Andors   : Women `1949-1980 (Bloomington: India University Press, 1983)
Susan Bassnett   : Feminist Experiences:The Women's Movement in Four Cultures(London: Allen and Unwin, 1986)

Diploma Course in Gender Studies

Diploma Course III - Women in Development   **12MGS3**

(For Students admitted from 2009-2010 & onwards)

Credits: 3

Preamble:
- ❖ to know the status of women and their education in India.
- ❖ to understand the concepts related to health intervention.
- ❖ to understand the Indian Constitution, Indian Law and role of Legislation in the betterment of Women.
- ❖ to understand women and their personal development.

Unit I

      Women in Development process- Women in Development (WID), Women and Development (WAD), Human Development Index (HDI) Gender Development Index (GDI) Gender Empowerment Measures (GEM).

Unit II

      Women's Education in different levels –Primary, Secondary and Tertiary –General, Professional, Technical and Para Professionals.

      Women and Environment: CHIPKO Movement – Narmada Bachao Pandolar- Neer Patent Victory- Women's Environment and Development Organization (WEDO).

Unit III

      Women and Health: Health Status of Women in India – National Health Policy, National Health Programme. Role of International Health Organisations-WHO, UNICEF, UNESCO, CARE, VHAI and others.

Unit IV

      Women and Work: Women in Labour force – Women in organized and unorganized sector-Labour market theories – Segmented Labour market – Determinants of Women's Employment – Occupational Pattern of Women in India - Contribution of Women to GNP in India-Problems and working conditions of Indian women – Sex discrimination – Social and Economic barriers – Women and Economic Development.

Unit V

      Women and Politics: Women in Panchayats, District Boards, Party Organisations, Legislatures and Cabinet.

      Women and Law: Legal – Constitutional Rights, Provisions and safeguard, Inadequacy of legal power for Women- Uniform Civil Code-Participation in Panchayat Raj.

      Women and Technology: Modernization, Industrialization, Urbanization – Impact on Women – Case histories of Women Scientists, Professional & Entrepreneurs.

Books for Reference:

Raj Kumar Pruthi, Women in Law and Politics, Mangal Deep Publications, Jaipur, 2001.

Antony M.J, Women's Rights, Hind Pocket Books, New Delhi, 1995.

Roma Mukherjee, Women, Law and Free Legal Aid in India, Deep and Deep Publications
            Pvt Ltd., New Delhi, 2000

Jeyapalan.N, Women's Studies, N.S Publications, Madras, 1998.

Ram Mehta, Women and Society, Equality and Empowerment, Kanishka Publishers, NewDelhi, 1997.

M.A. Economics

Semester – IV

Core Course XIII- Human Resource Management

(For the Candidates admitted during the academic year 2012-2013 & onwards)

Credit: 5   **Hours: 75**
Preamble:
   The aim of the course is to
   ❖ equip the students with the basic human resource management skills.
   ❖ develop the managerial skills for business management.

Module I:
        Human Resource Management – definition – concept, meaning.   Objectives and
responsibilities – the need, approaches towards human resources – functions of human resource
management.   (15 Hours)
Module II:
        Human Resource Planning – steps involved – problems in human resource management –
recruitment, screening and selection process – orientation – placement, promotion , transfer, and
training   (15 Hours)
Module III:
         Job Analysis – usefulness, methods – performance appraisal – objectives, methods and
requirements of a good appraisal system – labour turn over costs – effects on employees and
workers, causes of labour turn over- control of turnover.   (15 Hours)
Module IV:
         Wages and Salary Administration – principles of wage administration – wage and salary
policies – incentive payments – importance – types of incentives – pre-requisites for an effective
incentive system – systems of wage payment – time wage and piece wage.   (15 Hours)
Module V :
        Morale and productivity Relation between morale and productivity – Impact of
globalization on employment, wages and benefit, trade unions, collective bargaining and
participative managements and quality circles – Total Quality and Human Resource
Management – Principles and concepts of TQM – HRM and TQM.   (15 Hours)

Books for Reference

Bhaskar Chatterjee   : Human Resource Management, (A contemporary Text) Sterling
                         Publishers Pvt Ltd., New Delhi, 1996.
T.N. Chhabra   : Human Resource Management, concepts & issues, Sultan Chand & sons,
                         New Delhi 2000.
P.C. Tripathi   : Human Resource Management, Sultan Chand & Sons, New Delhi, 2002.
E.A. Ramaswamy   :Managing Human Resources A contemporary Text, Oxford University
                         Press, New Delhi 2000.
Arthur Sherman George :Managing Human Resources, South-Western College Publishers,
Bohlander Scott   Cincinnati, Ohio, 1996.
P. Subba Rao :Essentials of Human Resource Management and IndustrialRelations. (Text,cases
                          and Games) Himalaya Publishing House, Delhi 2006.
K. Aswathappa   :Human Resource and Personnel Management Text Cases,TataMC Graw–
                       Hill Publishing Co Limited,   New Delhi 2002.
Gary Dessler   :Human   Resource   Management   .Dorling   Kindersley
                       (India) Pvt. Ltd., Delhi 2006.
Dr. Radha   :Human Resource Management Prasanna & Co., Chennai, 2005.

Starred and underlined portions are for self-study.

DEPARTMENT OF HISTORY
LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Programme	Year	code	course	Explanation
BH	2017-18	117EVS	Part IV Environmental Studies	To promote the core competency skills and augment citizenship values
BH	2017-18	217VEC	Part IV Value Education	To promote the core competency skills and augment citizenship values
BH	2017-18	317NHC	NMEC-History for competitive Examination	To promote the core competency skills and augment citizenship values
BH	2017-18	317HS1	SBC I-Travel management	To train for self employment
BH	2017-18	417HS2	SBC II-Hospitality management	To enable for carrier opportunities
BH	2017-18	417GIS	Information security	to equip with computer skills
BH	2017-18	517HS3	SBC III Ctering Services	To train the students on self-employment
BH	2017-18	617HS4	SBC IV- Health Tourism	To focus the importance of health tourism
BH	2016-17	115EVS	Part IV Environmental Studies	To promote the core competency skills and augment citizenship values
BH	2016-17	215VEC	Part IV Value Education	To promote the core competency skills and augment citizenship values
BH	2016-17	315NHC	NMEC- history for competitive examination	To promote the core competency skills and augment citizenship values
BH	2016-17	315HSI	SBC I-Travel management	To train for self employement
BH	2016-17	415HS2	SBC II-Hotel management	To instill confidence in securing jobs
BH	2016-17	515HS3	SBC III Catering Services	To train the students on self-employment
BH	2016-17	615HS4	SBC IV- Health Tourism	To focus the importance of health tourism
BH	2015-16	115EVS	Part IV Environmental Studies	To promote the core competency skills and augment citizenship values
BH	2015-16	215VEC	Part IV Value Education	To promote the core competency skills and augment citizenship values
BH	2015-16	315NHC	NMEC- history for competitive examination	To promote the core competency skills and augment citizenship values
BH	2015-16	315HSI	SBC I-Travel management	To train for self employment
BH	2015-16	415HS2	SBC II-Hotel management	To instill confidence in securing jobs
BH	2015-16	515HS3	SBC III Catering Services	To train the students on self-employment
BH	2015-16	615HS4	SBC IV- Health Tourism	To focus the importance of health

				tourism
BH	2014-15		Part IV Environmental Studies	To promote the core competency skills and augment citizenship values
BH	2014-15		Part IV Value Education	To promote the core competency skills and augment citizenship values
BH	2014-15	314NHC	NMEC- history for competitive examination	To promote the core competency skills and augment citizenship values
BH	2014-15	314HS1	SBC I-Travel management	To train for self employment
BH	2014-15	414HS2	SBC II-Hotel management	To instill confidence in securing jobs
BH	2014-15	514HS3	SBC III Catering Services	To train the students on self-employment
BH	2013-14		Part IV Environmental Studies	To promote the core competency skills and augment citizenship values
BH	2013-14		Part IV Value Education	To promote the core competency skills and augment citizenship values
BH	2013-14	312NH3	NMEC History for competitive Examination	To promote the core competency skills and augment citizenship values
BH	2013-14	312HS1	SBC I-Travel management	To train for self employment
BH	2013-14	412HS2	SBC II-Hotel management	To instill confidence in securing jobs
BH	2013-14	512HS3	SBC III Catering Services	To train the students on self-employment

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of History
BA HISTORY
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2017-18onwards)

Course code	Course Title	Inst Hrs / week	Examination					Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks		
Semester I								
117TA1/ 117MY1/ 117HD1/ 117FR1	**Part I** -Tamil I	6	3	25	75	100		4
117EN1	**Part II** - English I	6	3	25	75	100		4
117H01	**Part III** Core I- Main Currents in Indian History upto A.D. 647.	5	3	25	75	100		4
117H02	Core II- Main Currents in Indian History A.D. 647 - A.D 1526.	5	3	25	75	100		4
117AH1	Allied I- Introduction to Tourism.	6	3	25	75	100		4
117EVS	**Part IV**- Environmental Studies.	2	2	50	-	50		2
Semester II								
217TA2/ 217MY2/ 217HD2/ 217FR2	**Part I**-Language II	6	3	25	75	100		4
217EN2	**Part II**- English II	6	3	25	75	100		4
217H03	**Part III** Core III - Main Currents in Indian History A.D. 1526 - A.D.1707	5	3	25	75	100		4
217H04	Core IV- Main Currents in Indian History A.D1707 - A.D1857.	5	3	25	75	100		4
217AH2	Allied II- Learning with the Internet - Practical	6	3	40	60	100		4
217VEC	**Part IV**-Value Education.	2	2	50	-	50		2

F3

Course code	Course Title	Inst Hrs / week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester III						
317TA3/ 317MY3/ 317HD3/ 317FR3	**Part I**-Language III	6	3	25	75	100	4
317EN3	**Part II**- English III	6	3	25	75	100	4
317H05	**Part III** Core V-Main Currents in Indian History A.D.1858 - A.D.1919.	3	3	25	50	75	3
317H06	Core VI-Main Currents in Indian History A.D. 1920-1965.	4	3	25	75	100	4
317AH3	Allied III – Modern Governments	6	3	25	75	100	4
317NHC	**Part IV** Non-Major Elective - History for Competitive Examination.	2	2	50	-	50	2
317HS1	Skill Enhancement Course -I- Tourism Industry - Travel Management.	3	3	75	-	75	3
	Semester IV						
417TA4/ 417MY4 417HD4 417FR4	**Part I** – Language IV	6	3	25	75	100	4
417EN4	**Part II** – English IV	6	3	25	75	100	4
417H07	**Part III** Core VII - Main Currents in Indian History A.D. 1965 – A.D.2014.	4	3	25	75	100	4
417H08	Core VIII - History of Tamil Nadu upto A.D 1336.	3	3	25	50	75	3
417AH4	Allied IV- Indian Constitution	6	3	25	75	100	4
417NGA	**Part IV** General Awareness	-	1	50	-	50	2
417HS2	Skill Enhancement Course -II - Tourism Industry – Hospitality Management.	3	3	75	-	75	3
417GIS	Information security.	2	2	50	-	Grade	Grade
417ALH	Advanced Learners Course - I - Subject Viva Voce.	-	-	-	100	100	4*

Course code	Course Title	Inst Hrs / week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	Semester V						
	Part III						
517H09	Core IX - History of Tamil Nadu A.D 1336 - A.D.1806.	6	3	25	75	100	4
517H10	Core X- World History A.D 1453-A.D 1789.	6	3	25	75	100	4
517H11	Core XI - History of China and Japan A.D.1800- A.D.1970	5	3	25	75	100	4
517H12	Core XII– History of Science and Technology.	5	3	25	75	100	4
517HE1/ 517HE2	Elective I: Tourist Destinations In India. / Panchayt Raj.	5	3	25	75	100	4
517HS3	**Part IV** - Skill Enhancement Course - III -Tourism Industry - Catering Services.	3	3	75	-	75	3
	Semester VI						
	Part III						
617H13	Core XIII- History of Tamil Nadu A.D. 1807 - A.D. 2016.	6	3	25	75	100	4
617H14	Core XIV - World History A.D.1789-A.D.2000.	6	3	25	75	100	4
617H15	Core XV –India and Her Neighbours.	5	3	25	75	100	4
617HE3 / 617HE4	Elective II : Tourist Destinations in Tamil Nadu / Sociology	5	3	25	75	100	4
617HE5/ 617HE6	Elective III : Women Studies / Temple Study	5	3	25	75	100	4
617HS4	**Part IV** -Skill Enhancement Course - IV-Tourism Industry- Health Tourism	3	3	75	-	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	**Part V** -Extension Activity.	-	-	50	-	50	2
617ALH	Advanced Learners Course - II - Subject Viva Voce	-	-	-	100	100	4*
	TOTAL					3500	140

- Starred credits are treated as additional credits, which are optional

F5

II UG Course
Semester III
Part IV - Non-Major Elective - History for Competitive Examinations

Credit: 2   **317NHC**

(For students admitted from the academic year 2017-18 onwards)

Objective: **Hours: 26**

➢ To promote the core competency skills and augment citizenship values.

Unit I: Sources - Indus Valley Civilization - Vedic Civilization – Alexander's Invasion-Mauryas – Guptas- Harshavardhana – Pallavas – Cholas.   (6 Hrs)

Unit II: Delhi Sultanate – Vijayanagar – Bahmini - Bhakthi Movement.   (5 Hrs)

Unit III: Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb**.**   (5 Hrs)

Unit IV: Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck – Dalhousie – Sepoy Mutiny.   (5 Hrs)

Unit V: Nationalism-Moderates - Extremists - Gandhian Era -Indian Constitution.
                                                      (5 Hrs)

Book for Study:

J.C. Aggarwal   - The Ancient, Medieval & Modern Indian History, S.Chand & Co, New Delhi,2009.

Books for Reference:

1.Shailesh Chandra   - Medieval India (1200 – 1800),Alfa Publicatios,NewDelhi,2009.

2. J.Thiagarajan & Gandhidasan - History of Contemporary India upto 2006 , Prabha Publications,Madurai.

3. Pramod Singh Parashar -Trueman's Indian History, Kanishka Publications, New Delhi,2005.

4. Chakravarthy   - Freedom Fighters of India,Crest Publishing House, Delhi,1999.

Outcome:

Learners emerge as skilled and responsible citizens.

B.A History
Semester III
Part IV- Skill Enhancement Course -I - Tourism Industry- Travel Management

Credit:3   **(For students admitted from the academic year 2017-18 onwards) 317HS1**

Objectives: **Hours: 38**

➢ To familiarize with the operations of Travel Agency.

➢ To train for self-employment.

Unit I: Meaning of Travel Agencies –Forms: Proprietorship –Partnership –Corporate: Public-Private –Government -Multi-national Companies.   (8Hrs)

Unit II: Organizations –Travel Booking –International &Domestic –Tour Operators – Travel Agents in India and Abroad.   (8Hrs)

Unit III: Types Retail –Wholesale – Functions of Modern Travel Agency.
(7Hrs)
Unit IV: Travel Documents: Passport –Visa –Health –Custom and Migration –Immigration rules. (8Hrs)
Unit V: Approval and Recognition for Travel Agency: Ministry of Tourism and IATA – Local bodies.

(7Hrs)

Book for study:
Mohinder Chand - Travel Agency Management -An Introductory Text, Anmol
Publications,2003.
Books for Reference:
1.Dr.Jagmohan Negi   - Travel Agency & Tour Operation – Concepts & Principles,
Kanishka Publishers,New Delhi ,1997.
2. A.K.Bhatia   - Tourism Development, Sterling Publications,New Delhi,2003.
3. Romila Chawla   - Tourism Services and Operation,Arise Publishers,New Delhi,2003.
4.Joshua O Milluwi - Tourism and Travel Management, Mangalam
Publications, Delhi,2014.

Course Designed by   : Mrs.S.Shenbagavalli.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

B.A History
Semester IV
Part IV - Skill Enhancement Course -II - Tourism Industry-
Credit:3   Hospitality Management   417HS2
(For students admitted from the academic year 2017-18 onwards)
Objectives: **Hours: 38**
> ➢ To impart the basic knowledge on Hotel Industry.
> ➢ To enable for career opportunities.

Unit I: Origin and development of Hotel industry –Kinds of Hotels - Main
Accommodation - Supplementary Accommodation.   (8Hrs)

Unit II: Classification of Hotels: Location- Hotels – Motels – Resort – Youth Hostel _
Caravan and camping sites etc.   (8Hrs)

 Unit III: Organization Categories: Sole Proprietorship –Partnership –Chain Hotels –
Hotel Manager: Role and Functions.   (7Hrs)

Unit IV: Front Office Management: Front Office Staff-General Procedure of Hotel
Reservation Registration –Mode of Receiving payment –Communication Skills.
(8Hrs)
Unit V: Various departments of Hospitality industry – Housekeeping – Food and
Beverage production-Food and beverage and service, engineering and Human Resource
Management.   (7Hrs)

Books for study:

1. Pushpinder S.Gill – Tourism and Hotel Management, Anmol Publications, New Delhi,
2004.

2. J.David - Textbook of Hotel Management,Anmol Publications, NewDelhi,2004.

Books for reference:

1.R.N.Kaul   - Dynamics of Tourism: A Trilogy,Vol-II,Accomodation,
Streling,Publications,1985.

2. J.Mathews   -Hotel Management, Pointer Publishers,Jaipur-2008.

3.A.K.Bhatia   -Tourism Development - Principles and Practices, Sterling Publications NewDelhi,2003.

4.Sudhir Andrew - Front Office - A TrainingManual, Tata Mc Graw Hill Publications,
New Delhi, 2008.

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of History
BA HISTORY
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2016 – 17 onwards)

Course code	Course Title	Inst Hrs / week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
115TA1/ 115MY1/ 115HD1/ 115FR1	**Part I** -Tamil I	6	3	25	75	100	4
115EN1	**Part II** - English I	6	3	25	75	100	4
115H01	**Part III** Core I- Main Currents in Indian History upto A.D. 647.						
115H02	Core II- Main Currents in Indian History A.D. 647 - A.D 1526.	5	3	25	75	100	4
		5	3	25	75	100	4
115AH1	Allied I- Introduction to Tourism.	6	3	25	75	100	4
115EVS	**Part IV**- Environmental Studies.	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	**Part I**-Language II	6	3	25	75	100	4
215EN2	**Part II**- English II	6	3	25	75	100	4
215H03	**Part III** Core III - Main Currents in Indian History A.D. 1526 - A.D.1707	5	3	25	75	100	4
215H04	Core IV- Main Currents in Indian History A.D1707 - A.D1857.	5	3	25	75	100	4
215AH2	Allied II - Cultural Tourism in India.	6	3	25	75	100	4
215VEC	**Part IV**-Value Education. F9	2	2	50	-	50	2

Course code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
Semester III							
315TA3/ 315MY3/ 315HD3/ 315FR3	**Part I**-Language III	6	3	25	75	100	4
315EN3	**Part II**- English III	6	3	25	75	100	4
315H05	**Part III** Core V-Main Currents in Indian History A.D.1858 - A.D.1919.	3	3	25	50	75	3
315H06	Core VI-Main Currents in Indian History A.D. 1920-1966.	4	3	25	75	100	4
315AH3	Allied III – Modern Governments	6	3	25	75	100	4
315HS1	**Part IV** Skill Based Course -I-Tourism Industry - Travel Management.	3	3	75	-	75	3
315NHC	Non-Major Elective Course I - History for Competitive Examination.	2	2	50	-	50	2
Semester IV							
415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I** – Language IV	6	3	25	75	100	4
415EN4	**Part II** – English IV	6	3	25	75	100	4
415H07	**Part III** Core VII - Main Currents in Indian History A.D. 1966 – A.D.2004.	4	3	25	75	100	4
415H08	Core VIII - History of Tamil Nadu upto A.D 1336.	3	3	25	50	75	3
415AH4	Allied IV- Indian Constitution	6	3	25	75	100	4
415HS2	**Part IV** Skill Based Course -II - Tourism Industry - Hotel Management.	3	3	75	-	75	3
415NGA	Non-Major Elective Course -II General Awareness (Online).	-	1	50	-	50	2
415GIS	Information security.	2	2	50	-	Grade	Grade
415ALH	Advanced Learners Course - I -Subject Viva Voce.	-	-	-	100	100	4*

Course code	Course Title	Inst Hrs/ week	Examination Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	Semester V						
	Part III						
515H09	Core IX - History of Tamil Nadu from A.D 1336 to A.D.1806.	6	3	25	75	100	4
515H10	Core X- World History A.D 1453-A.D 1789.	6	3	25	75	100	4
515H11	Core XI - History of China and Japan A.D.1800- A.D.1970	5	3	25	75	100	4
515H12	Core XII– History of Science and Technology.	5	3	25	75	100	4
515HE1	Elective I - Tourist Destinations In India.	5	3	25	75	100	4
515HS3	**Part IV** - Skill Based Course - III -Tourism Industry - Catering Services.	3	3	75	-	75	3
	Semester VI						
	Part III						
615H13	Core XIII- History of Tamil Nadu A.D.1807 - A.D.1996.	6	3	25	75	100	4
615H14	Core XIV - World History A.D.1789-A.D.2000.	6	3	25	75	100	4
615H15	Core XV –India and Her Neighbours.	5	3	25	75	100	4
615HE2	Elective II – Tourist Destinations in Tamil Nadu.	5	3	25	75	100	4
615HE3	Elective III – Women Studies	5	3	25	75	100	4
615HS4	**Part IV** -Skill Based Course - IV-Tourism Industry- Health Tourism	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	**Part V** -Extension Activities.	-	-	50	-	50	2
615ALH	Advanced Learners Course - II - Subject Viva Voce	-	-	-	100	100	4*
	TOTAL					3500	140

Starred credits are treated as additional credits, which are optional.

Part IV - Non- Major Elective Course - I- History for Competitive Examination
Credit: 2   315NHC
(For students admitted from the academic year 2016-17 onwards)
Preamble: **Hours: 26**
- ➢ To appear for Competitive Examinations
- ➢ To get basic Knowledge in Indian History

Unit I: Sources - Indus Valley Civilization - Vedic Civilization – Alexander's Invasion-Mauryas – Guptas- Harshavardhana – Pallavas – Cholas.   (6 Hrs)

Unit II: Delhi Sultanate – Vijayanagar – Bahmini - Bhakthi Movement.   (5 Hrs)

Unit III: Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb**.**   (5 Hrs)

Unit IV: Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck – Dalhousie – Sepoy Mutiny.   (5 Hrs)
Unit V: Nationalism-Moderates - Extremists - Gandhian Era -Indian Constitution. (5hrs)
 Book for Study:
  J.C. Aggarwal   - The Ancient, Medieval & Modern Indian History,
                               S.Chand &Co,New Delhi,2009.
Books for Reference:
 1. Shailesh Chandra   - Medieval India (1200 – 1800),
                             Alfa Publicatios,NewDelhi,2009.
 2. J.Thiagarajan & Gandhidasan -History of Contemporary India upto 2006 , Prabha
                               Publications,Madurai.
 3. Pramod Singh Parashar -Trueman's Indian History,
                             Kanishka Publications,New Delhi.
 4. Chakravarthy   - Freedom Fighters of India,
                              Crest Publishing House, Delhi,1999.

Course Designed By   :Mrs.S.Shenbagavalli.
Course Reviewed By   :Dr.S.RenukaDevi
Checked By   : Dr.R.Meera

B.A History
Semester III
Part IV-Skill Based Course -I - Tourism Industry- Travel Management
Credit:3   (For students admitted from the academic year 2016-17 onwards)
315HS1   Hours: 38
Unit I: Meaning of Travel Agencies –Forms: Proprietorship –Partnership –Corporate: Public-Private –Government -Multi –national Companies.   (8Hrs)
Unit II: Organizations –Travel Booking –International &Domestic –Tour Operators – Travel Agents in India and Abroad.   (8Hrs)
Unit III: Types Retail –Wholesale –Functions of Modern Travel Agency.
                                                                        (7Hrs)

Unit IV: Travel Documents: Passport –Visa –Health –Custom and Migration –Immigration rules.   (8Hrs)

Unit V: Approval and Recognition-Ministry of Tourism and IATA –Local bodies (7Hrs)
Book for study:
Mohinder Chand -Travel Agency Management –An Introductory Text.
Books for Reference:
1.Dr.Jagmohan Negi   - Travel Agency & Tour Operation – Concepts & Principles,
                            Kanishka Publishers,New Delhi ,1997.
2. A.K.Bhatia   - Tourism Development, Sterling Publications,New Delhi,2003.
3. Romila Chawla   - Tourism Services and Operation,Arise Publishers,New Delhi,2003.

Course Designed by   : Mrs.S.Shenbagavalli.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

<div align="center">

B.A History
Semester IV
Part IV - Skill Based Course -II - Tourism Industry- Hotel Management
</div>

Credit:3   (For students admitted from the academic year 2016-17 onwards)
415HS2   Hours: 38
Unit I: Hotel –Types – Main Accommodation: International –Resort –Commercial -
Residential – Floatel.   (8Hrs)
Unit II: Supplementary Accommodation: Youth Hostel-Caravan and Camping sites –
Pension –Bed and Breakfast Establishment –Tourist Holiday Villages.   (8Hrs)
Unit III: Organization Categories: Sole Proprietorship –Partnership –Chain Hotels –
Hotel Manager: Role and Functions.   (7Hrs)
Unit IV: Front Office Management: Front Office Staff-General Procedure of Hotel
Reservation Registration –Mode of Receiving payment –Communication Skills.   (8Hrs)
Unit V: Personnel Management in Hotel: Human Resource in Hotel Industry-Wages and
Types in Hotel –Hotel Workers.   (7Hrs)

Books for study:
1.Pushpinder S.Gill – Tourism and Hotel Management,Anmol Publications, New Delhi
2.J.David   - Textbook Of Hotel Management,Anmol
Publications,NewDelhi,2004.

Books for reference:
1.J.Mathews   -Hotel Management, Pointer Publishers,Jaipur-2008.
2.R.N.Kaul   -   Dynamics   of   Tourism:A   Trilogy,Vol-
II,Accomodation,Streling,Publications,1985.
3.A.K.Bhatia -Tourism Development - Principles and Practices, Sterling Publications NewDelhi,2003.
4.Sudhir Andrew- Front Office - A TrainingManual, Tata Mc Graw Hill Publications,
New Delhi.

Course Designed by   : Mrs.S.Shenbagavalli.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

B.A History
Semester V
Part IV-Skill Based Course - III -Tourism Industry- Catering Services
Credit:3   (For students admitted from the academic year 2016-17 onwards)
515HS3   Hours: 38
Unit I : Food Service - Types - Guidelines - Guest reception - Service table - Planning of Menu Dining .   (9Hrs)
Unit II: Food – Types of Food :South Indian –North Indian –Chinese –European – Continental.   (9Hrs)
Unit III: Safety measures - Dining –Bars –Rooms –Fire service equipments –Emergency exit –Cleaning and Sanitation.   (9Hrs)
Unit IV: Customer care: Communication Skills - Tariff and Concessions.
                                                                                            (8Hrs)
Unit V: Visiting a nearby Hotel   (3Hrs)

Books for study:
1. J.David   - Textbook of Hotel Management,Anmol publication,New Delhi,2004.
2. J.Mathews - Hotel Management,Pointer Publishers,Jaipur -2008.
Books for Reference:
1. Pushpinder S.Gill -Tourism and Hotel Management,
                        Anmol Publications,NewDelhi,2004.
2. R.N.Kaul   - Dynamics of Tourism: A Trilogy,Vol III,
                        Accomodation,Sterling Publications,1985.
3. A.K. Bhatia   - Tourism development –Principles and Practices,
                        Sterling Publications, NewDelihi,2003.
4. Sudhir Andrew   - Food & Beverage Service,
                        Tata Mc Graw Hill Publications, New Delhi.

Course Designed by   : Dr.S.Renuka Devi.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

B.A History
Semester VI
Part IV - Skill Based Course - IV -Tourism Industry- Health Tourism
Credit:3   (For students admitted from the academic year 2016-17onwards)
615HS4   Hours: 38
Module I: Nature & Scope of Medical Tourism - History of Medical Tourism-Recent Trends – The World Tourist Organisation.   (8 Hrs)
Module II: Medical Tourism in India - AYUSH:Ayurveda-Yoga-Unani-Siddha - Homaeopathy-Health-care services.   (7 Hrs)
Module III: Regulatory Laws-Ethical Issues for Medical Tourism.   (8 Hrs)
Module IV: Government Policies - Economic Impacts (Forex & Empoyment)   (7Hrs)
Module V: New Packages & Making of Medicval Tourism.   (8 Hrs)
Books for study:
1. Dr.R.Kumar   - Medical Tourism in India,Deep & Deep Publications
                        Pvt.Ltd.New Delhi-2008.

2. R.L.Parekh   - Medical Tourism,Alfa publications,New Delhi-2009.

Books for Reference:

3. G.Radha Krishna   - Tourism Promotional Perspectives and Issues,
                                   The Icfai University   Press, Hyderabad,2010.
4. Ratandeep Singh   - Tourism Today, Vol III,
                                   Kanishka Publications New Delhi.1994.

Course Designed by   : Dr.S.Renuka Devi.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of History
BA HISTORY
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2015 – 16 onwards)

Course code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
115TA1/ 115MY1/ 115HD1/ 115FR1	**Part I** -Tamil I	6	3	25	75	100	4
115EN1	**Part II** - English I	6	3	25	75	100	4
115H01	**Part III** Core I- Main Currents in Indian History upto A.D. 647.	5	3	25	75	100	4
115H02	Core II- Main Currents in Indian History A.D. 647 - A.D 1526.	5	3	25	75	100	4
115AH1	Allied I- Introduction to Tourism.	6	3	25	75	100	4
115EVS	**Part IV**- Environmental Studies.	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	**Part I**-Language II	6	3	25	75	100	4
215EN2	**Part II**- English II	6	3	25	75	100	4
215H03	**Part III** Core III - Main Currents in Indian History A.D. 1526 - A.D.1707	5	3	25	75	100	4
215H04	Core IV- Main Currents in Indian History A.D1707 - A.D1857.	5	3	25	75	100	4
215AH2	Allied II - Cultural Tourism in India.	6	3	25	75	100	4
215VEC	**Part IV**-Value Education.	2	2	50	-	50	2

Course code	Course Title	Inst Hrs/ week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester III							
315TA3/ 315MY3/ 315HD3/ 315FR3	**Part I**-Language III	6	3	25	75	100	4
315EN3	**Part II**- English III	6	3	25	75	100	4
315H05	**Part III** Core V-Main Currents in Indian History A.D.1858 - A.D.1919.	3	3	25	50	75	3
315H06	Core VI-Main Currents in Indian History A.D. 1920-1966.	4	3	25	75	100	4
315AH3	Allied III – Modern Governments	6	3	25	75	100	4
315HS1	**Part IV** Skill Based Course -I-Tourism Industry - Travel Management.	3	3	75	-	75	3
315NHC	Non-Major Elective Course I - History for Competitive Examination.	2	2	50	-	50	2
Semester IV							
415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I** – Language IV	6	3	25	75	100	4
415EN4	**Part II** – English IV	6	3	25	75	100	4
415H07	**Part III** Core VII - Main Currents in Indian History A.D. 1966 – A.D.2004.	4	3	25	75	100	4
415H08	Core VIII - History of Tamil Nadu upto A.D 1336.	3	3	25	50	75	3
415AH4	Allied IV- Indian Constitution	6	3	25	75	100	4
415HS2	**Part IV** Skill Based Course -II - Tourism Industry - Hotel Management.	3	3	75	-	75	3
415NGA	Non-Major Elective Course -II General Awareness (Online).	-	1	50	-	50	2
415GIS	Information security.	2	2	50	-	Grade	Grade
415ALH	Advanced Learners Course - I -Subject Viva Voce.	-	-	-	100	100	4*

Course code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester V							
	Part III						
515H09	Core IX - History of Tamil Nadu from A.D 1336 to A.D.1806.	6	3	25	75	100	4
515H10	Core X- World History A.D 1453-A.D 1789.	6	3	25	75	100	4
515H11	Core XI - History of China and Japan A.D.1800- A.D.1970	5	3	25	75	100	4
515H12	Core XII– History of Science and Technology.	5	3	25	75	100	4
515HE1	Elective I - Tourist Destinations In India.	5	3	25	75	100	4
515HS3	**Part IV** - Skill Based Course - III -Tourism Industry - Catering Services.	3	3	75	-	75	3
Semester VI							
	Part III						
615H13	Core XIII- History of Tamil Nadu A.D. 1807 - A.D.1996.	6	3	25	75	100	4
615H14	Core XIV - World History A.D.1789-A.D.2000.	6	3	25	75	100	4
615H15	Core XV –India and Her Neighbours.	5	3	25	75	100	4
615HE2	Elective II – Tourist Destinations in Tamil Nadu.	5	3	25	75	100	4
615HE3	Elective III – Women Studies	5	3	25	75	100	4
615HS4	**Part IV** -Skill Based Course - IV-Tourism Industry- Health Tourism	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	**Part V** -Extension Activities.	-	-	50	-	50	2
615ALH	Advanced Learners Course - II - Subject Viva Voce	-	-	-	100	100	4*
TOTAL						**3500**	**140**

Starred credits are treated as additional credits, which are optional.

Part IV - Non- Major Elective Course - I- History for Competitive Examination

Credit: 2
315NHC
(For students admitted from the academic year 2015-16 onwards)
Preamble:
Hours: 26
- ➢ To appear for Competitive Examinations
- ➢ To get basic Knowledge in Indian History

Unit I: Sources - Indus Valley Civilization - Vedic Civilization – Alexander's Invasion-Mauryas – Guptas- Harshavardhana – Pallavas – Cholas.   (6 Hrs)

Unit II: Delhi Sultanate – Vijayanagar – Bahmini - Bhakthi Movement.   (5 Hrs)

Unit III: Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb.   (5 Hrs)

Unit IV: Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck – Dalhousie – Sepoy Mutiny.   (5 Hrs)
Unit V: Nationalism-Moderates - Extremists - Gandhian Era -Indian Constitution. (5Hrs)
Book for Study:
  J.C. Aggarwal   - The Ancient, Medieval & Modern Indian History,
                    S.Chand &Co, New Delhi,2009.
Books for Reference:
 1. Shailesh Chandra   - Medieval India (1200 – 1800),
                 Alfa Publicatios,NewDelhi,2009.
 2. J.Thiagarajan & Gandhidasan -History of Contemporary India upto 2006 ,
                 Prabha Publications, Madurai.
 3. Pramod Singh Parashar -Trueman's Indian History,
                 Kanishka Publications,New Delhi.
 4. Chakravarthy   - Freedom Fighters of India,Crest Publishing House,
 Delhi,1999.

Course Designed By   :Mrs.S.Shenbagavalli.
Course Reviewed By   :Dr.S.RenukaDevi
Checked By   : Dr.R.Meera

B.A History
Semester III
Part IV-Skill Based Course -I - Tourism Industry- Travel Management
Credit:3   (For students admitted from the academic year 2015-16 onwards)
315HS1   Hours: 38
Unit I: Meaning of Travel Agencies –Forms: Proprietorship –Partnership –Corporate: Public-Private –Government -Multi –national Companies.   (8Hrs)

Unit II: Organizations –Travel Booking –International &Domestic –Tour Operators – Travel Agents in India and Abroad.   (8Hrs)

Unit III: Types Retail –Wholesale –Functions of Modern Travel Agency.   (7Hrs)
Unit IV: Travel Documents: Passport –Visa –Health –Custom and Migration –Immigration rules.   (8Hrs)
Unit V: Approval and Recognition-Ministry of Tourism and IATA –Local bodies (7Hrs)
Book for study:
Mohinder Chand -Travel Agency Management –An Introductory Text.
Books for Reference:
1.Dr.Jagmohan Negi   - Travel Agency & Tour Operation – Concepts & Principles,
                          Kanishka Publishers,New Delhi ,1997.
2. A.K.Bhatia   - Tourism Development, Sterling Publications,New Delhi,2003.
3. Romila Chawla   - Tourism Services and Operation,Arise Publishers,New Delhi,2003.

Course Designed by   : Mrs.S.Shenbagavalli.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

B.A History
Semester IV
Part IV - Skill Based Course -II - Tourism Industry- Hotel Management
Credit:3   (For students admitted from the academic year 2015-16 onwards)
415HS2   Hours: 38
Unit I: Hotel –Types – Main Accommodation: International –Resort –Commercial - Residential – Floatel.   (8Hrs)

Unit II: Supplementary Accommodation: Youth Hostel-Caravan and Camping sites – Pension –Bed and Breakfast Establishment –Tourist Holiday Villages.   (8Hrs)

 Unit III: Organization Categories: Sole Proprietorship –Partnership –Chain Hotels – Hotel Manager: Role and Functions.   (7Hrs)

Unit IV: Front Office Management: Front Office Staff-General Procedure of Hotel Reservation Registration –Mode of Receiving payment –Communication Skills.
                                                                      (8Hrs)

Unit V: Personnel Management in Hotel: Human Resource in Hotel Industry-Wages and Types in Hotel –Hotel Workers.   (7Hrs)

Books for study:
1.Pushpinder S.Gill – Tourism and Hotel Management,Anmol Publications, New Delhi
2.J.David   - Textbook Of Hotel Management,
                          Anmol Publications,NewDelhi,2004.
Books for reference:
1.J.Mathews   -Hotel Management, Pointer Publishers,Jaipur-2008.
2.R.N.Kaul   -   Dynamics   of   Tourism:A   Trilogy,Vol-II,Accomodation,Streling,Publications,1985.
3.A.K.Bhatia -Tourism Development -Principles and Practices, Sterling Publications NewDelhi,2003.
4.Sudhir Andrew- Front Office - A TrainingManual, Tata Mc Graw Hill Publications, New Delhi.

Course Designed by   : Mrs.S.Shenbagavalli.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

<div align="center">

B.A History
Semester V
Part IV-Skill Based Course - III -Tourism Industry- Catering Services
</div>

Credit:3   **(For students admitted from the academic year 2015-16 onwards)**
515HS3

Hours: 38
Unit I : Food Service - Types - Guidelines - Guest reception - Service table - Planning of Menu Dining .   (9Hrs)
Unit II: Food – Types of Food :South Indian –North Indian –Chinese –European – Continental.   (9Hrs)
Unit III: Safety measures - Dining –Bars –Rooms –Fire service equipments –Emergency exit –Cleaning and Sanitation.   (9Hrs)
Unit IV: Customer care: Communication Skills - Tariff and Concessions. (8Hrs)
Unit V: Visiting a nearby Hotel   (3Hrs)

Books for study:
1. J.David   - Textbook of Hotel Management,Anmol publication,New Delhi,2004.
2. J.Mathews - Hotel Management,Pointer Publishers,Jaipur -2008.
Books for Reference:
1. Pushpinder S.Gill   -Tourism and Hotel Management, Anmol Publications,NewDelhi,2004.
2. R.N.Kaul   - Dynamics of Tourism: A Trilogy,Vol III,Accomodation,Sterling Publications,1985.
3. A.K. Bhatia   - Tourism development –Principles and Practices, Sterling Publications,
      NewDelihi,2003.
4. Sudhir Andrew   - Food & Beverage Service, Tata Mc Graw Hill Publications, New Delhi.

Course Designed by   : Dr.S.Renuka Devi.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

<div align="center">

B.A History
Semester VI
Part IV - Skill Based Course - IV -Tourism Industry- Health Tourism
</div>

Credit:3   **(For students admitted from the academic year 2015-16 onwards)**
615HS4   **Hours: 38**
Module I: Nature & Scope of Medical Tourism - History of Medical Tourism-Recent Trends – The World Tourist Organisation.   (8 Hrs)
Module II: Medical Tourism in India - AYUSH:Ayurveda-Yoga-Unani-Siddha - Homaeopathy-Health-care services.   (7 Hrs)

ModuleIII: Regulatory Laws-Ethical Issues for Medical Tourism.   (8 Hrs)
Module IV: Government Policies - Economic Impacts (Forex & Empoyment)   (7Hrs)
Module V: New Packages & Making of Medicval Tourism.   (8 Hrs)

Books for study:
1. Dr.R.Kumar   - Medical Tourism in India,Deep & Deep Publications
                              Pvt.Ltd.New Delhi-2008.
2. R.L.Parekh   - Medical Tourism,Alfa publications,New Delhi-2009.

Books for Reference:

3. G.Radha Krishna   - Tourism Promotional Perspectives and Issues,The Icfai
                              University   Press, Hyderabad,2010.
4. Ratandeep Singh   - Tourism Today, Vol III,
                         Kanishka Publications New Delhi.1994.

Course Designed by   : Dr.S.Renuka Devi.
Course Reviewed by   :Dr.V.K Saraswathi.
Checked by   : Dr.R.Meera.

BA HISTORY

Semester wise Distribution with Scheme of Examination

(For students admitted during the academic year 2014-15 & onwards)

Semester	Course	Credit	Duration of Exam Hrs(ESE)	Marks		Total
				CIA	ESE	
I	Part I -Language I	3	3	25	75	100
	Part II - English I	3	3	25	75	100
	Part III					
	Core I – Main Currents in Indian History upto A.D. 647	4	3	25	75	100
	Core II Main Currents in Indian History A.D. 647 - A.D 1526.	4	3	25	75	100
	Allied I- Introduction to Tourism	5	3	25	75	100
	Part IV -Environmental Studies	2	-	50	-	50
II	Part I-Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III					
	Core III – Main Currents in Indian History A.D. 1526 - A.D.1707	4	3	25	75	100
	Core IV– Main Currents in Indian History A.D1707 - A.D1857	4	3	25	75	100
	Allied II – Cultural Tourism In India	5	3	25	75	100
	Part IV-Value Education	2	-	50	-	50
	ALC I – Social History of India upto A.D. 1206	3*	3	-	100	100
III	Part I – Language III	3	3	25	75	100
	Part II- English III	3	3	25	75	100
	Part III					
	Core V-Main Currents in Indian History A.D.1858 - A.D.1947	4	3	25	75	100
	Core VI - Main Currents in Indian History A.D. 1947-A.D. 2004	4	3	25	75	100
	Allied III – Modern Governments	5	3	25	75	100
	Skill Based Course -Tourism Management- Paper I-Travel Management	3	-	100	-	100
	Non-Major Elective - Course I	2	-	75	-	75

Sem	Course	Credit	Dur Exam Hrs (ESE)	Marks CIA	Marks ESE	Total
IV	Part I – Language IV	3	3	25	75	100
	Part II – English IV	3	3	25	75	100
	Part III					
	Core VII -History of TamilNadu Upto A.D. 1799	4	3	25	75	100
	Core VIII- History of TamilNadu A.D. 1800 – A.D.1996.	4	3	25	75	100
	Allied IV – Indian Constitution	5	3	25	75	100
	Skill Based Course - Tourism Management - Paper II- Hotel Management	3	-	100	-	100
	Non-Major Elective - Course II General Awareness	2	-	75	-	75
	ALC II- Social History of India A.D.1206 - A.D.1950	3*	3	-	100	100
	Extension Activities	1	-	50	-	50
V	Part III					
	Core – IX World History A.D 1453-A.D 1789	4	3	25	75	100
	Core X- History of England A.D. 1485-A.D.1714	4	3	25	75	100
	Core XI – History of China and Japan A.D.1800- A.D.1970	4	3	25	75	100
	Core XII– History of Science and Technology	4	3	25	75	100
	Elective I – Tourist Destinations In India	5	3	25	75	100
	Skill Based Course - Tourism Management - Paper III- Catering Management	3	-	100	-	100
VI	Part III					
	Core XIII – World History A.D.1789- A.D.2000	4	3	25	75	100
	Core XIV - History of England A.D. 1714 – A.D. 1990	4	3	25	75	100
	Core XV –India and Her Neighbours	4	3	25	75	100
	Elective II – Tourist Destinations in TamilNadu	5	3	25	75	100
	Elective III – Women Studies	5	3	25	75	100
	Skill Based Course - Tourism Management-		-	-	-	100
	Paper IV – Report Writing	3	-	100	-	100
	ALC –III Eminent South Indians	3*	3	-	100	100

Total Credits: 140

Starred Credits are treated as Additional Credits, Which are Optional.

Non Major Course offered by the Department-History for Competitive Examination

B.A. History – Semester III   314NHC
Credit:2   Non- Major Elective - History for Competitive Examination
   (For students admitted during the academic year 2014-15 & onwards)
Preamble: Hours: 26

- ➢ To appear for Competitive Examinations
- ➢ To get basic Knowledge in Indian History

Module I: Sources - Indus Valley Civilization - Vedic Civilization – Alexander's Invasion- Mauryas – Guptas- Harshavardhana – Pallavas – Cholas.   *(6 Hrs)*

Module II: Delhi Sultanate – Vijayanagar – Bahmini - Bhakthi Movement.   *(5 Hrs)*

Module III: Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb**.**   *(5 Hrs)*

Module IV: Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck – Dalhousie – Mutiny.   *(5 Hrs)*

 Module V: Nationalism-Moderates - Extremists - Gandhian Era -Indian Constitution.

                                                              (5 Hrs)

 Book for Study:
  J.C. Aggarwal   - The Ancient, Medieval & Modern Indian History,
                                 S.Chand &Co, New Delhi,2009.
Books for Reference:
 1. Shailesh Chandra   - Medieval India (1200 – 1800),
                                 Alfa Publicatios,NewDelhi,2009.
 2. J.Thiagarajan & Gandhidasan -History of Contemporary India upto 2006 ,
                                 Prabha Publications,Madurai.
 3. Pramod Singh Parashar -Trueman's Indian History,
                                 Kanishka Publications,New Delhi.
 4. Chakravarthy   - Freedom Fighters of India,
                                 Crest Publishing House, Delhi,1999.

Course Designed By   :Mrs.A.S.Shenbagavalli.
Course Reviewed By   :Dr.S.RenukaDevi
Checked By   : Dr.R.Meera

Skill Based Course - Tourism Management
(For students admitted during the academic year 2014-15 & onwards)

Preamble: Tourism is a highly Labour –Intensive Industry offering employment to both semi – skilled and unskilled.

The content of the course is designed

- ➢ To open new avenues of Knowledge and career advancement in Travel Agency and Hotel industry.
- ➢ To instill confidence in securing jobs.
- ➢ To train the students on self-employment.

Semester III -Skill Based Course - Tourism Management -I
314HS1
(For students admitted during the academic year 2014-15 & onwards)
Credit:3   Hours: 38
Travel Management

Module I: Meaning of Travel Agencies –Forms: Proprietorship –Partnership –Corporate: Public-Private –Government -Multi –national Companies.   *(8Hrs)*

Module II: Organizations –Travel Booking –International &Domestic –Tour Operators – Travel Agents in India and Abroad.   *(8Hrs)*

Module III: Types Retail –Wholesale –Functions of Travel Agency.   *(7Hrs)*

Module IV: Approval and Recognition –GOI and IATA –Preparation of Itineries.
          (8Hrs)

Module V: Travel Documents: Passport –Visa –Health –Custom and Migration – Immigration rules.   *(7Hrs)*

Book for study:
Mohinder Chand -Travel Agency Management –An Introductory Text.

Books for Reference:
1.Dr.Jagmohan Negi   - Travel Agency & Tour Operation –Concepts & Principles,
                 Kanishka Publishers,New Delhi ,1997.
2. A.K.Bhatia   - Tourism Development, Sterling Publications,New Delhi,2003.
3. Romila Chawla   - Tourism Services and Operation,Arise Publishers,New
Delhi,2003.

Semester IV -Skill Based Course - Tourism Management-II   414HS2
(For students admitted during the academic year 2014-15 & onwards)
Credit:3   Hours: 38
Hotel Management

Module I: Hotel –Types –International –Resort –Commercial -Residential –Floating.
(8Hrs)

Module II: Motel –Youth Hostel-Caravan and Camping sites –Pension –Bed and Breakfast Establishment –Tourist Holiday Villages.
(8Hrs)

Module III: Organization Categories: Sole Proprietorship –Partnership –Chain Hotels – Hotel Manager: Role and Functions.
(7Hrs)

Module IV: Front Office Management: Front Office Staff-General Procedure of Hotel Reservation Registration –Mode of Receiving payment –Communication Skills.
(8Hrs)

Module V: Personnel Management in Hotel: Human Resource in Hotel Industry-Wages and Types in Hotel –Hotel Workers.
(7Hrs)

Books for study:
1.Pushpinder S.Gill – Tourism and Hotel Management,Anmol Publications, New Delhi
2.J.David   - Textbook Of Hotel Management,Anmol
Publications,NewDelhi,2004.
Books for reference:

1.J.Mathews   -Hotel Management, Pointer Publishers,Jaipur-2008.
2.R.N.Kaul   - Dynamics of Tourism:A Trilogy,Vol-II,Accomodation,Streling
Publications,1985.
3.A.K.Bhatia   - Tourism Development –Principles and Practices,Sterling Publications
NewDelhi,2003.

Semester V -Skill Based Course -Tourism Management - III   514HS3
(For students admitted during the academic year 2014-15 & onwards)

Credit:3   **Hours: 38**
Catering Management
Module I: Kitchen: Planning the Equipment –Planning of Menu-Dining Halls.
(8Hrs)
Module II: Food Service –Guidelines –Service table –Guest reception –Dining Table-
Furniture Maintenance.
(8Hrs)

Module III: Beverage and Food – Types of Food –South Indian Cusine –North Indian –
Chinese   –European   –Continental.
(8Hrs)

Module IV: Customer care: Communication Skills –Laundry –Tariff and Concessions.
(7Hrs)

Module V: Safety measures –Kitchen- Dining –Bars –Rooms –Fire service equipments –
Emergency   exit   –Cleaning   and   Sanitation.
(7Hrs)

Books for study:
1. J.David   - Textbook of Hotel Management,Anmol publication,New Delhi,2004.
2. J.Mathews - Hotel Management,Pointer Publishers,Jaipur -2008.

Books for Reference:
1. Pushpinder S.Gill -Tourism and Hotel Management,Anmol
Publications,NewDelhi,2004.
2. R.N.Kaul   - Dynamics of Tourism: A Trilogy,VoIII,Accomodation,Sterling
Publications,1985.
3. A.K. Bhatia   - Tourism development –Principles and Practices, Sterling
Publications,
                    NewDelihi,2003.

BA HISTORY

Semester wise Distribution with Scheme of Examination

(For students admitted during the academic year 2013-14 & onwards)

Semester	Course	Credit	Duration of Exam Hrs(ESE)	Marks CIA	ESE	Total
I	Part I -Language I	3	3	25	75	100
	Part II - English I	3	3	25	75	100
	Part III Core I – Main Currents in Indian History upto A.D. 647	4	3	25	75	100
	Core II Main Currents in Indian History A.D. 647 - A.D 1526.	4	3	25	75	100
	Allied I- Introduction to Tourism	5	3	25	75	100
	Part IV -Environmental Studies	2	-	50	-	50
II	Part I-Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III Core III – Main Currents in Indian History A.D. 1526 - A.D.1707	4	3	25	75	100
	Core IV– Main Currents in Indian History A.D1707 - A.D1857	4	3	25	75	100
	Allied II – Cultural Tourism In India	5	3	25	75	100
	Part IV-Value Education	2	-	50	-	50
	ALC I – Social History of India upto A.D. 1206	3*	3	-	100	100
III	Part I – Language III	3	3	25	75	100
	Part II- English III	3	3	25	75	100
	Part III Core V-Main Currents in Indian History A.D.1858 - A.D.1947	4	3	25	75	100
	Core VI - Main Currents in Indian History A.D. 1947-A.D. 2004	4	3	25	75	100
	Allied III – Modern Governments	5	3	25	75	100
	Skill Based Course -Tourism Management-Paper I-Travel Management	3	-	100	-	100
	Non-Major Elective - Course I	2	-	75	-	75

Semester	Course	Credit	Duration of Exam Hrs(ESE)	Marks CIA	Marks ESE	Total
IV	Part I – Language IV	3	3	25	75	100
	Part II – English IV	3	3	25	75	100
	Part III					
	Core VII -History of TamilNadu Upto A.D. 1799	4	3	25	75	100
	Core VIII- History of TamilNadu A.D. 1800 – A.D.1996.	4	3	25	75	100
	Allied IV – Indian Constitution	5	3	25	75	100
	Skill Based Course - Tourism Management - Paper II- Hotel Management	3	-	100	-	100
	Non-Major Elective - Course II General Awareness	2	-	75	-	75
	ALC II- Social History of India A.D.1206 - A.D.1950	3*	3	-	100	100
	Extension Activities	1	-	50	-	50
V	Part III					
	Core – IX World History A.D 1453-A.D 1789	4	3	25	75	100
	Core X- History of England A.D. 1485-A.D.1714	4	3	25	75	100
	Core XI – History of China and Japan A.D.1800-A.D.1970	4	3	25	75	100
	Core XII– History of Science and Technology	4	3	25	75	100
	Elective I – Tourist Destinations In India	5	3	25	75	100
	Skill Based Course - Tourism Management - Paper III- Catering Management	3	-	100	-	100
VI	Part III					
	Core XIII – World History A.D.1789- A.D.2000	4	3	25	75	100
	Core XIV - History of England A.D. 1714 – A.D. 1990	4	3	25	75	100
	Core XV –India and Her Neighbours	4	3	25	75	100
	Elective II – Tourist Destinations in TamilNadu	5	3	25	75	100
	Elective III – Women Studies	5	3	25	75	100
	Skill Based Course - Tourism Management- Paper IV – Report Writing	3	-	100	-	100
	ALC –III Eminent South Indians	3*	3	-	100	100

Total Credits: 140

Starred Credits are treated as Additional Credits, Which are Optional.

Non Major Course offered by the Department-History for Competitive Examination

B.A. History – Semester III   **314NHC**
Credit:2   **Non- Major Elective - History for Competitive Examination**
(For students admitted during the academic year 2014-15 & onwards)
Preamble: **Hours: 26**

➢ To appear for Competitive Examinations
➢ To get basic Knowledge in Indian History

Module I: Sources - Indus Valley Civilization - Vedic Civilization – Alexander's
Invasion-   Mauryas – Guptas- Harshavardhana – Pallavas – Cholas.
(6 Hrs)

Module II: Delhi Sultanate – Vijayanagar – Bahmini - Bhakthi Movement. *(5 Hrs)*

Module III: Babur – Sher Shah – Akbar – Shahjahan – Aurangzeb**.**   *(5 Hrs)*

Module IV: Robert Clive –Warren Hastings – Cornwallis – Wellesley – Bentinck –
Dalhousie – Mutiny.   *(5 Hrs)*

Module V: Nationalism-Moderates - Extremists - Gandhian Era -Indian Constitution.

(5 Hrs)

Book for Study:
J.C. Aggarwal   - The Ancient, Medieval & Modern Indian History,
                 S.Chand &Co, New Delhi,2009.
Books for Reference:
1. Shailesh Chandra   - Medieval India (1200 – 1800),
                           Alfa Publicatios,NewDelhi,2009.
2. J.Thiagarajan & Gandhidasan -History of Contemporary India upto 2006 ,
                           Prabha Publications,Madurai.
3. Pramod Singh Parashar -Trueman's Indian History,
                           Kanishka Publications,New Delhi.
4. Chakravarthy   - Freedom Fighters of India,
                           Crest Publishing House, Delhi,1999.
Course Designed By   :Mrs.A.S.Shenbagavalli.
Course Reviewed By   :Dr.S.RenukaDevi
Checked By   : Dr.R.Meera

Skill Based Course - Tourism Management
(For students admitted during the academic year 2013-14 & onwards)
Preamble: Tourism is a highly Labour –Intensive Industry offering employment to both
semi – skilled and unskilled.

The content of the course is designed

➢ To open new avenues of Knowledge and career advancement in Travel Agency
   and Hotel industry.
➢ To instill confidence in securing jobs.
➢ To train the students on self-employment.

Semester III -Skill Based Course - Tourism Management -I
314HS1
(For students admitted during the academic year 2013-14 & onwards)
Credit:3   **Hours: 38**

Travel Management

Module I: Meaning of Travel Agencies –Forms: Proprietorship –Partnership –Corporate: Public-Private –Government -Multi –national Companies.   *(8Hrs)*

Module II: Organizations –Travel Booking –International &Domestic –Tour Operators – Travel Agents in India and Abroad.   *(8Hrs)*

Module III: Types Retail –Wholesale –Functions of Travel Agency.   *(7Hrs)*

Module IV: Approval and Recognition –GOI and IATA –Preparation of Itineries. *(8Hrs)*

Module V: Travel Documents: Passport –Visa –Health –Custom and Migration – Immigration rules.   *(7Hrs)*

Book for study:
Mohinder Chand -Travel Agency Management –An Introductory Text.

Books for Reference:
1.Dr.Jagmohan Negi   - Travel Agency & Tour Operation –Concepts & Principles,
                   Kanishka Publishers,New Delhi ,1997.
2. A.K.Bhatia   - Tourism Development, Sterling Publications,New Delhi,2003.
3. Romila Chawla   - Tourism Services and Operation,Arise Publishers,New
Delhi,2003.

Semester IV -Skill Based Course - Tourism Management-II   **414HS2**
(For students admitted during the academic year 2013-14 & onwards)
Credit:3   **Hours: 38**

Hotel Management

Module I: Hotel –Types –International –Resort –Commercial -Residential –Floating.
(8Hrs)

Module II: Motel –Youth Hostel-Caravan and Camping sites –Pension –Bed and Breakfast Establishment –Tourist Holiday Villages.
(8Hrs)

Module III: Organization Categories: Sole Proprietorship –Partnership –Chain Hotels – Hotel Manager: Role and Functions.
(7Hrs)

Module IV: Front Office Management: Front Office Staff-General Procedure of Hotel Reservation Registration –Mode of Receiving payment –Communication Skills.
(8Hrs)

Module V: Personnel Management in Hotel: Human Resource in Hotel Industry-Wages and Types in Hotel –Hotel Workers.
(7Hrs)

Books for study:

1.Pushpinder S.Gill – Tourism and Hotel Management,Anmol Publications, New Delhi
2.J.David   - Textbook Of Hotel Management,Anmol
Publications,NewDelhi,2004.

Books for reference:

1.J.Mathews   -Hotel Management, Pointer Publishers,Jaipur-2008.
2.R.N.Kaul   - Dynamics of Tourism:A Trilogy,Vol-II,Accomodation,Streling
Publications,1985.
3.A.K.Bhatia   - Tourism Development –Principles and Practices,Sterling Publications
NewDelhi,2003.

Semester V -Skill Based Course -Tourism Management - III   514HS3
(For students admitted during the academic year 2013-14& onwards)

Credit:3   **Hours: 38**
Catering Management

Module I: Kitchen: Planning the Equipment –Planning of Menu-Dining Halls.
(8Hrs)
Module II: Food Service –Guidelines –Service table –Guest reception –Dining Table-
Furniture   Maintenance.
(8Hrs)

Module III: Beverage and Food – Types of Food –South Indian Cusine –North Indian –
Chinese   –European   –Continental.
(8Hrs)

Module IV: Customer care: Communication Skills –Laundry –Tariff and Concessions.
(7Hrs)

Module V: Safety measures –Kitchen- Dining –Bars –Rooms –Fire service equipments –
Emergency   exit   –Cleaning   and   Sanitation.
(7Hrs)

Books for study:
1. J.David   - Textbook of Hotel Management,Anmol publication,New Delhi,2004.
2. J.Mathews - Hotel Management,Pointer Publishers,Jaipur -2008.

Books for Reference:
1. Pushpinder S.Gill -Tourism and Hotel Management,Anmol
Publications,NewDelhi,2004.
2. R.N.Kaul   - Dynamics of Tourism: A Trilogy,VoIII,Accomodation,Sterling
Publications,1985.
3. A.K. Bhatia   - Tourism development –Principles and Practices,
                       Sterling Publications, NewDelihi,2003.

DEPARTMENT OF MATHEMATICS
LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Prg code	Year	Course code	Name of the course	Explanation	No. of courses per year
BM	2017-2018	315NMC	NMEC-Basic Mathematics for Competitive Examinations	Helps the students to appear for Exams like TNPSC,SSC, Railways, Bank,Civil services etc.	15
		117EVS	Environmental Studies	To protect our environment	
		217VEC	Value Education	To impart human values among individuals	
		315MS1	SBC I-Graph Theory I-Introductory Concepts	Application to real life situations	
		415MS2	SBC II-Graph Theory II-Paths and Trees	Problem solving, Reasoning, Application to real life situations	
		515MS3	SBC III-Graph Theory III-Planar Graphs and Colouring of Graphs	Application to real life situations	
		615MS4	SBC IV-Internship	Promotes Team work, self confidence and Comprehensive knowledge of the subject	
		415GIS	Information Security	To develop competency skills	
		117M02	Core II Differential Equations and Laplace Equations	To solve real life problems	
		217M04	Core IV Numerical Methods	To find the approximate solutions of problems	
		315M05	Core V Vector Calculus and Fourier Series	To study physical problems	
		415AM4	Allied IV Mathematical Statistics	To analyse and interpret the problems in natural, physical and social sciences	
		515ME1	Elective I Programming in C (Theory)	To develop logical reasoning and programming skills	
		615ME2	Elective II Operations Research	Decision making ability in a systematic manner	
		615ME3	Elective III Computational Mathematics Laboratory(C & Scilab)	To develop programming skills and helps in problem solving	
	2016-2017	315NMC	NMEC-Basic Mathematics for Competitive Examinations	Helps the students to appear for Exams like TNPSC,SSC, Railways, Bank,Civil services etc.	15

		115EVS	Environmental Studies	To protect our environment	
		215VEC	Value Education	To impart human values among individuals	
		315MS1	SBC I-Graph Theory I-Introductory Concepts	Application to real life situations	
		415MS2	SBC II-Graph Theory II-Paths and Trees	Problem solving, Reasoning, Application to real life situations	
		514MS3	SBC III-Graph Theory III-Planar Graphs and Colouring of Graphs	Application to real life situations	
		614MS4	SBC IV-Model Presentation	Promotes Team work, self confidence and Comprehensive knowledge of the subject	
		415GIS	Information Security	To develop competency skills	
		115M02	Core II Differential Equations and Laplace Equations	To solve real life problems	
		215M04	Core IV Numerical Methods	To find the approximate solutions of problems	
		315M05	Core V Vector Calculus and Fourier Series	To study physical problems	
		415AM4	Allied IV Mathematical Statistics	To analyse and interpret the problems in natural, physical and social sciences	
		514ME1	Elective I Programming in C	To develop logical reasoning and programming skills	
		614ME2	Elective II Mathematical Cryptography	To maintain secrecy in communication	
		614ME3	Elective III Computational Mathematics Laboratory	To develop programming skills and helps in problem solving	
	2015-2016	314NMC	NMEC-Basic Mathematics for Competitive Examinations	Helps the students to appear for Exams like TNPSC,SSC, Railways, Bank,Civil services etc.	14
		115EVS	Environmental Studies	To protect our environment	
		215VEC	Value Education	To impart human values among individuals	
		314MS1	SBC I-Graph Theory I-Introductory Concepts	Application to real life situations	
		414MS2	SBC II-Graph Theory II-Paths and Trees	Problem solving, Reasoning, Application to real life situations	
		512MS3	SBC III-Graph Theory III-Planar Graphs and Colouring of Graphs	Application to real life situations	

		612MS4	SBC IV-Model Presentation	Promotes Team work, self confidence and Comprehensive knowledge of the subject	
		115M02	Core II Differential Equations and Laplace Equations	To solve real life problems	
		215M04	Core IV Numerical Methods	To find the approximate solutions of problems	
		314M05	Core V Trigonometry, Vector Calculus and Fourier Series	To study physical problems	
		414AM4	Allied IV Mathematical Statistics	To analyse and interpret the problems in natural, physical and social sciences	
		510ME1	Elective I Programming in C	To develop logical reasoning and programming skills	
		610ME2	Elective II Mathematical Cryptography	To maintain secrecy in communication	
		610ME3	Elective III Computational Mathematics Laboratory	To develop programming skills and helps in problem solving	
	2014-2015	312NMC	NMEC-Basic Mathematics for Competitive Examinations	Helps the students to appear for Exams like TNPSC,SSC, Railways, Bank,Civil services etc.	14
		114EVS	Environmental Studies	To protect our environment	
		214VEC	Value Education	To impart human values among individuals	
		312MS1	SBC I-Graph Theory I-Introductory Concepts	Application to real life situations	
		412MS2	SBC II-Graph Theory II-Paths and Trees	Problem solving, Reasoning, Application to real life situations	
		512MS3	SBC III-Graph Theory III-Planar Graphs and Colouring of Graphs	Application to real life situations	
		612MS4	SBC IV-Model Presentation	Promotes Team work, self confidence and Comprehensive knowledge of the subject	
		114M02	Core II Differential Equations and Laplace Equations	To solve real life problems	
		214M04	Core IV Numerical Methods	To find the approximate solutions of problems	
		312M05	Core V Trigonometry, Vector Calculus and Fourier Series	To study physical problems	

		412AM4	Allied IV Mathematical Statistics	To analyse and interpret the problems in natural, physical and social sciences	
		510ME1	Elective I Programming in C	To develop logical reasoning and programming skills	
		610ME2	Elective II Mathematical Cryptography	To maintain secrecy in communication	
		610ME3	Elective III Computational Mathematics Laboratory	To develop programming skills and helps in problem solving	
	2013-2014	312NMC	NMEC-Basic Mathematics for Competitive Examinations	Helps the students to appear for Exams like TNPSC,SSC, Railways, Bank,Civil services etc.	14
		112EVS	Environmental Studies	To protect our environment	
		112VEC	Value Education	To impart human values among individuals	
		312MS1	SBC I-Graph Theory I-Introductory Concepts	Application to real life situations	
		412MS2	SBC II-Graph Theory II-Paths and Trees	Problem solving, Reasoning, Application to real life situations	
		510MS3	SBC III-Graph Theory III-Planar Graphs and Colouring of Graphs	Application to real life situations	
		610MS4	SBC IV-Model Presentation	Promotes Team work, self confidence and Comprehensive knowledge of the subject	
		112M02	Core II Differential Equations and Laplace Equations	To solve real life problems	
		212M04	Core IV Numerical Methods	To find the approximate solutions of problems	
		312M05	Core V Trigonometry, Vector Calculus and Fourier Series	To study physical problems	
		412AM4	Allied IV Mathematical Statistics	To analyse and interpret the problems in natural, physical and social sciences	
		510ME1	Elective I Programming in C	To develop logical reasoning and programming skills	
		610ME2	Elective II Mathematical Cryptography	To maintain secrecy in communication	
		610ME3	Elective III Computational Mathematics Laboratory	To develop programming skills and helps in problem solving	

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Mathematics
B.Sc. Mathematics
Scheme of Examination–CBCS Pattern
[For students admitted from the academic year 2017–2018 and onwards]

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
117TA1/ 117MY1/ 117HD1/ 117FR1	Part I: Language I	6	3	25	75	100	4
117EN1	Part II: English I	6	3	25	75	100	4
	Part III:						
117M01	Core I: Algebra and Calculus	5	3	25	75	100	4
117M02	Core II: Differential Equations and Laplace Transforms	5	3	25	75	100	4
117AM1	Allied I : Physics I	6	3	25	50	75	3
117EVS	Part IV: Environmental Studies	2	2	50	–	50	2
Semester II							
217TA2/ 217MY2/ 217HD2/ 217FR2	Part I: Language II	6	3	25	75	100	4
217EN2	Part II: English II	6	3	25	75	100	4
	Part III:						
217M03	Core III: Analytical Geometry	5	3	25	75	100	4
217M04	Core IV: Numerical Methods	5	3	25	75	100	4
217AM2	Allied II: Physics II	4	3	25	50	75	3
217AMP	Allied Physics Practical	2	3	20	30	50	2
217VEC	Part IV: Value Education	2	2	50	–	50	2

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester III						
317TA3/ 317MY3/ 317HD3/ 317FR3	Part I: Language III	6	3	25	75	100	4
317EN3	Part II: English III	6	3	25	75	100	4
	Part III:						
317M05	Core V: Vector Calculus and Fourier Series	3	3	25	50	75	3
317M06	Core VI: Statics	4	3	25	75	100	4
317AM3/ 317AM1	Allied III: Principles of Accountancy/ Chemistry I	6	3	25	75/50	100/75	4/3
317NMC	Part IV: NME – Basic Mathematics for Competitive Examinations	2	2	50	–	50	2
317MS1	Skill Enhancement Course I: Graph Theory-I	3	3	75	–	75	3
	Semester IV						
417TA4/ 417MY4/ 417HD4/ 417FR4	Part I: Language IV	6	3	25	75	100	4
417EN4	Part II: English IV	6	3	25	75	100	4
	Part III:						
417M07	Core VII: Discrete Mathematics	3	3	25	50	75	3
417M08	Core VIII: Dynamics	4	3	25	75	100	4
417AM4/ 417AM2	Allied IV: Mathematical Statistics/ Chemistry II	6/4	3	25	75/50	100/75	4/3
417AMP	Allied Chemistry Practical	2	3	20	30	50	2
417NGA	Part IV: General Awareness	–	1	50	–	50	2
417MS2	Skill Enhancement Course II: Graph Theory-II	3	3	75	–	75	3
417GIS	Information Security	2	2	50	–	Grade	Grade
417MA1/ 417MA2	Advanced Learners Course I Combinatorics / Statistical Quality Control	–	3	–	100	100	4*

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester V Part III:						
517M09	Core IX: Real Analysis I	6	3	25	75	100	4
517M10	Core X: Complex Analysis I	5	3	25	75	100	4
517M11	Core XI: Abstract Algebra	5	3	25	75	100	4
517M12	Core XII: Group Project	5	_	_	100	100	4
517ME1/ 517ME2	Elective I: Programming in C (Theory)/Number Theory	4/6	3	15/25	35/75	50/100	2/4
517MP1	Programming in C Practicals	2	3	15	35	50	2
517MS3	Part IV: Skill Enhancement Course III : Scilab	3	3	75	–	75	3
	Semester VI Part III:						
617M13	Core XIII: Real Analysis II	5	3	25	75	100	4
617M14	Core XIV: Complex Analysis II	5	3	25	75	100	4
617M15	Core XV: Linear Algebra	5	3	25	75	100	4
617ME3/ 617ME4	Elective II : Operations Research / Mathematical Cryptography	6	3	25	75	100	4
617ME5/ 617ME6	Elective III : Fuzzy and Intuitionstic fuzzy sets /Astronomy	6	3	25	75	100	4
617MS4	Part IV: Skill Enhancement Course IV: Internship	3	–	75	–	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V : Extension Activity	–	–	50	–	50	2
617MA3/ 617MA4	Advanced Learners Course II: Mathematics in Insurance/ Introduction to Wavelet theory	–	3	–	100	100	4*
	Total					3500	140

Starred credits are treated as additional credits which are optional.

B.Sc. Mathematics
Semester I
Part III – Core II – DIFFERENTIAL EQUATIONS AND
LAPLACE TRANSFORMS   117M02
[For students admitted from the academic year 2017 – 2018 onwards]
65 Hours

The objectives of this course are

- to expose the students to various methods of solving Ordinary and Partial differential equations.
- to equip the students with the knowledge of Laplace transformation and its application in solving differential equations.

Unit I   **(13 Hours)**

Differential Equations: Differential equations of the first order: Equations of the first order, but of higher degree: Equations solvable for dy/dx – Equations solvable for y – Equations solvable for x (particular cases of 5.2) – Clairaut's form – Extended form of Clairaut's Equations – Equations that do not contain x explicitly–Equations that do not contain y explicity – Equations homogeneous in x and y.

Chapter 1: Sections 5.1 - 5.5, 6.1, 6.2, 7.1 - 7.3

Unit II   **(13 Hours)**

Linear Differential Equations with Constant Coefficients:Solving $(d^n y/ dx^n) + a_1(d^{n-1} y/dx^{n-1}) + a_2(d^{n-2} y / dx^{n-2}) +…+ a_n y = X$, when X is of the form $e^{ax}V$, V is any function of x – Linear differential equations with variable coefficients – Equations reducible to the linear homogeneous equation.

Chapter 2: Sections 4(d), 8, 9

Unit III   **(13 Hours)**

Simultaneous Differential Equations: Simultaneous equations of the first order and first degree – Solutions of $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ – Methods for solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$ – Simultaneous linear differential equations with constant coefficients.
Chapter 3: Sections 1 - 4, 6

Unit IV   **(13 Hours)**
Partial Differential Equations: Derivation of Partial Differential Equations – Different integrals of Partial differential equations (definition only) – Standard types of first order equations – Lagrange's equation.

Chapter 4: Sections 1 - 3, 5, 6

Unit V   **(13 Hours)**

The Laplace Transforms: Definition – Results from the definition – Laplace transforms of periodic functions – Some general Theorems – Evaluation of certain integrals using Laplace transforms – The inverse transforms – Solving second order differential equations with constant coefficients using Laplace transforms.

Chapter 5: Sections 1 – 8.

Book for Study:
S.Narayanan and T.K.Manicavachagom Pillay, Calculus (Major) Volume III, S.Viswanathan (Printers and Publishers) Pvt. Ltd, Reprint 2014.

Books for Reference:

1. Ervin Kreyszig, Advanced Engineering Mathematics, Wiley Eastern Ltd., 8th edition, 2006.

2. George .F.Simmons, Differential Equations with applications and Historical notes, McGrawHill,Inc, 2nd Edition 1991.

Course Outcomes

Upon successful completion of this course, students will be able to
CO1: know various methods of solving first order and higher degree differential equations
CO2: Solve the linear differential equations with constant coefficients , variable coefficients and simultaneous differential equations
CO3: solve the first order partial differential equations
CO4: apply Laplace transform to solve differential equations.

	PO 1	PO 2	PO 3	PO 4	PO 5	Knowledge Level
CO1	H	H	L	L	M	K
CO 2	H	H	M	L	H	U
CO 3	H	H	M	M	H	A
CO 4	H	H	M	M	M	A

Course Designed by : A.ANIS FATHIMA
Course Reviewed by : P.JAYALAKSHMI
Course Checked by   : S.KALAISELVI

B.Sc. Mathematics
Semester II
Part III – Core IV – NUMERICAL METHODS   217M04
[For students admitted from the academic year 2017 – 2018 onwards]
65 Hours

Objectives of introducing this course are

- to teach the various numerical methods of solving Numerical, Algebraic and Transcendental equations.
- to introduce interpolation techniques and their applications to real life situations.
- to give them a knowledge about the quadrature formulae and their applications.

Unit I   **(13 Hours)**

The solution of Numerical, Algebraic and Transcendental Equation: The Bisection method – Regula-Falsi method – Newton-Raphson method. Solution of Simultaneous Linear Algebraic Equations: Introduction – Gauss-Elimination Method – Gauss-Jordan elimination method – Iterative methods – Gauss-Jacobi method – Gauss-Seidel method of iteration.
Chapter 3: Sections 3.1.1, 3.3, 3.4 Chapter 4: Sections 4.1, 4.2, 4.2.1, 4.7 - 4.9

Unit II   **(13 Hours)**

Finite Differences: First difference – Express any value of y in term of y_n and the backward differences of y_n – Differences of a polynomial – Factorial polynomial – Error propagation in a difference table. Interpolation(for Equal Intervals) : Introduction – Linear Interpolation or method of proportional parts – Gregory-Newton forward Interpolation formula – Gregory-Newton backward Interpolation Formula.
Chapter 5: Sections 5.1 - 5.5, Chapter 6: Sections 6.1 - 6.3.

Unit III   **(13 Hours)**

Central Difference Interpolation formulae (For Equal Intervals): Central differences and central difference table – Central difference interpolation formula – Gauss's forward Interpolation formula – Gauss's backward interpolation formula – Stirling's formula – Bessel's formula.
Chapter 7: Sections 7.1 - 7.6

Unit IV   **(13 Hours)**

Interpolation with Unequal Intervals: Introduction – Divided differences – Properties of divided differences – Relation between divided differences and forward differences – Theorem: Newton's interpolation formula for unequal intervals – Deduction: Deduce Gregory Newton interpolation forward formula for equal intervals – Lagrange's interpolation formula (for unequal intervals).
Chapter 8: Sections 8.1 - 8.7

Unit V   **(13 Hours)**

Numerical differentiation and Integration: Introduction – Newton's forward difference formula to get the derivative – Newton's backward difference formula to compute the derivative – Derivative using Stirling's formula – Caution – To find maxima and minima of

the function given the tabular values. Numerical Integration: Introduction – A general Quadrature formula for equidistant ordinates – Trapezoidal rule – Simpson's one-third rule – Simpson's three-eighths rule.

Chapter 9: Sections 9.1 - 9.9, 9.13 and 9.14

Book for Study:

Dr.P.Kandasamy, Dr. K.Thilagavathy and Dr. K.Gunavathi, Numerical Methods, S. Chand & Company limited, Third Revised Edition Reprint (2016).

Books for Reference:

1. Dr.M.K.Venkataraman, Numerical Methods in Science and Engineering, National Publishing Company, fifth edition, 1995.

2. H.C.Saxena, Finite differences and Numerical Analysis, S. Chand & Company limited, New Delhi, 2001.

Course Outcomes

Upon successful completion of this course, students will be able to

CO1: solve system of equations by Direct and Iteration methods.

CO2: use different types of difference operators.

CO3: solve physical problems using different types of operators.

CO4: find derivatives of functions using various interpolation methods.

CO5: integrate functions using numerical techniques.

	PO 1	PO 2	PO 3	PO 4	PO 5	Knowledge Level
CO1	H	H	M	L	M	A
CO2	H	H	M	L	H	A
CO3	H	H	M	M	H	A
CO4	H	H	M	M	M	A
CO5	H	H	M	H	M	A

Course Designed by : T.VANJIKKODI

Course Reviewed by : R.ANGEL JOY

Course Checked by   : S.KALAISELVI

Curriculum Design

SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Mathematics
B.Sc. Mathematics
Scheme of Examination-CBCS Pattern
[For students admitted from the academic year 2015-2016 &2016-2017 only]

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
115TA1/ 115MY1 /115HD1/ 115FR1 115EN1	Part I: Language I	6	3	25	75	100	4
	Part II: English I	6	3	25	75	100	4
	Part III:						
115M01	Core I: Algebra and Calculus	5	3	25	75	100	4
115M02	Core II: Differential Equations and Laplace Transforms	5	3	25	75	100	4
115AM1	Allied I : Physics I	6	3	25	50	75	3
115EVS	Part IV: Environmental Studies	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	Part I: Language II	6	3	25	75	100	4
215EN2	Part II: English II	6	3	25	75	100	4
	Part III:						
215M03	Core III: Analytical Geometry	5	3	25	75	100	4
215M04	Core IV: Numerical Methods	5	3	25	75	100	4
215AM2	Allied II: Physics II	4	3	25	50	75	3
215AMP	Allied Physics Practical	2	3	20	30	50	2
215VEC	Part IV: Value Education	2	2	50	-	50	2

| Course Code | Course Title | Ins. Hrs/ week | Examination | | | | Credits |
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester III						
315TA3/ 315MY3/ 315HD3 /315FR3	Part I: Language III	6	3	25	75	100	4
315EN3	Part II: English III	6	3	25	75	100	4
	Part III:						
315M05	Core V: Vector Calculus and Fourier Series	3	3	25	50	75	3
315M06	Core VI: Statics	4	3	25	75	100	4
315AM3	Allied III: Principles of Accountancy	6	3	25	75	100	4
315NMC	Part IV: NME - Basic Mathematics for Competitive Examinations	2	2	50	-	50	2
315MS1	Skill Based Course I: Graph Theory-I: Introductory Concepts	3	3	75	-	75	3
	Semester IV						
415TA4/ 415MY4/ 415HD4/4 15FR4	Part I: Language IV	6	3	25	75	100	4
415EN4	Part II: English IV	6	3	25	75	100	4
	Part III:						
415M07	Core VII: Discrete Mathematics	3	3	25	50	75	3
415M08	Core VIII: Dynamics	4	3	25	75	100	4
415AM4	Allied IV: Mathematical Statistics	6	3	25	75	100	4
	Part IV:						
415NGA	General Awareness (Online)	-	1	50	-	50	2
415MS2	Skill Based Course II: Graph Theory- II: Paths and Trees	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415MA1/ 415MA2	Advanced Learners Course I : Combinatorics / Statistical Quality Control	-	3	-	100	100	4*

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester V						
	Part III:						
515M09	Core IX: Real Analysis I	6	3	25	75	100	4
515M10	Core X: Complex Analysis I	5	3	25	75	100	4
515M11	Core XI: Abstract Algebra	5	3	25	75	100	4
515M12	Core XII: Group Project	5	_	_	100	100	4
515ME1	Elective I: Programming in C (Theory)	6	3	25	75	100	4
515MS3	Part IV: Skill Based Course III : Graph Theory- III: Planar Graphs and Colouring of Graphs	3	3	75	-	75	3
	Semester VI						
	Part III:						
615M13	Core XIII: Real Analysis II	5	3	25	75	100	4
615M14	Core XIV: Complex Analysis II	5	3	25	75	100	4
615M15	Core XV: Linear Algebra	5	3	25	75	100	4
615ME2	Elective II: Operations Research	6	3	25	75	100	4
615ME3	Elective III: Computational Mathematics Laboratory (Scilab and C Practical)	6	3	40	60	100	4
615MS4	Part IV: Skill Based Course IV: Internship	3	-	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V : Extension Activity	-	-	50	-	50	2
615MA3/ 615MA4	Advanced Learners Course II : Mathematics in Insurance / Introduction to wavelet theory	-	-	-	100	100	4*
	Total					3500	140

*Starred credits are treated as additional credits.

B.Sc. Mathematics
Semester V
Part III – Elective I – PROGRAMMING IN C
(Theory)   515ME1
[For students admitted during the academic year 2015-2016 and 2016-2017 only**]**

75 Hours

The objectives of this course are
- to introduce the basics of programming.
- to improve the logical thinking.
- to imbibe confidence to develop programs for solving problems in mathematical and physical sciences.

Unit I   **(15 Hours)**

Constants, Variables and Data types: Introduction – Character set – C tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Declaration of storage class – Assigning values to variables – Defining symbolic constants – Declaring a variable as constant – Declaring a variable as Volatile. Operators and Expressions: Introduction – Arithmetic operators – Relational operators – Logical operators – Assignment operators– Increment and decrement operators – Conditional operator – Bitwise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of Arithmetic operators – Some computational problems – Type conversions in expressions – Operator precedence and associativity – Mathematical functions.
Chapter 2: Sections 2.1 - 2.13, Chapter 3

Unit II   **(15 Hours)**

Managing Input and Output operations: Introduction – Reading a Character – Writing a Character – Formatted Input – Formatted Output. Decision making and Branching: Introduction – Decision making with IF statement – Simple IF statement – The IF…ELSE statement – Nesting of IF…ELSE statements – The ELSE IF ladder – The Switch statement – The ?: operator – The GOTO statement.
Chapter 4 and Chapter 5

Unit III   **(15 Hours)**

Decision making and looping: Introduction – The WHILE statement – The DO statement – The FOR statement – Jumps in loops. Arrays: Introduction – One-dimensional arrays – Declaration of One-dimensional arrays – Initialization of One-dimensional arrays – Two-dimensional arrays – Initializing Two-dimensional arrays – Multi-dimensional arrays.
Chapter 6: Sections 6.1- 6.5, Chapter 7: Sections 7.1 - 7.7

Unit IV   **(15 Hours)**

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – Arithmetic operations on characters – Putting strings together – Comparison of two strings – String handling functions. User–Defined functions : Introduction – Need for user defined functions – A

multi– function program – Elements of user defined functions – Definition of functions – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Functions that return multiple values.

Chapter 8: Sections 8.1 - 8.8, Chapter 9: Sections 9.1 - 9.14

Unit V   **(15 Hours)**

User - Defined functions: Nesting of functions – Recursion – Passing arrays to functions – Passing strings to functions – The scope, visibility and lifetime of variables. Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Accessing Structure members – Structure Initialization – Copying and Comparing Structure variables – Operations on Individual members – Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions.

Chapter 9: Sections 9.15 - 9.19, Chapter 10: Sections 10.1 - 10.12

Book for Study:

E.Balagurusamy, Programming in ANSI 'C', McGraw Hill Education Private Limited, Sixth Edition, Fifth reprint 2013.

Books for Reference:

1. Henry Mullish and Herbert L. Cooper, The Spirit of 'C' – An Introduction to modern Programming, Jaico publishing house 2006.
2. Harvey Deitel & Paul J.Deitel,C: How to program, Pearson Education Inc, 6th Edition 2010.

 E - resource

Spoken Tutorial Project (Programming with C) as e-Resource for Learning – IIT, Mumbai under National Mission on Education through ICT, MHRD, Govt. of India.

Course Designed by   : N.RAJESWARI
Course Reviewed by : P.PADMAVATHI
Course Checked by   : S.KALAISELVI

B.Sc. Mathematics

Semester V

Part IV– Skill Enhancement Course III : GRAPH THEORY-III   515MS3

(For students admitted during the academic year 2015-2016 and 2016-2017 only)

                                                                                        35 Hours

The objectives of this course are

- to enable the students to analyze the applications of graph colorings.
- to represent and study about relationship which deals with uncertainty.

Unit I   **(7 Hours)**

Planarity: Planar graphs – Euler's formula

Chapter 11: Sections 11.1 and 11.2

Unit II (7 Hours)

Planarity: Cycle Method for Planarity Testing – Kuratowski's Theorem – Duality.

Chapter 11: Sections 11.3 - 11.5

Unit III (7 Hours)

Vertex Colourings and Decompositions: Vertex Colourings – Algorithm for Vertex Colouring – Vertex Decompositions.

Chapter 12: Sections 12.1 - 12.3

Unit IV (7 Hours)

Edge Colourings and Decompositions: Edge Colourings – Algorithm for Edge Colouring Edge Decompositions.

Chapter 13: Sections 13.1 - 13.3

Unit V (7 Hours)

Case studies: Four Cubes problem- Knights Tour Problem-Gray odes-Rotating Drum problem-Ranking in Tournaments-Interval Graphs.

Chapter 2 (Section 2.5), Chapter 3 (Section 3.4),Chapter 4(Section4.5),Chapter 5 (Section 5.4)

(Specified case Studies only)

Note: Proof of the theorems are not included.

Book for Study:

Graphs and Applications - An Introductory Approach,

Joan M.Aldous and Robin J.Wilson, Springer - First Indian Reprint 2007.

Books for Reference:

1. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi, Tenth Reprint 2001.
2. John Clark, Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd, Reprint 1995.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science, Prentice - Hall of India Private Ltd, New Delhi 2005.
4. Dieter Jungnickel, Graphs, Networks and Algorithms, Springer - Verlag Berlin Heidelberg, 2005.

Course Designed by   : N.JEYANTHI

Course Reviewed by   : N.RAJESWARI

Course Checked by   : S.KALAISELVI

B.Sc. Mathematics

Semester VI - Part III – Elective II – OPERATIONS RESEARCH   615ME3

[For students admitted during the academic year 2015-2016 and 2016-2017 only**]**

75 Hours

The prime objectives for introducing this course are:

- to give practical training in converting a managerial decision making problem to a linear programming problem.
- to gain knowledge on techniques for solving linear programming problem.

- to develop logical reasoning in sequencing in a network to trace the shortest route.
- to develop knowledge in basic techniques to deal with inventory.

Unit I (15 Hours)

Linear Programming Problem: Graphical solution and Extension: Introduction – Graphical solution method– Some exceptional cases – General linear programming problem – Canonical and standard forms of L.P.P.

Linear programming problem – Simplex method: Introduction – Fundamental properties of solutions – The computational procedure – Use of artificial variables.

Chapter 3: Sections 3.1 - 3.5, Chapter 4: Sections 4.1 - 4.4

Unit II (15 Hours)

Duality in Linear Programming: Introduction – General Primal – Dual pair – Formulating a dual problem – Primal – Dual pair in matrix form – Duality and Simplex method – Dual Simplex method. Transportation Problem: Introduction – LP formulation of the transportation problem – Existence of Solution in T.P – Duality in transportation problem – The transportation table – Loops in transportation tables – Triangular basis in a T.P – Solution of a transportation problem – Finding an initial basic feasible solution – Test for optimality – Economic Interpretation of u_j's and v_j's – Degeneracy in transportation problem – Transportation algorithm [MODI method].

Assignment Problem: Introduction – Mathematical formulation of the problem – Solution Methods of Assignment Problem.

Chapter 5: Sections 5.1 - 5.4, 5.7, 5.9, Chapter 10: Sections 10.1 - 10.13

Chapter 11: Sections 11.1 - 11.3

Unit III (15 Hours)

Games and Strategies: Introduction – Two-person zero-sum games – Some basic terms – The Maximin-Minimax principle – Games without saddle points – Mixed strategies – Graphic solution of 2 x n and m x 2 games.

Chapter 17: Sections 17.1 - 17.6

Unit IV (15 Hours)

Inventory Control I: Introduction – Types of Inventories – Reasons for carrying Inventories – The inventory decisions – Objectives of Scientific Inventory Control – Costs associated with inventories – Factors affecting inventory control – An Inventory Control Problem – The Concept of EOQ – Deterministic inventory problems with No shortages – Deterministic inventory problems with shortages – Problems of EOQ with Price Breaks.

Chapter 19: Sections 19.1 - 19.12

Unit V (15 Hours)

Network Scheduling by PERT/CPM: Introduction – Network: Basic Components – Logical Sequencing – Rules of Network Construction – Concurrent Activities – Critical path analysis – Probability considerations in PERT – Distinction between PERT and CPM.

Chapter 25: Sections 25.1 - 25.8

Note: Statement of the theorems and algorithms are included.

Book for Study:

 Kanti Swarup, P.K Gupta, Man Mohan, Operations Research, Sultan Chand & Sons, New Delhi, Fifteenth Edition, Reprint 2010.

Books for Reference:

1. J.K.Sharma, Operations Research: Theory and Applications, MacMillan India Ltd, Second Edition, 2003.
2. Hamdy A. Taha, Operations Research: An Introduction, Macmillan Publishing Company, Eighth Edition, 2008.

Course Designed by : P.PADMAVATHI
Course Reviewed by : N.RAJESWARI
Course Checked by   : S.KALAISELVI

B.Sc. Mathematics
Semester VI
Part III – Elective III – COMPUTATIONAL MATHEMATICS LABORATORY
(Scilab and C Practical)   615ME5
[For students admitted during the academic year 2015-2016 and 2016-2017 only**]**

75 Hours

The objective of this course is to

- develop the logical and programming skills.
- provide hands on training in executing programs.

Programming in C – List of Programs

1. Finding sum, average, standard deviation for a given set of numbers.
2. Printing Fibonacci series.
3. Prime number checking.
4. Finding roots of a Quadratic Equation.
5. Finding the product of two matrices.
6. Finding the factorial of a number using recursion.
7. Finding whether a string is PALINDROME or not.
8. Arranging strings in alphabetical order.
9. Counting tabs, number of lines, characters and blank spaces in a given text.
10. Reading and Printing personal information using structures.

Scilab – List of Programs

1. Solving a system of linear Equations.
2. Arithmetic operations on arrays.
3. Drawing 2D and 3D plots.
4. Finding derivatives and integrals of polynomials
5. Creating a structure for an employee data base containing employee code, name, designation and salary.

6. A function subprogram to calculate the compound interest, given the initial amount, time period of deposit, rate of interest and time of compounding.
7. Program to process the applications for admission to an engineering college and to list the candidates eligible for admission based on the following conditions:
   (a) Marks in Maths ≥ 60
   (b) Marks in Physics ≥ 55
   (c) Marks in Chemistry ≥ 55
   (d) Total marks ≥ 180
8. Program to reverse the digits of a number having minimum three digits.
9. Program to solve first order Ordinary Differential Equations.
10. Solving Linear Programming Problem.

Course Designed by   : N.RAJESWARI
Course Reviewed by   : S.KALAISELVI
Course Checked by   : S.KALAISELVI

B.Sc. Mathematics
Semester VI
Part IV – Skill Enhancement Course IV: INTERNSHIP   615MS4
[For students admitted during the academic year 2015-2016 and 2016-2017 only**]**

35 Hours

The students have to select a concern/industry and takeup practical training in any area related to the courses they have studied for a period of 10 days and a report has to be submitted and viva voce examination will be conducted

The objectives of internship are
- to open up a pathway to enter into a job.
- to provides awareness about the applications on Mathematics in real life.
- to instill confidence to meet people and interact with them.
- to establishes a proactive industry institute relationships.

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Mathematics
B.Sc. Mathematics
Scheme of Examination-CBCS Pattern
[For students admitted from the academic year 2015-2016 onwards]

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
115TA1/ 115MY1/ 115HD1/ 115FR1	Part I: Language I	6	3	25	75	100	4
115EN1	Part II: English I	6	3	25	75	100	4
	Part III:						
115M01	Core I: Algebra and Calculus	5	3	25	75	100	4
115M02	Core II: Differential Equations and Laplace Transforms	5	3	25	75	100	4
115AM1	Allied I : Physics I	6	3	25	50	75	3
115EVS	Part IV: Environmental Studies	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	Part I: Language II	6	3	25	75	100	4
215EN2	Part II: English II	6	3	25	75	100	4
	Part III:						
215M03	Core III: Analytical Geometry	5	3	25	75	100	4
215M04	Core IV: Numerical Methods	5	3	25	75	100	4
215AM2	Allied II: Physics II	4	3	25	50	75	3
215AMP	Allied Physics Practical	2	3	20	30	50	2
215VEC	Part IV: Value Education	2	2	50	-	50	2

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester III						
315TA3/ 315MY3/ 315HD3/ 315FR3	Part I: Language III	6	3	25	75	100	4
315EN3	Part II: English III	6	3	25	75	100	4
	Part III:						
315M05	Core V: Vector Calculus and Fourier Series	3	3	25	50	75	3
315M06	Core VI: Statics	4	3	25	75	100	4
315AM3	Allied III: Principles of Accountancy	6	3	25	75	100	4
315NMC	Part IV: NMEC I- Basic Mathematics for Competitive Examinations	2	2	50	-	50	2
315MS1	Skill Based Course I: Graph Theory-I: Introductory Concepts	3	3	75	-	75	3
	Semester IV						
415TA4/ 415MY4/ 415HD4/ 415FR4	Part I: Language IV	6	3	25	75	100	4
415EN4	Part II: English IV	6	3	25	75	100	4
	Part III:						
415M07	Core VII: Discrete Mathematics	3	3	25	50	75	3
415M08	Core VIII: Dynamics	4	3	25	75	100	4
415AM4	Allied IV: Mathematical Statistics	6	3	25	75	100	4
	Part IV:						
415NGA	NMEC II -General Awareness (Online)	-	1	50	-	50	2
415MS2	Skill Based Course II: Graph Theory- II: Paths and Trees	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALM	Advanced Learners Course I : Combinatorics / Statistical Quality Control	-	3	-	100	100	4*

Course Code	Course Title	Ins. Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	Semester V Part III:						
515M09	Core IX: Real Analysis I	6	3	25	75	100	4
515M10	Core X: Complex Analysis I	5	3	25	75	100	4
515M11	Core XI: Abstract Algebra	5	3	25	75	100	4
515M12	Core XII: Fuzzy Logic and Intuitionistic fuzzy sets	5	3	25	75	100	4
515ME1	Elective I: Programming in C (Theory & Practical)	6	3	40	60	100	4
515MS3	Part IV: Skill Based Course III : Graph Theory- III: Planar Graphs and Colouring of Graphs	3	3	75	-	75	3
	Semester VI Part III:						
615M13	Core XIII: Real Analysis II	5	3	25	75	100	4
615M14	Core XIV: Complex Analysis II	5	3	25	75	100	4
615M15	Core XV: Linear Algebra	5	3	25	75	100	4
615ME2	Elective II: Operations Research	6	3	25	75	100	4
615ME3	Elective III: Computational Mathematics Laboratory (Theory & Practical)	6	3	40	60	100	4
615MS4	Part IV: Skill Based Course IV: Model Presentation (Group Project)	3	-	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V : Extension Activity	-	-	50	-	50	2
615ALM	Advanced Learners Course II : Mathematics in Insurance / Mathematical Cryptography	-	-	-	100	100	4*
	Total					3500	140

Starred credits are treated as additional credits which are optional.

B.Sc. Mathematics
Semester I

Part III – Core II – DIFFERENTIAL EQUATIONS AND

LAPLACE TRANSFORMS   115M02
[For students admitted from the academic year 2015 – 2016 onwards]

Preamble   **65 Hours**

This course is introduced in the curriculum since Differential equations play an important role in physical system of science, engineering and social sciences

- The Laplace transforms are widely adopted by scientists and engineers as an efficient tool for solving linear differential equations.
- The topics included in the course help the students
- To interpret the physical systems in terms of differential equation
- To master the various methods of solving a variety of differential equations.

Unit I   **(13 Hours)**

Differential Equations: Differential equations of the first order: Equations of the first order, but of higher degree: Equations solvable for dy /dx- Equations solvable for y-Equations solvable for x (particular cases of 5.2) - Clairaut's form- Extended form of Clairaut's Equations - Equations that do not contain x explicity-Equations that do not contain y explicity-Equations homogeneous in x and y.

Chapter 1 (Sections 5.1-5.5,6.1,6.2,7.1-7.3)

Unit II   **(13 Hours)**

Linear Differential Equations with constant coefficients:Solving $(d^n y/ dx^n) + a_1 (d^{n-1} y/ dx^{n-1}) + a_2 (d^{n-2} y / dx^{n-2}) + \ldots + a_n y = X$,when X is of the form $e^{ax} V$, V is

function of x.-Linear differential equations with variable coefficients-Equations reducible to the linear homogeneous equation.

Chapter 2 (Sections 4(d), 8, 9)

Unit III   **(13 Hours)**

Simultaneous Differential Equations: Simultaneous equations of the first order and first

degree - Solutions of $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ - Methods for solving $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ - Simultaneous

linear differential equations with constant coefficients.

Chapter 3 (Sections 1-4, 6).

Unit IV   **(13 Hours)**

Partial Differential Equations: Derivation of Partial Differential Equations- Different integrals of Partial differential equations (definition only) – Standard types of first order equations - Lagrange's equation.

Chapter 4 (Sections 1-3, 5, 6)

Unit V   **(13 Hours)**

The Laplace Transforms: Definition-Results from the definition-Laplace transforms of periodic functions – Some general theorems - Evaluation of certainintegrals using Laplace transforms- The inverse Laplace transforms-Solving second order differential equations with constant coefficients using Laplace transforms.

Chapter 5 (Sections 1 – 8)

Book for study

S.Narayanan and T.K.ManicavachagomPillay,Calculus (Major) VolumeIII,
S.Viswanathan(Printers and Publishers) Pvt.Ltd,Reprint 2012.

Books for Reference

3. Ervin Kreyszig, Advanced Engineering Mathematics, Wiley Eastern Ltd.,
   8th edition, 2006.
4. George .F.Simmons, Differential Equations with applications and Historical
   notes, McGrawHill,Inc, 2nd Edition 1991.

Course Designed by   : B.KALAISELVI
Course Reviewed by : A.R.THILAGAVATHI
Course Checked by   :A.R.THILAGAVATHI

B.Sc. Mathematics
Semester II
Part III-Core IV - NUMERICAL METHODS   215M04
[For students admitted from the academic year 2015-2016 onwards]

Preamble   **65 Hours**

The study of Numerical Methods has become very important due to the wide
spread use of these methods by scientists and engineers.
This course is designed in such a way that

- it develops the problem solving skills of the students .
- it provides confidence and motivation to solve problems with higher degree of
  complexity.

Unit I   **(13 Hours)**

The solution of Numerical algebraic and Transcendental equations: The Bisection method – Regula-Falsi method – Newton-Raphson method. Solution of Simultaneous Linear Algebraic Equations: Introduction – Gauss-Elimination Method – Gauss-Jordan elimination method – Iterative methods – Gauss- Jacobi method – Gauss-Seidel method of iteration.
Chapter 3 (Sections 3.1.1,3.3,3.4) Chapter 4 (Sections 4.1,4.2, 4.2.1,4.7-4.9)

Unit II   **(13 Hours)**

Finite differences:First difference-Express any value of y in term of y_n and the backward differences of y_n– Differences of a polynomial –Factorial polynomial – Error propagation in a difference table. Interpolation(for Equal Intervals): Introduction – Linear Interpolation or method of proportional parts – Gregory-Newton forward Interpolation formula – Gregory-Newton backward Interpolation Formula.
Chapter 5 (Sections 5.1-5.5) Chapter 6 (Sections 6.1-6.3)

Unit III   **(13 Hours)**

Central Difference Interpolation formulae (For Equal Intervals):
Central differences and central difference table-Central difference interpolation
formula-Gauss's forward interpolation formula – Gauss's backward interpolation
formula – Stirling's formula –Bessel's formula.
Chapter 7 (Sections 7.1-7.6)

Unit IV   **(13 Hours)**

Interpolation With Unequal Intervals: Introduction – Divided differences – Properties of divided differences – Relation between divided differences and forward differences – Theorem: Newton's interpolation formula for unequal intervals – Deduction: Deduce Gregory Newton interpolation forward formula for equal intervals – Lagrange's interpolation formula (for unequal intervals).

Chapter 8 (Sections 8.1-8.7)

Unit V   **(13 Hours)**

Numerical differentiation and Integration: Introduction – Newton's forward difference formula to get the derivative – Newton's backward difference formula to compute the derivative – Derivative using Stirling's formula – Caution – To find maxima and minima of the function given the tabular values. Numerical Integration: Introduction – A general Quadrature formula for equidistant ordinates – Trapezoidal rule – Simpson's one-third rule – Simpson's three-eighths rule.

Chapter 9 (Sections 9.1-9.9, 9.13 and 9.14).

Book for study

Dr.P.Kandasamy,Dr. K.Thilagavathy,Dr. K.Gunavathi, Numerical Methods, S.Chand& Company limited,Third Revised Edition Reprint(2010).

Books for Reference

1. Dr.M.K.Venkataraman, Numerical Methods in Science and Engineering, National Publishing company, fifth edition,1995.

2. H.C.Saxena, Finite differences and Numerical Analysis, S.Chand& Company limited,New Delhi,2001.

Course Designed by :P.PADMAVATHI
Course Reviewed by :R.ANGEL JOY
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester III
Part III – Core V –VECTOR CALCULUS AND FOURIER SERIES
315M05

[For students admitted from the academic year 2015 - 2016 onwards]

Preamble   **35 hours**

This course enables the students

- to gain a thorough knowledge of the fundamentals of vector calculus and their applications in fields like physics and fluid dynamics
- to apply Fourier concepts in the field of image processing

Unit I   **(8 Hours)**

Gradient: Scalar and Vector point functions-Level Surfaces-Directional derivative of a scalar point function-Gradient of a scalar point function-Gradient of sum and product of functions-Gradient of f(r).

Chapter 2: (Section 2.1-2.6).

Unit II   **(7 Hours)**

Divergence & curl: Divergence and curl of a vector point function-Solenoidal and irrotational vectors-Theorems on divergence and curl-Laplacian operator-

Divergence and curl of a gradient-Divergence and curl of a curl-Divergence and curl of f(r)$\bar{r}$-Scalar potential.
Chapter 3: (Section 3.1-3.5).

Unit III   **(8 Hours)**
Integral Theorems: Integral Theorems – Green's theorem in the plane – Gauss' divergence theorem – Stoke's theorem.
Chapter 4: (Section 6.1- 6.4).

Unit IV   **(6 Hours)**
Fourier series: Fourier series - Even and odd functions.
Chapter 1: (pages 96-135).

Unit V   **(6 Hours)**
Fourier series: Half - range series – Half - range sine series – Half - range cosine series, Change of interval.
Chapter 1: (pages 135-154).

Books for study:
For Units I, II and III : Vector Analysis, P.Duraipandian, KayalalPachaiyappa,MuhilPublishers, Revised Edition 2009.

For Units IV & V   : Mathematics for B.Sc. . Branch-I, Volume – IV, P.Kandasamy, K.Thilagavathi, S.Chand& Company Limited, First Edition 2005.

Books for reference:
1. Vector Analysis, DipakChatterjee, PHI Learning Private Limited, Second Edition, 2009
2. S.Narayanan and T.K.ManicavachagomPillay, Calculus (Major) Volume III, S.Viswanathan (Printers and Publishers) Pvt.Ltd, Reprint 2012.

Course Designed by :A.ANIS FATHIMA
Course Reviewed by :N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

II UG COURSE - Semester III
Part IV –Non-Major Elective Course I- BASIC MATHEMATICS FOR COMPETITIVE EXAMINATIONS   315NMC
[For students admitted from the academic year 2015-2016 onwards]

Preamble   **25 Hours**
The syllabus of this course has been framed to cover all topics in quantitative aptitude required for competitive examinations like Bank P.O., and Railways etc.
The syllabus helps the students
  * to equip them with as much knowledge on all topics as is desirable from the point of view of brilliant success in the competitive examinations.
  * to familiarize with different types of tests conducted by various examining bodies
  * to sharpen the basic knowledge in mathematics and to increase the speed of its application through regular practice.

Unit I   **(5 Hours)**
Decimal fractions – Simplification – Number series.
Chapters(3,4,39)

Unit II   **(5 Hours)**

Problems on Ages – Percentage – Profit and loss.
Chapters(8,10,11)

Unit III   **(5 Hours)**

Ratio and proportion – Partnership
Chapters(12,13)

Unit IV   **(5 Hours)**

Time and work -   Time and distance - Problems on trains.
Chapters (15,17,18)

Unit V   **(5 Hours)**

Simple interest – Compound interest – True discount.
Chapters (21,22,25)

Book for Study

Objective Arithmetic – R.S. Aggarwal, S.Chand & Company LTD, Reprint 2009.

Books for Reference

1.Quick Arithmetic -Ashish Aggarwal, Sultan Chand & Company Ltd, Second
 edition 2007.

2.Quantitative Aptitude for Competitive Examinations, Abhijit Guha,
 Tata McGraw –Hill Publishing Company Ltd, Third edition.

         Course Designed by : P.JAYALAKSHMI
         Course Reviewed by : P.PADMAVATHI
         Course Checked by   : A.R.THILAGAVATHI

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B.Sc. Mathematics
Semester III
Part IV-Skill Based Course I: Graph Theory- I
INTRODUCTORY CONCEPTS   **315MS1**
[For students admitted from the academic year 2015-2016 onwards]

</div>

Preamble   **35 Hours**

 Skill based learning enables the student to remember more effectively when they can use skills to access, process and express their knowledge. Graph theory is an area of mathematics which finds wide applications in real life. This course provides all the fundamentals required to develop the skills of applications of graph theory in real life.

Unit I   **(7 Hours)**

Graphs: Graphs and Sub graphs – Vertex Degrees – Paths and Cycles.
Chapter 2(Sections 2.1-2.3)

Unit II   **(7Hours)**

Graphs: Regular and bipartite graphs. Eulerian and Hamiltonian Graphs:
Exploring and Travelling.
Chapter 2(Sections 2.4) Chapter 3(Sections 3.1)

Unit III   **(7 Hours)**

Eulerian and Hamiltonian Graphs: Eulerian Graphs-Hamiltonian Graphs.
Chapter 3(Sections 3.2, 3.3)

Unit IV   **(7 Hours)**

Digraphs: Digraphs and Sub digraphs- Vertex Degrees- Paths and Cycles.
Chapter 4(Sections 4.1-4.3)

Unit V   **(7 Hours)**

Matrix Representations: Adjacency Matrices- Walks in graphs and Digraphs- Incidence Matrices.

Chapter 5(Sections 5.1-5.3)

* **Proof of the theorems are not included.**

Book for Study

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer- First Indian Reprint 2007

Books for Reference

1. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi, Tenth Reprint 2001.
2. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
4. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

                              Course Designed by   : N.JEYANTHI
                                Course Reviewed by   : N.RAJESWARI
                                Course Checked by   : A.R.THILAGAVATHI

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B.Sc. Mathematics - Semester IV
Part III–Allied IV -MATHEMATICAL STATISTICS   415AM4
[For students admitted from the academic year 2015-2016 onwards]

</div>

Preamble   **75 Hours**

Mathematical Statistics is widely employed as a highly valuable tool in the analysis of problems in natural, physical and social sciences.

The topics included in the syllabus help the students

- to know about the random variables and their different distributions
- to understand about the characteristics of distributions
- to determine different sampling distributions

Unit I   **(15   Hours)**

Random variables: Function of a random variable – Two dimensional random variable –Definitions- Marginal probability distribution – Conditional probability distribution – Independent random variable.

Chapter 2(Pages 2.13 - 2.35)

Unit II   **(15 Hours)**

Variance: Tchebechev's Inequality. Moments and Moment Generating Function. Conditional Expectation.

Chapter 4(Pages 4.21 – 4.26), Chapter 5 and Chapter 7

Unit III   **(15 Hours)**

Correlation.

Chapter 8(Pages 8.1-8.61)

Unit IV   **(15 Hours)**

Normal Distribution. Uniform Distribution. Exponential Distribution. Gamma Distribution. Beta Distribution.

Chapter 16, 17,18,19,20

Unit V   **(15 Hours)**
   Sampling Distribution - Chi Square, t, F Distribution.
   Chapter 22.
Book for Study
   P.R. Vittal, Mathematical Statistics, Margham Publications, First Edition, 2010.
Books for Reference
   1. S.C. Gupta and V.K.Kapoor, Fundamentals of Mathematical statistics, Sultan
       Chand & Company, Eleventh Edition, 2002.
   2. Robert V.Hogg & Allen T. Craig, Introduction to Mathematical statistics,
       Fifth Edition, Pearson Education.
                    Course Designed by : V.PANKAJAM
                    Course Reviewed by : A.ANIS FATHIMA
                    Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester IV
Part IV-Skill Based Course II: GRAPH THEORY-II
PATHS AND TREES   415MS2
[For students admitted from the academic year 2015-2016 onwards]
Preamble   **35 Hours**
 This being the second course in skill based learning provides the students with
 thinking skills and active learning at the same time as knowledge is acquired. It
 also provides a platform to learn the skill of analyzing the real world problems.
Unit I   **(7 Hours)**
    Tree Structures: Mathematical Properties of Trees – Spanning Trees – Rooted Trees.
    Chapter 6(Sections 6.1 – 6.3)
Unit II   **(7 Hours)**
    Counting Trees : Counting Labeled Trees – Counting Binary Trees.
    Chapter 7(Sections 7.1, 7.2)
Unit III   **(7 Hours)**
    Greedy Algorithms: Minimum Connector Problem – Travelling Salesman
    Problem.
    Chapter 8(Sections 8.1, 8.2)
Unit IV   **(7 Hours)**
    Path Algorithms: Fleury's Algorithm – Shortest Path Algorithm.
    Chapter 9(Sections 9.1, 9.2)
Unit V   **(7 Hours)**
    Paths and Connectivity: Connected Graphs and Digraphs – Menger's Theorem
    for Graphs-Some analogues of Menger's theorem.
    Chapter 10(Sections 10.1-10.3)
    * **Proof of the theorems are not included.**
Book for Study
    Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin
    J.Wilson, Springer- First Indian Reprint 2007.
Books for Reference
   1. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.

2. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
4. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2006.

Course Designed by   : N.JEYANTHI
Course Reviewed by : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics - Semester V
Part III -Elective I – PROGRAMMING IN C   515ME1
(Theory and Practical)
[For students admitted from the academic year 2015 – 2016 onwards]

Preamble   **45 Hours**

The study of Programming Languages has inevitably become a part and parcel of life. The Programming Language C finds a wide variety of applications in the development of software. This course is designed
- To encourage economy of expression in its application areas
- To provide the students with all the fundamental concepts of the C language.
- To improve the logical thinking while developing programs.

Unit I   **(9Hours)**

Constants, Variables and Data types: Introduction – Character set – C tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Declaration of storage class – Assigning values to variables – Defining symbolic constants – Declaring a variable as constant – Declaring a variable as Volatile. Operators and Expressions: Introduction – Arithmetic operators – Relational operators – Logical operators – Assignment operators– Increment and decrement operators – Conditional operator – Bitwise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of Arithmetic operators – Some computational problems – Type conversions in expressions – Operator precedence and associativity – Mathematical functions.
Chapter 2(Sections 2.1-2.13) ,Chapter 3(Sections 3.1-3.16)

Unit II   **(9 Hours)**

Managing Input and Output operations : Introduction – Reading a Character – Writing a Character – Formatted Input – Formatted Output. Decision making and Branching: Introduction – Decision making with IF statement – Simple IF statement – The IF…ELSE statement – Nesting of IF…ELSE statements – The ELSE IF ladder – The Switch statement – The ?: operator – The GOTO statement.
Chapter 4(Sections 4.1-4.5),Chapter 5(Sections 5.1-5.9)

Unit III   **(9 Hours)**

Decision making and looping : Introduction – The WHILE statement– The DO statement – The FOR statement – Jumps in loops. Arrays: Introduction – One- dimensional arrays – Declaration ofOne- dimensional arrays –Initialization of One- dimensional arrays – Two- dimensional arrays – Initializing Two- dimensional arrays – Multi - dimensional arrays.
Chapter 6(Sections 6.1-6.5) Chapter 7(Sections 7.1-7.7)

Unit IV (9 Hours)

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – Arithmetic operations on characters –Putting strings together – Comparison of two strings – String handling functions. User-Defined functions : Introduction – Need for user defined functions – A multi- function program – Elements of user defined functions – Definition of functions – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Functions that return multiple values.

Chapter 8(Sections 8.1-8.8) ,Chapter 9(Sections 9.1-9.14)

Unit V (9 Hours)

User – Defined functions : Nesting of functions – Recursion – Passing arrays to functions – Passing strings to functions – The scope, visibility and lifetime of variables.Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Accessing Structure members – Structure Initialization – Copying and Comparing Structure variables - Operations on Individual members - Arrays of Structures – Arrays within Structures – Structures within Structures – Structures and Functions – Unions.

Chapter 9(Sections 9.15-9.19) , Chapter 10(Sections 10.1-10.12)

Book for Study

E.Balagurusamy, Programming in ANSI 'C', McGraw Hill Education Private Limited, Sixth Edition,Fifth reprint 2013.

Books for Reference

3. Henry Mullish and Herbert L. Cooper, The Spirit of 'C' – An Introduction to modern Programming, Jaico publishing house 2006.
4. Harvey Deitel & Paul J.Deitel,C:How to program,Pearson Education Inc, 6th Edition 2010.

e - resource

Spoken Tutorial Project (Programming with C) as e-Resource for Learning -IIT, Mumbai under National Mission on Education through ICT, MHRD, Govt. of India.

List of Programs (20 Hours)

1. Finding sum, average, standard deviation for a given set of numbers.
2. Printing Fibonacci series.
3. Prime number checking.
4. Finding roots of a Quadratic Equation.
5. Finding the product of two matrices.
6. Finding the factorial of a number using recursion.
7. Finding whether a string is PALINDROME or not.
8. Arranging strings in alphabetical order.
9. Counting tabs, number of lines, characters and blank spaces in a given text.
10. Reading and Printing personal information using structures.

Course Designed by : P.PADMAVATHI
Course Reviewed by : N.RAJESWARI
Course Checked by : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester V
Part IV-Skill Based Course III: Graph Theory - III
PLANAR GRAPHS AND COLOURING OF GRAPHS   515MS3
[For students admitted from the academic year 2015-2016 onwards]

Preamble   **35 Hours**

This course provides opportunities for skills development including team work,   independent enquiry, self-evaluation, problem solving and critical/creative   thinking. The case studies enable the students to visualize and comprehend the practical applications and to build their own models depicting graph theory
applications.

Unit I   **(7 Hours)**
   Planarity: Planar graphs – Euler's formula
   Chapter 11(Sections 11.1,11.2)

Unit II   **(7 Hours)**
   Planarity: Cycle Method for Planarity Testing – Kuratowski's Theorem – Duality.
   Chapter 11(Sections 11.3-11.5)

Unit III   **(7 Hours)**
   Vertex Colourings and Decompositions: Vertex Colourings – Algorithm for
   Vertex Colouring – Vertex Decompositions.
   Chapter 12(Sections 12.1-12.3)

Unit IV   **(7 Hours)**
   Edge Colourings and Decompositions : Edge Colourings – Algorithm for Edge
   Colouring Edge Decompositions.
   Chapter 13(Sections 13.1-13.3)

Unit V   **(7 Hours)**
   Case Studies : Four Cubes Problem – Knight's Tour Problem – Gray Codes – Rotating
   Drum Problem – Ranking in Tournaments – Interval Graphs.
   Chapter 2 (Section 2.5), Chapter 3 (Section 3.4), Chapter 4 (Section 4.5)
   Chapter 5 (Section 5.4) (Specified case Studies only)
   *Proof of the theorems are not included.

Book for Study
   Graphs And Applications – An Introductory Approach, Joan M.Aldous and
   Robin J.Wilson, Springer – First Indian Reprint 2007.

Books for Reference
   5. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.
   6. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
   7. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
   8. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

                    Course Designed by   : N.JEYANTHI
                     Course Reviewed by   : N.RAJESWARI
                     Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics - Semester VI
Elective II – OPERATIONS RESEARCH   615ME2
[For students admitted from the academic year 2015-2016 onwards]

Preamble   **65 Hours**

Operations Research seeks the determination of the best course of action of a
decision problem under the restriction of limited resources.
The prime objectives for introducing this course are:
- To give practical training in converting a managerial decision making problem to a linear programming problem.
- To gain knowledge on techniques for solving linear programming problem.
- To develop logical reasoning in sequencing in a network to trace the shortest route.
- To develop knowledge in basic techniques to deal with inventory and replacement of equipments.

Unit I   **(13 Hours)**

Linear Programming Problem: Graphical solution and Extension: Introduction –
Graphical solution method– Some exceptional cases – General linear programming problem – Canonical and standard forms of L.P.P.
Linear programming- Simplex method: Introduction – Fundamental properties of solutions – The computational procedure – Use of artificial variables.
Chapter 3 (Sections 3.1 – 3.5),Chapter 4 (Sections 4.1 – 4.4)

Unit II   **(13 Hours)**

Duality in Linear Programming: Introduction – General Primal – Dual pair – Formulating a dual problem – Primal – Dual pair in matrix form – Duality and Simplex method – Dual Simplex method. Transportation Problem: Introduction – LP formulation of the transportation problem - Existence of Solution in T.P - Duality in transportation problem - The transportation table - Loops in transportation tables - Triangular basis in a T.P - Solution of a transportation problem - Finding an initial basic feasible solution – Test for optimality – Economic Interpretation of u_j's and v_j's - Degeneracy in transportation problem – Transportation algorithm [MODI method] Assignment Problem: Introduction – Mathematical formulation of the problem – Solution Methods of Assignment Problem.
Chapter 5 (Sections 5.1- 5.4, 5.7, 5.9), Chapter 10 (Sections 10.1 – 10.13)
Chapter 11 (Sections 11.1 – 11.3)

Unit III   **(13 Hours)**

Games and Strategies: Introduction – Two-person zero-sum games – Some basic
terms – The Maximin–Minimax principle – Games without saddle points – Mixed strategies – Graphic solution of 2 x n and m x 2 games .
Chapter 17 (Sections 17.1 – 17.6)

Unit IV   **(13 Hours)**

Inventory Control I: Introduction – Types of Inventories – Reasons for carrying
Inventories - The inventory decisions – Objectives of Scientific Inventory Control
- Costs associated with inventories – Factors affecting inventory control – An
Inventory Control Problem – The Concept of EOQ - Deterministic inventory
problems with No shortages – Deterministic inventory problems with shortages –
Problems of EOQ with Price Breaks.
Chapter 19 (Sections 19.1 – 19.12)

Unit V   **(13 Hours)**

Network Scheduling by PERT/CPM: Introduction- Network: Basic Components - Logical Sequencing - Rules of Network Construction - Concurrent Activities - Critical path analysis - Probability considerations in PERT - Distinction between PERT and CPM.
Chapter 25 (Sections 25.1 - 25.8)

Note: Statement of the theorems and algorithms are included.

Book for study

Kanti Swarup, P.K Gupta, Man Mohan, Operations Research, Sultan Chand & Sons, New Delhi, Fifteenth Edition, Reprint 2010.

Books for Reference

3. J.K.Sharma, Operations Research: Theory and Applications, MacMillan India Ltd, Second Edition, 2003.
4. Hamdy A. Taha, Operations Research: An Introduction, Macmillan Publishing Company, Eighth Edition, 2008.

Course Designed by : P.JAYALAKSHMI
Course Reviewed by : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester VI
Elective III - COMPUTATIONAL MATHEMATICS LABORATORY
(Theory and Practical)   615ME3
[For students admitted from the academic year 2015-2016 onwards]

Preamble   **45 Hours**

MATLAB is a scientific and technical computing software packages which is versatile and used widely by Scientists, Engineers and Mathematicians.
This course is designed
- to aid the students in solving problems with ease
- to sharpen the skills of computing

Unit I   **(9 Hours)**

Introduction to MATLAB: Introduction - Starting and ending MATLAB Session - Matlab Environment - Help Feature -Types of files -Platform – Search Path – Some useful MATLAB Commands – Summary. Constants, Variables and Expressions: Introduction - Character set - Data types – Constants and Variables –Operators – Hierarchy of Operations – Built-in Functions- Assignment Statement – Illustrative Programs – Summary. Vectors and Matrices: Introduction - Scalars and Vectors –Entering data in matrices – Line continuation- Matrix subscripts/indices.
Chapter 1(Sections 1.1 – 1.9), Chapter 2(Sections 2.1 – 2.10),
Chapter 3(Sections 3.1 – 3.5)

Unit II   **(9 Hours)**

Vectors and Matrices: Multi-dimensional matrices and arrays –Matrix manipulations – Generation of special matrices – Some useful commands related to matrices – Matrix and Array operations - Functions with array inputs – Structure arrays –Cell arrays – Creating Some useful commands of structures and cells – Summary. Polynomials: Introduction – Entering a Polynomial – Polynomial evaluation – Roots of a Polynomial – Polynomial

addition and subtraction – Polynomial multiplication – Polynomial division – Formulation of Polynomial equation – Characteristic Polynomial of a matrix – Polynomial differentiation – Polynomial integration – Polynomial curve fitting – Evaluation of Polynomial with matrix arguments – Summary.

Chapter 3(Sections 3.6 – 3.15), Chapter 4(Sections 4.1 – 4.14)

Unit III   **(9 Hours)**

Input-Output statements: Introduction – Data input –Interactive inputs - Reading/Storing file data - Output commands– Low-level input-output functions –Summary. MATLAB Graphics: Introduction – Two-dimensional plots –Multiple plots –Style options – legend command – subplots – specialized two-dimensional plots .

Chapter 5(Sections 5.1 - 5.7) Chapter 6(Sections 6.1 – 6.7)

Unit IV   **(9 Hours)**

MATLAB Graphics: Three-dimensional plots - Summary. Control structures:
Introduction – Loops -Branches control structures -Summary. Writing programs
and functions: Introduction – MATLAB Editor – Opening the editor – Editor
main menu – Tool bar – MATLAB programming– Function sub programs.
Chapter 6 (Sections 6.8, 6.9), Chapter 7 (Sections7.1 – 7.4),
Chapter 8 (Sections 8.1 – 8.4)

Unit V   **(9 Hours)**

Writing Programs and Functions: Some Illustrative Examples – Types of Functions – Function Handles –Errors and Warnings - MATLAB Debugger. Ordinary Differential Equations and Symbolic Mathematics.

Chapter 8(Sections 8.5 – 8.10), Chapter 9(Sections 9.1 - 9.4)

Book for Study

Raj Kumar Bansal, Ashok Kumar Goel, Manoj Kumar Sharma, MATLAB and its applications in Engineering, Version 7.5, Pearson Education, 2009.

Books for Reference

1. **Duane Hanselman, Bruce Littlefield Mastering MATLAB 7, DorlingKindersly (India Pvt Ltd, Pearson , Seventh impression 2011,**
2. RudraPratap , Getting started with MATLAB 7 – A Quick introduction for Scientists and Engineers.Oxford university press.Ed. 2006.

List of Programs   (**20 Hours**)

11. Solving a system of linear Equations.
12. Arithmetic operations on arrays.
13. Drawing 2D and 3D plots.
14. Finding derivatives and integrals of polynomials.
15. Creating a structure for an employee data base containing employee code, name, designation and salary.
16. A function subprogram to calculate the compound interest, given the initial amount, time period of deposit, rate of interest and time of compounding.
17. Program to process the applications for admission to an engineering college and to list the candidates eligible for admission based on the following conditions:
    - (a) Marks in Maths ≥ 60
    - (b) Marks in Physics ≥ 55
    - (c) Marks in Chemistry ≥ 55

(d) Total marks ≥ 180

18. Program to reverse the digits of a number having minimum three digits.
19. Program to solve first order Ordinary Differential Equations.
20. Program to solve set of Simultaneous Differential Equations.

        Course Designed by   : N.RAJESWARI
        Course Reviewed by   : S.KALAISELVI
        Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester VI
Part IV-Skill Based Course IV - MODEL PRESENTATION   615MS4
[For students admitted from the academic year 2015-2016 onwards]

Preamble

This Course is unique in the sense that it enables the students to understand the theoretical concepts and to apply them to construct models in their area of study. This course is carried out as group project, thus enabling the student to learn to work as a team.

B.Sc. Mathematics
Semester wise Distribution with Scheme of Examination
[For the students admitted during the academic year 2014-2015 & onwards]

Sem	Course	Credits	Duration of Exam(ESE) (Hrs)	Marks		Total
				CIA	ESE	
I	Part I: Language I	3	3	25	75	100
	Part II: English I	3	3	25	75	100
	Part III:					
	Core I: Algebra and Calculus	4	3	25	75	100
	Core II: Differential Equations and Laplace Transforms	4	3	25	75	100
	Allied I : Physics I	4	3	15	60	75
	Allied Physics Practical	-	-	-	-	-
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I: Language II	3	3	25	75	100
	Part II: English II	3	3	25	75	100
	Part III:					
	Core III: Analytical Geometry	4	3	25	75	100
	Core IV: Numerical Methods	4	3	25	75	100
	Allied II: Physics II	4	3	15	60	75
	Allied Physics Practical	2	3	20	30	50
	Part IV: Value Education	2	-	50	-	50
	Advanced Learner's Course I (ALC I): Combinatorics	3*	3	-	100	100
III	Part I: Language III	3	3	25	75	100
	Part II: English III	3	3	25	75	100
	Part III:					
	Core V: Trigonometry, Vector Calculus and Fourier Series	4	3	25	75	100
	Core VI: Statics	4	3	25	75	100
	Allied III: Principles of Accountancy	5	3	25	75	100
	Part IV: Non Major Elective	2	-	75	-	75
	Skill Based Course: Graph Theory- I	3	-	100	-	100

Sem	Course	Credits	Duration of Exam(ESE) Hrs	Marks		Total
				CIA	ESE	
IV	Part I: Language IV	3	3	25	75	100
	Part II: English IV	3	3	25	75	100
	Part III:					
	Core VII: Operations Research	4	3	25	75	100
	Core VIII: Dynamics	4	3	25	75	100
	Allied IV: Mathematical Statistics	5	3	25	75	100
	Part IV: General Awareness	2	-	75	-	75
	Skill Based Course: Graph Theory- II	3	-	100	-	100
	ALC II: Statistical Quality Control	3*	3	-	100	100
	Part V: Extension Activity	1	-	50	-	50
V	Part III:					
	Core IX: Real Analysis I	4	3	25	75	100
	Core X: Abstract Algebra	4	3	25	75	100
	Core XI: Discrete Mathematics	4	3	25	75	100
	Core XII: Fuzzy Logic and Intuitionistic fuzzy sets	4	3	25	75	100
	Elective I: Programming in C	3	3	25	75	100
	Elective I : Programming in C- Practical	2	3	20	30	50
	Part IV: Skill Based Course : Graph Theory- III	3	-	100	-	100
VI	Part III:					
	Core XIII: Real Analysis II	4	3	25	75	100
	Core XIV: Complex Analysis	4	3	25	75	100
	Core XV: Linear Algebra	4	3	25	75	100
	Elective II- Mathematical Cryptography	5	3	25	75	100
	Elective III: Computational Mathematics Laboratory	3	3	25	75	100
	Elective III: Computational Mathematics Laboratory - Practical	2	3	20	30	50
	Part IV: Skill Based Course IV: Model Presentation (Group Project)	3	-	100	-	100
	ALC III: Mathematics in Insurance	3*	3	-	100	100

Total Credits   140

B.Sc. Mathematics/ Mathematics (CA)
Semester I

Part III – Core II – DIFFERENTIAL EQUATIONS AND

LAPLACE TRANSFORMS 114M02/114D02
[For students admitted during the academic year 2014 – 2015 and onwards]
65 Hours

Preamble

This course is introduced in the curriculum since
- Differential equations play an important role in physical system of science, engineering and social sciences
- The Laplace transforms are widely adopted by scientists and engineers as an efficient tool for solving linear differential equations.

The topics included in the course help the students
- To interpret the physical systems in terms of differential equation
- To master the various methods of solving a variety of differential equations.

Module I   **(13 Hours)**

Differential Equations: Differential equations of the first order: Equations of the first order, but of higher degree: Equations solvable for dy /dx- Equations solvable for y-Equations solvable for x (particular cases of 5.2) - Clairaut's form- *Extended form of Clairaut's Equations - Equations that do not contain x explicity-Equations that do not contain y explicity-Equations homogeneous in x and y.
Chapter 1 (Sections 5.1-5.5,6.1,6.2,7.1-7.3)

Module II   **(13 Hours)**

Linear Differential Equations with constant coefficients:Solving $(d^n y/ dx^n) + a_1 (d^{n-1}y/ dx^{n-1})+ a_2 (d^{n-2}y / dx^{n-2}) +…+ a_n y = X$,when X is of the form $e^{ax}V$, V is function of x.-Linear differential equations with variable coefficients-*Equations reducible to the linear homogeneous equation.
Chapter 2 (Sections 4(d), 8, 9)

Module III   **(13 Hours)**

Simultaneous Differential Equations: Simultaneous equations of the first order and first degree - Solutions of $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ - Methods for solving $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ -* Simultaneous linear differential equations with constant coefficients.
Chapter 3 (Sections 1-4, 6).

Module IV   **(13 Hours)**

Partial Differential Equations: Derivation of Partial Differential Equations- Different integrals of Partial differential equations (definition only) – Standard types of first order equations - *Lagrange's equation.
Chapter 4 (Sections 1-3, 5, 6)

Module V   **(13 Hours)**

The Laplace Transforms: Definition-Results from the definition-Laplace transforms of periodic functions – Some general theorems - *Evaluation of certain integrals using Laplace

<u>transforms</u>- The inverse Laplace transforms-Solving second order differential equations with constant coefficients using Laplace transforms-Solving systems of differential equations using Laplace transforms.
Chapter 5 (Sections 1 – 9)

Book for study
S.Narayanan and T.K.Manicavachagom Pillay,Calculus (Major) VolumeIII,
S.Viswanathan(Printers and Publishers) Pvt.Ltd,Reprint 2012.

Books for Reference
5. Ervin Kreyszig, Advanced Engineering Mathematics, Wiley Eastern Ltd.,
   8th edition, 2006.
6. George .F.Simmons, Differential Equations with applications and Historical
   notes, Mc Graw Hill,Inc, 2nd Edition 1991.

   Course Designed by : B.KALAISELVI
   Course Reviewed by : P.JAYALAKSHMI
   Course Checked by :A.R.THILAGAVATHI

B.Sc Mathematics
Semester II
Part III-Core IV - NUMERICAL METHODS   214M04
(For students admitted during the academic year 2014-2015 and onwards)
65 Hours

Preamble
The study of Numerical Methods has become very important due to the wide spread use of these methods by scientists and engineers.
This course is designed in such a way that
- it develops the problem solving skills of the students .
- it provides confidence and motivation to solve problems with higher degree of complexity.

Module I   **(13 Hours)**
The solution of Numerical algebraic and Transcendental equations: The Bisection method –

Regula-Falsi method – Newton-Raphson method.

Solution of Simultaneous Linear Algebraic Equations: Introduction – Gauss-Elimination Method – Gauss-Jordan elimination method – Iterative methods – Gauss- Jacobi method – *<u>Gauss-Seidel method of iteration</u>.
Chapter 3 (Sections 3.1.1,3.3,3.4) Chapter 4 (Sections 4.1,4.2,4.2.1,4.7-4.9)

Module II   **(13 Hours)**
Finite differences:First difference-Express any value of y in term of y_n and the backward differences of y_n – Differences of a polynomial –*<u>Factorial polynomial </u>– Error propagation in a difference table.Interpolation (for Equal Intervals): Introduction – Linear Interpolation or method of proportional parts – Gregory-Newton forward Interpolation formula – Gregory-Newton backward Interpolation Formula.
Chapter 5 (Sections 5.1-5.5) Chapter 6 (Sections 6.1-6.3)

Module III   **(13 Hours)**
Central Difference Interpolation formulae (For Equal Intervals):Central differences and central difference table-Central difference interpolation formula-Gauss's forward

interpolation formula – Gauss's backward interpolation formula – Stirling's formula – *<u>Bessel's formula.</u>
Chapter 7 (Sections 7.1-7.6)

Module IV (13 Hours)

Interpolation With Unequal Intervals: Introduction – Divided differences – Properties of divided differences – Relation between divided differences and forward differences – Theorem: Newton's interpolation formula for unequal intervals – Deduction: Deduce Gregory Newton interpolation forward formula for equal intervals – *<u>Lagrange's interpolation formula (for unequal intervals).</u>
Chapter 8 (Sections 8.1-8.7)

Module V (13 Hours)

Numerical differentiation and Integration: Introduction – Newton's forward difference formula to get the derivative – Newton's backward difference formula to compute the derivative – Derivative using Stirling's formula – Caution – To find maxima and minima of the function given the tabular values. Numerical Integration: Introduction – A general Quadrature formula for equidistant ordinates – *<u>Trapezoidal rule</u> – *<u>Simpson's one-third rule</u> – *<u>Simpson's three-eighths rule</u>.
Chapter 9 (Sections 9.1-9.9, 9.13 and 9.14).

Book for study

Dr.P.Kandasamy,Dr. K.Thilagavathy,Dr. K.Gunavathi, Numerical Methods, S.Chand & Company limited,Third Revised Edition Reprint(2010).

Books for Reference

1. Dr.M.K.Venkataraman, Numerical Methods in Science and Engineering, National Publishing company, fifth edition,1995.
2. H.C.Saxena, Finite differences and Numerical Analysis, S.Chand & Company limited,New Delhi,2001.

Course Designed by : B.KALAISELVI
Course Reviewed by : P.JAYALAKSHMI
Course Checked by : A.R.THILAGAVATHI

B.Sc. Mathematics / Mathematics (CA)
Semester III

Part III – Core V/VI– TRIGONOMETRY, VECTOR CALCULUS AND

FOURIER SERIES 314M05 / 314D06

(For students admitted during the academic year 2014– 2015 and onwards)
52 Hours

Preamble

This course provides the students
* to gain knowledge about expansions of trigonometric functions
* to learn about vector treatment which will help them to deal the analytical geometry problems using vector method
* to apply Fourier concepts in the field of image processing

Module I **(10 Hours)**

Expansions of $\sin^n\theta$, $\cos^n\theta$: Expansions of powers of $\sin\theta$ and $\cos\theta$ - Expansion of $\cos^n\theta$- Expansion of $\sin^n\theta$- Expansion of $\cos^m\theta\sin^n\theta$ - Expansions of $\cos n\theta$, $\sin n\theta$, $\tan n\theta$: *Expansions of $\cos n\theta$ and $\sin n\theta$ - Steps to expand $\cos n\theta$, $\sin n\theta$ - Expansion of $\tan n\theta$ - Expansion of $\tan(\theta_1+\theta_2+ \ldots\ldots+\theta_n)$ - Application of expansion of $\tan n\theta$ - Expansions of $\sin x$, $\cos x$, $\tan x$ in x -Series for $\cos x$ in x - Series for $\sin x$ in x- Series for $\tan x$ as far as the term x^5. Book 1: Chapter 2(Sections 2.1 – 2.1.3), Chapter 3(Sections 3.1-3.4.3)

Module II **(10 Hours)**

Hyperbolic functions: Hyperbolic functions - Relations between circular and hyperbolic functions- *Formulas in hyperbolic functions- Expansions of $\cosh^4\theta$ and $\sinh^4\theta$ - Period of a function- Real and imaginary parts of circular functions - $\sin(\theta+i\phi)$, $\cos(\theta+i\phi)$ - $\tan(\theta+i\phi)$, $\cot(\theta+i\phi)$ - $\csc(\theta+i\phi)$, $\sec(\theta+i\phi)$ - Real and imaginary parts of hyperbolic functions - Inverse hyperbolic functions and $\tan^{-1}(x + iy)$ - Implications of the relations. Logarithmic functions: Inverse function of exponential function - Values of $\text{Log}(u + iv)$ - Complex index. Book 1: Chapter 4(Sections 4.1 – 4.7), Chapter 5(Sections 5.1 – 5.3).

Module III **(10 Hours)** Differentiation of vectors: The scalar and vector fields- Derivative of a vector- Derivative of a function of a function- *Derivative of a dot and cross product of two vectors. Gradient, Divergence and Curl: The vector differential operator DEL(∇)-The gradient-The divergence- The curl- Directional derivative- Level surface- Formulae involving ∇ - Second order Differential Operators.

Book 2: Chapters 1, 2.

Module IV **(11 Hours)**

Integration of Vectors: The line integral- *Surface integral- Green's theorem in the plane- Gauss's Divergence Theorem- Stoke's theorem- Further worked examples.

Book 2: Chapter 3.

Module V **(11 Hours)**

Fourier series: Fourier series- Even and odd functions -Half-range series: *Half-range sine series- Half-range cosine series.

Book 2: Fourier Series and its Applications: Chapter 1: Pages 96-145.

Books for Study

   Book 1: For Modules I & II: Trigonometry.Duraipandian,Kayalal Pachaiyappa, Muhil Publishers, Revised Edition 2009.

   Book 2: For Modules III,IV & V : Mathematics for B.Sc. Branch-I,Volume – IV, P.Kandasamy, K.Thilagavathi, S.Chand & Company Limited, First Edition 2005.

Books for Reference

1. Trigonometry, T.K.Manickavasagam Pillai and S.Narayanan,S.Viswanathan (Printers and publishers), Pvt., Ltd., 2010.
2. Vector Analysis by P.Duraipandian and Kayalal Pachaiyappa, Muhil Publishers, Revised Edition 2009.
3. Calculus (Volume III), S.Narayanan, T.K.Manickavasagam Pillai, S.Viswanathan (printers and publishers), Pvt., Ltd., 2010.

   Course Designed by : P.JAYALAKSHMI
   Course Reviewed by : S.KALAISELVI
   Course Checked by   : A.R.THILAGAVATHI

Part IV –Non – Major Elective- BASIC MATHEMATICS
FOR COMPETITIVE EXAMINATIONS   314NMC
[For students admitted during the academic year 2014-2015 & onwards]

25 Hours

Preamble

The syllabus of this course has been framed to cover all topics in quantitative aptitude required for competitive examinations like Bank P.O., and Railways etc.

The syllabus helps the students

- to equip them with as much knowledge on all topics as is desirable from the point of view of brilliant success in the competitive examinations.
- to familiarize with different types of tests conducted by various examining bodies
- to sharpen the basic knowledge in mathematics and to increase the speed of its application through regular practice.

Module I   **(5 Hours)**

Decimal fractions – Simplification – Number series.

Chapters(3,4,39)

Module II   **(5 Hours)**

Problems on Ages – Percentage – Profit and loss.

Chapters(8,10,11)

Module III   **(5 Hours)**

Ratio and proportion – Partnership

Chapters(12,13)

Module IV   **(5 Hours)**

Time and work -   Time and distance - Problems on trains.

Chapters (15,17,18)

Module V   **(5 Hours)**

Simple interest – Compound interest – True discount.

Chapters (21,22,25)

Book for Study

Objective Arithmetic – R.S. Aggarwal, S.Chand & Company LTD, Reprint 2009.

Books for Reference

1. Quick Arithmetic -Ashish Aggarwal, Sultan Chand &Company Ltd,Second edition 2007.
2. Quantitative Aptitude for Competitive examinations, Abhijit Guha, Tata McGraw –Hill Publishing Company Ltd, Third edition.

Course Designed by : P.JAYALAKSHMI
Course Reviewed by : P.PADMAVATHI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/Mathematics (CA)
Semester III
Part IV-Skill Based Course : Graph Theory- I
INTRODUCTORY CONCEPTS   314MS1/314DS1
(For students admitted during the academic year 2014-2015 and onwards)
38 Hours

Preamble:
Skill based learning enables the student to remember more effectively when they can use skills to access, process and express their knowledge. Graph theory is an area of mathematics which finds wide applications in real life. This course provides all the fundamentals required to develop the skills of applications of graph theory in real life.

Module I   **(8 Hours)**
Graphs: Graphs and Sub graphs – Vertex Degrees – Paths and Cycles.
Chapter 2(Sections 2.1-2.3)

Module II   **(7Hours)**
Graphs: Regular and bipartite graphs. Eulerian and Hamiltonian Graphs: Exploring and Travelling.
Chapter 2(Sections 2.4) Chapter 3(Sections 3.1)

Module III   **(8 Hours)**
Eulerian and Hamiltonian Graphs: Eulerian Graphs-Hamiltonian Graphs.
Chapter 3(Sections 3.2, 3.3)

Module IV   **(7 Hours)**
Digraphs: Digraphs and Sub digraphs- Vertex Degrees- Paths and Cycles.
Chapter 4(Sections 4.1-4.3)

Module V   **(8 Hours)**
Matrix Representations: Adjacency Matrices- Walks in graphs and Digraphs- Incidence Matrices.
Chapter 5(Sections 5.1-5.3)
* **Proof of the theorems are not included.**

Book for Study
Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer- First Indian Reprint 2007.

Books for Reference
5. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi, Tenth Reprint 2001.
6. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
7. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
8. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

Course Designed by   : N.JEYANTHI
Course Reviewed by   : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/Mathematics (CA)
Semester IV/ Semester II
Part III- Allied IV/II –MATHEMATICAL STATISTICS 412AM4/212AD2
[For students admitted during the academic year 2014-15 and onwards]
75 Hours

Preamble

Mathematical Statistics is widely employed as a highly valuable tool in the analysis of problems in natural, physical and social sciences.

The topics included in the syllabus help the students
- to know about the random variables and their different distributions
- to understand about the characteristics of distributions
- to determine different sampling distributions
- to estimate the population parameters using sample statistics
- to test the hypothesis in order to extend the sample inference to the population.

Module I (15 Hours)

Random variables: Function of a random variable – Two dimensional random variable – Definitions- Marginal probability distribution – Conditional probability distribution – Independent random variables. Variance: Tchebechev's inequality. Moments and Moment Generating Functions. Chapter 2(Pages 2.13 - 2.35) Chapter 4(Pages 4.21 – 4.26) Chapter 5

Module II (15 Hours)

Conditional Expectation. Correlation: Correlation - Sample Correlation
Chapter 7 , Chapter 8(Pages 8.1-8.48)

Module III (15 Hours)

Normal Distribution. Uniform Distribution. Exponential Distribution. Gamma Distribution . *Beta Distribution.
Chapters 16,17,18,19,20

Module IV (15 Hours)

Functions of Random Variables. Sampling Distributions- Chi Square ,t, F Distribution.
Chapters 21, 22.

Module V (15 Hours)

Estimation.
Chapter 23

Book for Study

P.R. Vittal, Mathematical Statistics , Margham Publications, First Edition (2010).

Books for Reference

1. S.C. Gupta and V.K.Kapoor, Fundmentals of Mathematical statistics, Sultan Chand & Company, Eleventh Edition, 2002.
2. Robert V.Hogg & Allen T. Craig, Introduction to Mathematical statistics, Fifth Edition, Pearson Education.

Course Designed by : P.PADMAVATHI
Course Reviewed by : N.JEYANTHI
Course Checked by : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (CA)
Semester IV
Part IV-Skill Based Course : GRAPH THEORY-II
PATHS AND TREES 414MS2/414DS2
(For students admitted during the academic year 2014-2015 and onwards)
                                                                              38 Hours
Preamble:
This being the second course in skill based learning provides the students with thinking skills
and active learning at the same time as knowledge is acquired. It also provides a platform to
learn the skill of analyzing the real world problems.

Module I   **(8 Hours)**
   Tree Structures: Mathematical Properties of Trees – Spanning Trees – Rooted Trees.
   Chapter 6(Sections 6.1 – 6.3)
Module II   **(8 Hours)**
   Counting Trees: Counting Labeled Trees – Counting Binary Trees.
   Chapter 7(Sections 7.1, 7.2)
Module III   **(8 Hours)**
   Greedy Algorithms: Minimum Connector Problem – Travelling Salesman Problem.
   Chapter 8(Sections 8.1, 8.2)
Module IV   **(7 Hours)**
   Path Algorithms: Fleury's Algorithm – Shortest Path Algorithm.
   Chapter 9(Sections 9.1, 9.2)
Module V   **(7 Hours)**
   Paths and Connectivity: Connected Graphs and Digraphs – Menger's Theorem for Graphs-
   Some analogues of Menger's theorem.
   Chapter 10(Sections 10.1-10.3)
   * **Proof of the theorems are not included.**

Book for Study
   Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson,
   Springer- First Indian Reprint 2007.

Books for Reference
   5. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.
   6. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers
      Ltd,Reprint 1995.
   7. Narsingh Deo, Graph Theory with Applications to Engineering and Computer
      Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
   8. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin
      Heidelberg, 2006.

                     Course Designed by   : N.JEYANTHI
                     Course Reviewed by   : N.RAJESWARI
                     Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester V
Part III Elective I – PROGRAMMING IN C   510ME1
(For students admitted during the academic year 2014 – 2015 and onwards)
50 Hours

Preamble:

The study of Programming Languages has inevitably become a part and parcel of life. The Programming Language C finds a wide variety of applications in the development of software. This course is designed

- To encourage economy of expression in its application areas
- To provide the students with all the fundamental concepts of the C language .
- To improve the logical thinking while developing programs.

Module I   (10 Hours)

Constants, Variables and Data types: Introduction – Character set – C tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Declaration of storage class – Assigning values to variables – Defining symbolic constants – Declaring a variable as constant – Declaring a variable as Volatile. Operators and Expressions: Introduction – *Arithmetic operators – *Relational operators – *Logical operators – *Assignment operators – *Increment and decrement operators – *Conditional operator – Bitwise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of Arithmetic operators – Some computational problems – Type conversions in expressions – Operator precedence and associativity – Mathematical functions.
Chapter 2(Sections 2.1-2.13) ,Chapter 3(Sections 3.1-3.16)

Module II   (10 Hours)

Managing Input and Output operations : Introduction – Reading a Character – Writing a Character – Formatted Input – Formatted Output. Decision making and Branching: Introduction – Decision making with IF statement – *Simple IF statement – *The IF…ELSE statement – Nesting of IF…ELSE statements – The ELSE IF ladder – The Switch statement – The ?: operator – The GOTO statement.
Chapter 4(Sections 4.1-4.5),Chapter 5(Sections 5.1-5.9)

Module III   (10 Hours)

Decision making and looping : Introduction – *The WHILE statement – *The DO statement – The FOR statement – Jumps in loops. Arrays: Introduction – One- dimensional arrays – Declaration of One- dimensional arrays –Initialization of One- dimensional arrays – Two- dimensional arrays – Initializing Two- dimensional arrays – Multi - dimensional arrays.
Chapter 6(Sections 6.1-6.5) Chapter 7(Sections 7.1-7.7)

Module IV   (10 Hours)

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – Arithmetic operations on characters –Putting strings together – Comparison of two strings – *String handling functions. User-Defined functions : Introduction – Need for user defined functions – A multi-function program – Elements of user defined functions – Definition of functions – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Functions that return multiple values.
Chapter 8(Sections 8.1-8.8) ,Chapter 9(Sections 9.1-9.14)

Module V (10 Hours)

User – Defined functions : Nesting of functions – Recursion – Passing arrays to functions – Passing strings to functions – The scope, visibility and lifetime of variables. Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Accessing Structure members – Structure Initialization – Copying and Comparing Structure variables - Operations on Individual members - Arrays of Structures – *Arrays within Structures* – Structures within Structures – Structures and Functions – Unions.

Chapter 9(Sections 9.15-9.19) , Chapter 10(Sections 10.1-10.12)

Book for Study

E.Balagurusamy, Programming in ANSI 'C', McGraw Hill Education Private Limited, Sixth Edition,Fifth reprint 2013.

Books for Reference

1. Henry Mullish and Herbert L. Cooper, The Spirit of 'C' – An Introduction to modern Programming, Jaico publishing house 2006.
2. Harvey Deitel & Paul J.Deitel,C:How to program,Pearson Education Inc, 6th Edition 2010.

Part III Elective I – PROGRAMMING IN C - PRACTICAL 510MEP

(For students admitted during the academic year 2014 – 2015 and onwards)

List of Programs (25 Hours)

1. Finding sum, average, standard deviation for a given set of numbers.
2. Printing Fibonacci series.
3. Prime number checking.
4. Finding roots of a Quadratic Equation.
5. Finding the product of two matrices.
6. Finding the factorial of a number using recursion.
7. Finding whether a string is PALINDROME or not.
8. Arranging strings in alphabetical order.
9. Counting tabs, number of lines, characters and blank spaces in a given text.
10. Reading and Printing personal information using structures.

Course Designed by   : P.PADMAVATHI
Course Reviewed by : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (CA)
Semester V
Part IV-Skill Based Course : Graph Theory - III
PLANAR GRAPHS AND COLOURING OF GRAPHS   514MS3/514DS3
(For students admitted during the academic year 2014-2015 and onwards)
38 Hours

Preamble:

This course provides opportunities for skills development including team work, independent enquiry, self-evaluation, problem solving and critical/creative thinking.
The case studies enable the students to visualize and comprehend the practical applications and to build their own models depicting for graph theory applications.

Module I (7 Hours)

Planarity: Planar graphs – Euler's formula

Chapter 11(Sections 11.1,11.2)

Module II **(7 Hours)**

Planarity: Cycle Method for Planarity Testing – Kuratowski's Theorem – Duality.

Chapter 11(Sections 11.3-11.5)

Module III **(8 Hours)**

Vertex Colourings and Decompositions: Vertex Colourings – Algorithm for Vertex Colouring – Vertex Decompositions.

Chapter 12(Sections 12.1-12.3)

Module IV **(8 Hours)**

Edge Colourings and Decompositions : Edge Colourings – Algorithm for Edge Colouring Edge Decompositions.

Chapter 13(Sections 13.1-13.3)

Module V **(8 Hours)**

Case Studies : Four Cubes Problem – Knight's Tour Problem – Gray Codes – Rotating Drum Problem – Ranking in Tournaments – Interval Graphs.

Chapter 2 (Section 2.5), Chapter 3 (Section 3.4), Chapter 4 (Section 4.5)

Chapter 5 (Section 5.4) (Specified case Studies only)

*Proof of the theorems are not included.

Book for Study

Graphs And Applications – An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer – First Indian Reprint 2007.

Books for Reference

9. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.

10. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.

11. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.

12. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

Course Designed by   : N.JEYANTHI
Course Reviewed by   : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (CA)
Semester VI /V
Part III-Elective II - MATHEMATICAL CRYPTOGRAPHY
614ME2 /512DE1

[For candidates admitted during the academic year 2014-2015 and onwards]
75 Hours

Preamble

Information security has gained practical importance due to the rapid growth of electronic communication. Cryptography helps us to solve the problems in information security. The syllabus is framed with two main objectives.

- To make the students understand the significance of number theory in Cryptography and theoretical Computer Science.
- To give them the basic knowledge in Cryptography.

Module I (15 Hours)

An introduction to Cryptography: Simple substitution ciphers - *Divisibility and greatest common divisors - Modular arithmetic - Prime numbers, unique factorization and finite fields - Powers and primitive roots in finite fields - Symmetric and asymmetric ciphers.
Chapter 1 (Sections 1.1-1.5,1.7)

Module II (15 Hours)

Discrete Logarithms and Diffie Hellman: The birth of public key cryptography- The discrete logarithm problem - Diffie Hellman key exchange - The Elgamal public key cryptosystem - A collision algorithm for the DLP - *The Chinese remainder theorem - The Pohlig - Hellman algorithm.
Chapter 2 (Sections 2.1-2.4, 2.7-2.9))

Module III (15 Hours)

Integer factorization and RSA: Euler's formula and roots modulo pq - The RSA public key cryptosystem - Primality testing - Pollard's p-1 factorization algorithm. - *Factorization via difference of squares.
Chapter 3 (Sections 3.1-3.2, 3.4 -3.6)

Module IV (15 Hours)

Integer factorization and RSA:Smooth numbers and sieves - The index calculus and discrete logarithms - Quadratic residues and quadratic reciprocity -*Probabilistic encryption.
Chapter 3(Sections 3.7-3.10)

Module V (15 Hours)

Elliptic curves and Cryptography: Elliptic curves-Elliptic curves over finite fields - The Elliptic curve discrete logarithmic problem - Elliptic curve cryptography - *Lenstra's elliptic curve factorization algorithm.
Chapter 5(Sections 5.1-5.4,5.6)

Note: **Simple problems only.**

Book for Study

Jeffrey Hoffstein, Jill Pipher, Joseph H.Silverman, "An introduction to Mathematical Cryptography", Springer Undergraduate texts in mathematics, First Indian reprint 2011.

Books for Reference

1. Neal Koblitz, "A Course in Number Theory and Cryptography" – Graduate texts in Mathematics Springer – Second Edition, 2002 – Reprint.
2. Ivan Niven and Herbert S.Zuckerman, "An Introduction to Theory of Numbers "Wiley Eastern Ltd.,third Edition,1991 - Reprint.
3. Hans Delfs and Helmut knebl, "Introduction to Cryptography Principles and Applications" – Springer 2002.
4. N.Harini, C.K.Shyamala, Dr.T.R.Padmanabhan, " Cryptography and Security" – Wiley-India, Iˢᵗ Edition 2011.

      Course Designed by : R.ANGEL JOY
       Course Reviewed by : S.KALAISELVI
      Course Checked by : A.R.THILAGAVATHI

B.Sc. Mathematics - Semester VI
Elective III - COMPUTATIONAL MATHEMATICS LABORATORY
614ME3
[For candidates admitted during the academic year 2014-2015 and onwards]
50 Hours

Preamble

MATLAB is a scientific and technical computing software packages which is versatile and used widely by Scientists, Engineers and Mathematicians.

This course is designed

- to aid the students in solving problems with ease
- to sharpen the skills of computing

Module I   **(10 Hours)**

Introduction to MATLAB: Introduction - Starting and ending MATLAB Session - Matlab Environment - Help Feature -*Types of files -Platform – Search Path – Some useful MATLAB Commands – Summary. Constants, Variables and Expressions: Introduction - Character set - Data types – Constants and Variables –Operators – Hierarchy of Operations – Built-in Functions- Assignment Statement – Illustrative Programs – Summary. Vectors and Matrices: Introduction - Scalars and Vectors –Entering data in matrices – Line continuation-Matrix subscripts/indices. Chapter 1(Sections 1.1 – 1.9), Chapter 2(Sections 2.1 – 2.10), Chapter 3(Sections 3.1 – 3.5)

Module II   **(10 hours)**

Vectors and Matrices: Multi-dimensional matrices and arrays –Matrix manipulations – Generation of special matrices – Some useful commands related to matrices – Matrix and Array operations - Functions with array inputs – Structure arrays –Cell arrays – Creating Some useful commands of structures and cells – Summary. Polynomials: Introduction – Entering a Polynomial – Polynomial evaluation – Roots of a Polynomial – Polynomial addition and subtraction – *Polynomial multiplication – Polynomial division – Formulation of Polynomial equation – Characteristic Polynomial of a matrix – Polynomial differentiation – Polynomial integration – Polynomial curve fitting – Evaluation of Polynomial with matrix arguments – Summary. Chapter 3(Sections 3.6 – 3.15),   Chapter 4(Sections 4.1 – 4.14)

Module III   **(10 hours)**

Input-Output statements: Introduction – Data input –*Interactive inputs - Reading/Storing file data - Output commands– Low-level input-output functions –Summary. MATLAB Graphics: Introduction – Two-dimensional plots –Multiple plots –Style options – legend command – subplots – specialized two-dimensional plots. Chapter 5(Sections 5.1 - 5.7) Chapter 6(Sections 6.1 – 6.7)

Module IV   **(10 hours)**

MATLAB Graphics: Three-dimensional plots - Summary. Control structures: Introduction – *Loops -Branches control structures -Summary. Writing programs and functions: Introduction – MATLAB Editor – Opening the editor – Editor main menu – Tool bar – MATLAB programming– Function sub programs. Chapter 6 (Sections 6.8, 6.9), Chapter 7 (Sections7.1 – 7.4), Chapter 8 (Sections 8.1 – 8.4)

Module V   **(10 hours)**

Writing Programs and Functions: Some Illustrative Examples – Types of Functions – Function Handles –*Errors and Warnings - MATLAB Debugger. Ordinary Differential Equations and Symbolic Mathematics. Chapter 8(Sections 8.5 – 8.10), Chapter 9(Sections 9.1 - 9.4)

Book for Study

Raj Kumar Bansal, Ashok Kumar Goel, Manoj Kumar Sharma, MATLAB and its applications in Engineering, Version 7.5, Pearson Education, 2009.

Books for Reference

1.Duane Hanselman, Bruce Littlefield Mastering MATLAB 7, Dorling Kindersly (India)
  Pvt Ltd, Pearson , Seventh impression 2011,
2.Rudra Pratap , Getting started with MATLAB 7 – A Quick introduction for
  Scientists and Engineers. Oxford university press. Ed. 2006.

Elective III - COMPUTATIONAL MATHEMATICS LABORATORY-PRACTICAL   614MEP

[For candidates admitted during the academic year 2014-2015 and onwards]

List of Programs   (**25 hours**)

21. Solving a system of linear Equations.

22. Arithmetic operations on arrays.
23. Drawing 2D and 3D plots.
24. Finding derivatives and integrals of polynomials.
25. Creating a structure for an employee data base containing employee code, name,
    designation and salary.
26. A function subprogram to calculate the compound interest, given the initial amount, time
    period of deposit, rate of interest and time of compounding.
27. Program to process the applications for admission to an engineering college and to list the
    candidates eligible for admission based on the following conditions:
    (a) Marks in Maths ≥ 60
    (b) Marks in Physics ≥ 55
    (c) Marks in Chemistry ≥ 55
    (d) Total marks ≥ 180
28. Program to reverse the digits of a number having minimum three digits.
29. Program to solve first order Ordinary Differential Equations.
30. Program to solve set of Simultaneous Differential Equations.

Course Designed by	:	N.RAJESWARI
Course Reviewed by	:	S.KALAISELVI
Course Checked by	:	A.R.THILAGAVATHI

B.Sc. Mathematics/Mathematics(CA)
Semester VI
Part IV-Skill Based Course IV MODEL PRESENTATION 614MS4/614DS4
(For students admitted during the academic year 2014-2015 and onwards)

Preamble

This Course is unique in the sense that it enables the students to understand the theoretical
concepts and to apply them to construct models in their area of study.
This course is carried out as group project, thus enabling the student to learn to work as a
team.

B.Sc. Mathematics
Semester wise Distribution with Scheme of Examination
[For the students admitted during the academic year 2012-2013 & onwards]

Sem	Course	Credits	Duration of Exam(ESE) (Hrs)	Marks		Total
				CIA	ESE	
I	Part I: Language I	3	3	25	75	100
	Part II: English I	3	3	25	75	100
	Part III:					
	Core I: Algebra and Calculus	4	3	25	75	100
	Core II: Differential Equations and Laplace Transforms	4	3	25	75	100
	Allied I : Physics I	4	3	15	60	75
	Allied Physics Practical	-	-	-	-	-
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I: Language II	3	3	25	75	100
	Part II: English II	3	3	25	75	100
	Part III:					
	Core III: Analytical Geometry	4	3	25	75	100
	Core IV: Numerical Methods	4	3	25	75	100
	Allied II: Physics II	4	3	15	60	75
	Allied Physics Practical	2	3	20	30	50
	Part IV: Value Education	2	-	50	-	50
	Advanced Learner's Course I (ALC I): Combinatorics	3*	3	-	100	100
III	Part I: Language III	3	3	25	75	100
	Part II: English III	3	3	25	75	100
	Part III:					
	Core V: Trigonometry, Vector Calculus and Fourier Series	4	3	25	75	100
	Core VI: Statics	4	3	25	75	100
	Allied III: Principles of Accountancy	5	3	25	75	100
	Part IV: Non Major Elective	2	-	75	-	75
	Skill Based Course: Graph Theory- I	3	-	100	-	100

Sem	Course	Credits	Duration of Exam(ESE) Hrs	Marks		Total
				CIA	ESE	
IV	Part I: Language IV	3	3	25	75	100
	Part II: English IV	3	3	25	75	100
	Part III:					
	Core VII: Operations Research	4	3	25	75	100
	Core VIII: Dynamics	4	3	25	75	100
	Allied IV: Mathematical Statistics	5	3	25	75	100
	Part IV: General Awareness	2	-	75	-	75
	Skill Based Course: Graph Theory- II	3	-	100	-	100
	ALC II: Statistical Quality Control	3*	3	-	100	100
	Part V: Extension Activity	1	-	50	-	50
V	Part III:					
	Core IX: Real Analysis I	4	3	25	75	100
	Core X: Abstract Algebra	4	3	25	75	100
	Core XI: Discrete Mathematics	4	3	25	75	100
	Core XII: Fuzzy Logic and Neural Networks	4	3	25	75	100
	Elective I: Programming in C	3	3	25	75	100
	Elective I : Programming in C- Practical	2	3	20	30	50
	Part IV: Skill Based Course : Graph Theory- III	3	-	100	-	100
VI	Part III:					
	Core XIII: Real Analysis II	4	3	25	75	100
	Core XIV: Complex Analysis	4	3	25	75	100
	Core XV: Linear Algebra	4	3	25	75	100
	Elective II- Mathematical Cryptography	5	3	25	75	100
	Elective III: Computational Mathematics Laboratory	3	3	25	75	100
	Elective III: Computational Mathematics Laboratory - Practical	2	3	20	30	50
	Part IV: Skill Based Course IV: Model Presentation (Group Project)	3	-	100	-	100
	ALC III: Mathematics in Insurance	3*	3	-	100	100

Total Credits   **140**

Starred credits are treated as additional credits which are optional.
Non-Major Elective offered by the Department – Basic Mathematics for Competitive Examinations.

B.Sc. Mathematics/ Mathematics (C.A)
Semester I
Part III – Core II – DIFFERENTIAL EQUATIONS AND LAPLACE TRANSFORMS
112M02/112D02

[For students admitted during the academic year 2012 – 2013 and onwards]   65 Hours

Preamble

This course is introduced in the curriculum since
- Differential equations play an important role in physical system of science, engineering and social sciences
- The Laplace transforms are widely adopted by scientists and engineers as an efficient tool for solving linear differential equations.

The topics included in the course help the students
- To interpret the physical systems in terms of differential equation
- To master the various methods of solving a variety of differential equations.

Module I   **(13 Hours)**

Differential Equations: Differential equations of the first order: Equations of the first order, but of higher degree: Equations solvable for dy /dx- Equations solvable for y-Equations solvable for x (particular cases of 5.2) - Clairaut's form- *Extended form of Clairaut's Equations - Equations that do not contain x explicitly-Equations that do not contain y explicitly-Equations homogeneous in x and y.
Chapter 1 (Sections 5.1-5.5,6.1,6.2,7.1-7.3)

Module II   **(13 Hours)**

Linear Differential Equations with constant coefficients:Solving $(d^n y/ dx^n) + a_1 (d^{n-1}y/ dx^{n-1}) + a_2 (d^{n-2}y / dx^{n-2}) +…+ a_n y = X$,when X is of the form $e^{ax}V$, V is function of x.-Linear differential equations with variable coefficients-*Equations reducible to the linear homogeneous equations.
Chapter 2 (Sections 4(d), 8, 9)

Module III   **(13 Hours)**

Simultaneous Differential Equations: Simultaneous equations of the first order and first degree - Solutions of $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ - Methods for solving $\dfrac{dx}{P} = \dfrac{dy}{Q} = \dfrac{dz}{R}$ -* Simultaneous linear differential equations with constant coefficients.
Chapter 3 (Sections 1-4, 6).

Module IV   **(13 Hours)**

Partial Differential Equations: Derivation of Partial Differential Equations- Different integrals of Partial differential equations (definition only) – Standard types of first order equations - *Lagrange's equation.
Chapter 4 (Sections 1-3, 5, 6)

Module V   **(13 Hours)**

The Laplace Transforms: Definition-Results from the definition-Laplace transforms of periodic functions – Some general theorems - *Evaluation of certain integrals using Laplace transforms- The inverse Laplace transforms-Solving second order differential equations with constant coefficients using Laplace transforms-Solving systems of differential equations using Laplace transforms.
Chapter 5 (Sections 1 – 9)

Book for study

S.Narayanan and T.K.Manicavachagom Pillay,Calculus (Major) VolumeIII, S.Viswanathan(Printers and Publishers) Pvt.Ltd, 18th edition, 2008.

Books for Reference

7. Ervin Kreyszig, Advanced Engineering Mathematics, Wiley Eastern Ltd., 8th edition, 2006.
8. George .F.Simmons, Differential Equations with applications and Historical notes, Mc Graw Hill,Inc, 2nd Edition 1991.

Course Designed by   : B.KALAISELVI
Course Reviewed by   : P.JAYALAKSHMI
Course Checked by   :A.R.THILAGAVATHI

B.Sc Mathematics
Semester II
Part III-Core IV -NUMERICAL METHODS   212M04
(For students admitted during the academic year 2012-2013 and onwards)   65 Hours

Preamble:

The study of Numerical Methods has become very important due to the wide spread use of these methods by scientists and engineers.

This course is designed in such a way that

- it develops the problem solving skills of the students .
- it provides confidence and motivation to solve problems with higher degree of complexity.

Module I   (13 Hours)

The solution of Numerical algebraic and Transcendental equations: The Bisection method – Regula-Falsi method – Newton-Raphson method.Solution of Simultaneous Linear algebraic equations: Introduction – Gauss-Elimination method – Gauss-Jordan Elimination method – Iterative methods – Gauss Jacobi method – *Gauss-Seidel method of iteration.
Chapter 3 (Sections 3.1.1,3.3,3.4) Chapter 4 (Sections 4.1,4.2,4.2.1,4.7-4.9)

Module I   (13 Hours)

Finite differences:First difference-Express any value of y in term of y_n and the backward differences of y_n – Differences of a polynomial –*Factorial polynomial – Error propagation in a difference table.
Interpolation (for equal intervals): Introduction – Linear Interpolation or method of proportional parts – Gregory-Newton forward Interpolation formula – Gregory-Newton backward Interpolation formula.
Chapter 5 (Sections 5.1-5.5) Chapter 6 (Sections 6.1-6.3)

Module III   (13 Hours)

Central Difference Interpolation formulae (for equal intervals):Central differences and central difference table-Central difference interpolation formula-Gauss's forward interpolation formula – Gauss's backward interpolation formula – Stirling's formula – *Bessel's formula.
Chapter 7 (Sections 7.1-7.6)

Module IV   (13 Hours)

Interpolation with unequal intervals: Introduction – Divided differences – Properties of divided differences – Relation between divided differences and forward differences –

Theorem: Newton's interpolation formula for unequal intervals – Deduction: Deduce Gregory Newton interpolation forward formula for equal intervals – *<u>Lagrange's interpolation formula (for unequal intervals).</u>

Chapter 8 (Sections 8.1-8.7)

Module V **(13 Hours)**

Numerical differentiation and Integration: Introduction – Newton's forward difference formula to get the derivative – Newton's backward difference formula to compute the derivative – Derivative using Stirling's formula – Caution – To find maxima and minima of the function given the tabular values. Numerical Integration: Introduction – A general Quadrature formula for equidistant ordinates – *<u>Trapezoidal rule</u> – *<u>Simpson's one-third rule</u> – *<u>Simpson's three-eighths rule</u>.

Chapter 9 (Sections 9.1-9.9, 9.13 and 9.14).

Book for study

P.Kandasamy, K.Thilagavathy, K.Gunavathi, Numerical Methods, S.Chand & Company limited,Third Revised Edition Reprint(2010).

Books for Reference

1. Dr.M.K.Venkataraman, Numerical Methods in Science and Engineering, National Publishing company, fifth edition,1995.
2. H.C.Saxena, Finite differences and Numerical Analysis, S.Chand & Company limited,New Delhi,2001.

Course Designed by : B.KALAISELVI
Course Reviewed by : P.JAYALAKSHMI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (C.A)
Semester III

Part III – Core V/VI – TRIGONOMETRY, VECTOR CALCULUS & FOURIER SERIES 312M05/312D06
[For students admitted during the academic year 2012– 2013 and onwards]   52 Hours

Preamble

This course provides the students
- to gain knowledge about expansions of trigonometric functions
- to learn about vector treatment which will help them to deal the analytical geometry problems using vector method
- to apply Fourier concepts in the field of image processing

Module I **(10 Hours)**

Expansions of $\sin^n \theta$, $\cos^n \theta$: Expansions of powers of $\sin\theta$ and $\cos \theta$ - Expansion of $\cos^n \theta$- Expansion of $\sin^n \theta$- Expansion of $\cos^m\theta \sin^n\theta$ - Expansions of $\cos n\theta$, $\sin n\theta$, $\tan n\theta$: *<u>Expansions of cos nθ and sin nθ</u> - Steps to expand $\cos n\theta$, $\sin n\theta$ - Expansion of $\tan n\theta$ - Expansion of $\tan(\theta_1+\theta_2+ \ldots\ldots+\theta_n)$ - Application of expansion of $\tan n\theta$ - Expansions of $\sin x$, $\cos x$, $\tan x$ in x -Series for $\cos x$ in x - Series for $\sin x$ in x- Series for $\tan x$ as far as the term x^5.

Book 1: Chapter 2(Sections 2.1 – 2.1.3), Chapter 3(Sections 3.1-3.4.3)

Module II **(10 Hours)**

Hyperbolic functions: Hyperbolic functions - Relations between circular and hyperbolic functions- *<u>Formulas in hyperbolic functions</u>- Expansions of $\cosh^4\theta$ and $\sinh^4\theta$ - Period of a

function- Real and imaginary parts of circular functions - $\sin(\theta+i\phi)$, $\cos(\theta+i\phi)$ - $\tan(\theta+i\phi)$, $\cot(\theta+i\phi)$ - $\csc(\theta+i\phi)$, $\sec(\theta+i\phi)$ - Real and imaginary parts of hyperbolic functions - Inverse hyperbolic functions and $\tan^{-1}(x + iy)$ - Implications of the relations. Logarithmic functions: Inverse function of exponential function - Values of Log $(u + iv)$ - Complex index.
Book 1: Chapter 4(Sections 4.1 – 4.7), Chapter 5(Sections 5.1 – 5.3).

Module III   (10 Hours)

Differentiation of vectors: The scalar and vector fields- Derivative of a vector- Derivative of a function of a function- *Derivative of a dot and cross product of two vectors. Gradient, Divergence and Curl: The vector differential operator DEL(∇)-The gradient-The divergence- The curl- Directional derivative- Level surface- Formulae involving ∇ - Second order Differential Operators.
Book 2: Chapters 1, 2.

Module IV   (11 Hours)

Integration of Vectors: The line integral- *Surface integral- Green's theorem in the plane- Gauss's Divergence Theorem- Stoke's theorem- Further worked examples.
Book 2: Chapter 3.

Module V   (11 Hours)

Fourier series: Fourier series- Even and odd functions -Half-range series: *Half-range sine series- Half-range cosine series.
Book 2: Fourier Series and its Applications: Chapter 1: Pages 96-145.

Books for Study

Book 1: For Modules I & II: Trigonometry.Duraipandian,Kayalal Pachaiyappa, Muhil
        Publishers, Revised Edition 2009.
Book 2: For Modules III,IV & V : Mathematics for B.Sc. Branch-I,Volume – IV,
        P.Kandasamy, K.Thilagavathi, S.Chand & Company Limited, First Edition 2005.

Books for Reference

4. Trigonometry, T.K.Manickavasagam Pillai and S.Narayanan,S.Viswanathan (Printers and
                                publishers),Pvt.,Ltd.,2010.
5. Vector Analysis by P.Duraipandian and Kayalal Pachaiyappa, Muhil Publishers, Revised
                                Edition 2009.
6. Calculus (Volume III), S.Narayanan, T.K.Manickavasagam Pillai, S.Viswanathan (printers
                                and publishers),Pvt.,Ltd.,2010.

Course Designed by : B.KALAISELVI
Course Reviewed by : S.KALAISELVI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/Mathematics (C.A)
Semester III
Part IV-Skill Based Course : Graph Theory I
INTRODUCTORY CONCEPTS   312MS1/312DS1
(For students admitted during the academic year 2012-2013 and onwards)   38 Hours

Module I   (8 Hours)

Graphs: Graphs and Subgraphs – Vertex Degrees – Paths and Cycles.
Chapter 2(Sections 2.1-2.3)

Module II   **(8 Hours)**

Graphs: Regular and bipartite graphs. Eulerian and Hamiltonian Graphs: Exploring and Travelling.
Chapter 2(Sections 2.4) Chapter 3(Sections 3.1)

Module III   **(8 Hours)**

Eulerian and Hamiltonian Graphs: Eulerian Graphs-Hamiltonian Graphs.
Chapter 3(Sections 3.2, 3.3)

Module IV   **(7 Hours)**

Digraphs: Digraphs and Subdigraphs- Vertex Degrees- Paths and Cycles.
Chapter 4(Sections 4.1-4.3)

Module V   **(7 Hours)**

Matrix Representations: Adjacency Matrices- Walks in graphs and Digraphs- Incidence Matrices.
Chapter 5(Sections 5.1-5.3)
* **Proof of the theorems are not included.**

Book for Study

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer- First Indian Reprint 2007.

Books for Reference

9. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi, Tenth Reprint 2001.
10. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
11. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
12. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

Course Designed by   : R.ANGEL JOY
Course Reviewed by   : S.KALAISELVI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester III
Part IV-Non-Major Elective – BASIC MATHEMATICS FOR COMPETITIVE EXAMINATIONS   312NMC
[For students admitted during the academic year 2012-2013 & onwards]   25 Hours

Preamble

The syllabus of this course has been framed to cover all topics in quantitative aptitude required for competitive examinations like Bank P.O., and Railways etc. The syllabus helps the students

- to equip them with as much knowledge on all topics as is desirable from the point of view of brilliant success in the competitive examinations.
- to familiarize with different types of tests conducted by various examining bodies
- to sharpen the basic knowledge in mathematics and to increase the speed of its application through regular practice.

Module I   **(5 Hours)**

Decimal fractions – Simplification – Number series. Chapters(3,4,39)

Module II (5 Hours)
Problems on Ages – Percentage – Profit and loss.   Chapters(8,10,11)
Module III (5 Hours)
Ratio and proportion – Partnership   Chapters(12,13)
Module IV (5 Hours)
Time and work - Time and distance - Problems on trains.   Chapters (15,17,18)
Module V (5 Hours)
Simple interest – Compound interest – True discount.   Chapters (21,22,25)
Book for Study
Objective Arithmetic – R.S. Aggarwal, S.Chand & Company LTD, Reprint 2009.
Books for Reference
 1. Quick Arithmetic -Ashish Aggarwal, Sultan Chand &Company Ltd,Second edition 2007.
 2. Quantitative Aptitude for Competitive examinations, Abhijit Guha, Tata McGraw –Hill
    Publishing Company Ltd, Third edition.
              Course Designed by : P.PADMAVATHI
              Course Reviewed by : B.KALAISELVI
              Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/Mathematics (C.A)
Semester IV/ Semester II

Part III –Allied IV/II-MATHEMATICAL STATISTICS   412AM4 /212AD2
[For students admitted during the academic year 2012-13 and onwards] 75 Hours
Preamble
   Mathematical Statistics is widely employed as a highly valuable tool in the analysis of
   problems in natural, physical and social sciences.
   The topics included in the syllabus help the students
       • to know about the random variables and their different distributions
       • to understand about the characteristics of distributions
       • to determine different sampling distributions
       • to estimate the population parameters using sample statistics
       • to test the hypothesis in order to extend the sample inference to the population.

Module I (15 Hours)
    Random variables: Function of a random variable – Two dimensional random variable –
    Definitions- Marginal probability distribution – Conditional probability distribution –
    Independent random variable.
    Variance: Tchebechev's inequality. Moments and Moment Generating Function.
     Chapter 2(Pages 2.13 - 2.35) Chapter 4(Pages 4.21 – 4.26) Chapter 5
Module II (15 Hours)
    Conditional Expectation. Correlation: Correlation - Sample Correlation
    Chapter 7 , Chapter 8(Pages 8.1-8.48)
Module III (15 Hours)
    Normal Distribution – Uniform Distribution –Exponential Distribution – Gamma
    Distribution - *Beta Distribution.
    Chapters 16,17,18,19,20

Module IV (15 Hours)

Functions of Random Variables-Sampling Distributions- Chi Square ,t, F Distributions.
Chapters 21, 22.

Module V (15 Hours)

Estimation.
Chapter 23

Book for Study

P.R. Vittal, Mathematical Statistics , Margham Publishers, First Edition (2002).

Book for Reference

1. S.C. Gupta and V.K.Kapoor, Fundmentals of Mathematical statistics,SultanChand & Company, Eleventh Edition, 2002.
2. Robert V.Hogg & Allen T. Craig, Introduction to Mathematical statistics, Fifth Edition, Pearson Education.

Course Designed by : N.JEYANTHI
Course Reviewed by : P.PADMAVATHI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (C.A)
Semester IV
Part IV-Skill Based Course : GRAPH THEORY
PAPER II – PATHS AND TREES   412MS2/412DS2
(For students admitted during the academic year 2012-2013 and onwards)   38 Hours

Module I (8 Hours)

Tree Structures: Mathematical Properties of Trees – Spanning Trees – Rooted Trees.
Chapter 6(Sections 6.1 – 6.3)

Module II (8 Hours)

Counting Trees: Counting Labeled Trees – Counting Binary Trees.
Chapter 7(Sections 7.1, 7.2)

Module III (8 Hours)

Greedy Algorithms: Minimum Connector Problem – Travelling Salesman Problem.
Chapter 8(Sections 8.1, 8.2)

Module IV (7 Hours)

Path Algorithms: Fleury's Algorithm – Shortest Path Algorithm.
Chapter 9(Sections 9.1, 9.2)

Module V (7 Hours)

Paths and Connectivity: Connected Graphs and Digraphs – Menger's Theorem for Graphs- Some analogues of Menger's theorem.
Chapter 10(Sections 10.1-10.3)

* **Proof of the theorems are not included.**

Book for Study

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer- First Indian Reprint 2007.

Books for Reference

9. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.
10. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.

11. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
12. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2006.

B.Sc. Mathematics
Semester V
Part III Elective I – PROGRAMMING IN C 510ME1
(For students admitted during the academic year 2010 – 2011 and onwards) 50 Hours
Preamble:

The study of Programming Languages has inevitably become a part and parcel of life. The Programming Language C finds a wide variety of applications in the development of software. This course is designed
- To encourage economy of expression in its application areas
- To provide the students with all the fundamental concepts of the C language
- To improve the logical thinking while developing programs.

Module I **(10 Hours)**

Constants, Variables and Data types: Introduction – Character set – C tokens – Keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Declaration of storage class – Assigning values to variables – Defining symbolic constants – Declaring a variable as constant – Declaring a variable as Volatile.

Operators and Expressions: Introduction – *Arithmetic operators – *Relational operators – *Logical operators – *Assignment operators – *Increment and decrement operators – *Conditional operators – Bitwise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of Arithmetic operators – Some computational problems – Type conversions in expressions – Operator precedence and associativity – Mathematical functions.

Chapter 2(Sections 2.1-2.13) ,Chapter 3(Sections 3.1-3.16)

Module II **(10 Hours)**

Managing Input and Output operations : Introduction – Reading a Character – Writing a Character – Formatted Input – Formatted Output.

Decision making and Branching: Introduction – Decision making with IF statement – *Simple IF statement – *The IF…ELSE statement – Nesting of IF…ELSE statements – The ELSE IF ladder – The Switch statement – The ?: operator – The GOTO statement.

Chapter 4(Sections 4.1-4.5),Chapter 5(Sections 5.1-5.9)

Module III **(10 Hours)**

Decision making and looping : Introduction – *The WHILE statement – *The DO statement – The FOR statement – Jumps in loops.

Arrays: Introduction – One dimensional arrays – Declaration of One dimensional arrays – Initialization of One dimensional arrays – Two dimensional arrays – Initializing Two dimensional arrays – Multi - dimensional arrays.

Chapter 6(Sections 6.1-6.5) Chapter 7(Sections 7.1-7.7)

Module IV (10 Hours)

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – Arithmetic operations on characters – Putting strings together – Comparison of two strings – *String handling functions

User-Defined functions : Introduction – Need for user defined functions – A multi- function program – Elements of user defined functions – Definitions of functions – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Functions that return multiple values.

Chapter 8(Sections 8.1-8.8) ,Chapter 9(Sections 9.1-9.14)

Module V (10 Hours)

User – Defined functions : Nesting of functions – Recursion – Passing arrays to functions – Passing strings to functions – The scope, visibility and lifetime of variables.

Structures and Unions: Introduction – Defining a Structure – Declaring Structure variables – Accessing Structure members – Structure Initialization – Copying and Comparing Structure variables – Operations on Individual members – Arrays of Structure – *Arrays within Structure – Structure within Structure – Structures and Functions – Unions.

Chapter 9(Sections 9.15-9.19) , Chapter 10(Sections 10.1-10.12)

Book for Study

E.Balagurusamy, Programming in ANSI 'C', Tata McGraw Hill publishing company, Fourth Edition, Ninth Reprint 2009.

Books for Reference

3. Henry Mullish and Herbert L. Cooper, The Spirit of 'C' – An Introduction to
     modern Programming, Jaico publishing house 2006.
2. Harvey Deitel & Paul J.Deitel,C:How to program,Pearson Education Inc, 6th Edition 2010.

Part III Elective I – PROGRAMMING IN C -PRACTICAL   510MEP

(For students admitted during the academic year 2010 – 2011 and onwards)

List of Programs **(25 Hours)**

1. Finding sum, average, standard deviation for a given set of numbers.
2. Printing Fibonacci series.
3. Prime number checking.
4. Finding roots of a Quadratic Equation.
5. Finding the product of two matrices.
6. Finding the factorial of a number using recursion.
7. Finding whether a string is PALINDROME or not.
8. Arranging strings in alphabetical order.
9. Counting tabs, number of lines, characters and blank spaces in a given text.
10. Reading and Printing personal information using structures.

Course Designed by   : N.RAJESWARI
Course Reviewed by : R.ANGEL JOY
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (C.A)
Semester V
Part IV-Skill Based Course : Graph Theory III
PLANAR GRAPHS AND COLOURING OF GRAPHS   512MS3/512DS3
(For students admitted during the academic year 2012-2013 and onwards)   38 Hours

Module I   **(7 Hours)**
Planarity: Planar graphs – Euler's formula
Chapter 11(Sections 11.1,11.2)

Module II   **(7 Hours)**
Planarity: Cycle Method for Planarity Testing – Kuratowski's Theorem – Duality.
Chapter 11(Sections 11.3-11.5)

Module III   **(8 Hours)**
Vertex Colourings and Decompositions: Vertex Colourings – Algorithm for Vertex Colouring
– Vertex Decompositions.
Chapter 12(Sections 12.1-12.3)

Module IV   **(8 Hours)**
Edge Colourings and Decompositions : Edge Colourings – Algorithm for Edge Colouring
Edge Decompositions.
Chapter 13(Sections 13.1-13.3)

Module V   **(8 Hours)**
Case Studies : Four Cubes Problem – Knight's Tour Problem – Gray Codes – Rotating Drum
Problem – Ranking in Tournaments – Interval Graphs.
Chapter 2 (Section 2.5), Chapter 3 (Section 3.4), Chapter 4 (Section 4.5)
Chapter 5 (Section 5.4) (Specified case Studies only)
*Proof of the theorems are not included.

Book for Study
Graphs And Applications – An Introductory Approach, Joan M.Aldous and Robin J.Wilson,
Springer – First Indian Reprint 2007.

Books for Reference
13. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.
14. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers
     Ltd,Reprint 1995.
15. Narsingh Deo, Graph Theory with Applications to Engineering and Computer
     Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
16. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin
     Heidelberg, 2005.

Course Designed by   : R.ANGEL JOY
Course Reviewed by   : S.KALAISELVI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics
Semester VI
Elective III - COMPUTATIONAL MATHEMATICS LABORATORY   610ME3
[For candidates admitted during the academic year 2011-2012 and onwards]   50 Hours

Module I   **(10 Hours)**

Introduction to MATLAB: Introduction - Starting and ending MATLAB Session - MATLAB ENVIRONMENT - HELP FEATURE -*Types of files -Platform – Search Path – Some useful MATLAB Commands – Summary.

Constants, Variables and Expressions: Introduction - Character set - Data types – Constants and Variables –Operators – Hierarchy of Operations – Built-in Functions- Assignment Statement – Illustrative Programs – Summary. Vectors and Matrices: Introduction - Scalars and Vectors –Entering data in matrices – Line continuation- Matrix subscripts/indices..
Chapter 1(Sections 1.1 – 1.9), Chapter 2(Sections 2.1 – 2.10),Chapter 3(Sections 3.1 – 3.5)

Module II   **(10 hours)**

Vectors and Matrices: Multi-dimensional matrices and arrays –Matrix manipulations – Generation of special matrices – Some useful commands related to matrices – Matrix and Array operations - Functions with array inputs – Structure arrays –Cell arrays – Creating Some useful commands of structures and cells – Summary.

Polynomials: Introduction – Entering a Polynomial – Polynomial evolution – Roots of a Polynomial – Polynomial addition and subtraction – *Polynomial multiplication – Polynomial division – Formulation of Polynomial equation – Characteristic Polynomial of a matrix – Polynomial differentiation – Polynomial integration – Polynomial curve fitting – Evaluation of Polynomial with matrix arguments – Summary.
Chapter 3(Sections 3.6 – 3.15),   Chapter 4(Sections 4.1 – 4.14)

Module III   **(10 hours)**

Input-Output statements: Introduction – Data input –*Interactive inputs - Reading/Storing file data - Output commands– Low-level input-output functions –Summary.

MATLAB Graphics: Introduction – Two-dimensional plots –Multiple plots –Style options – legend command – subplots – specialized two-dimensional plots .
Chapter 5(Sections 5.1 - 5.7) Chapter 6(Sections 6.1 – 6.7)

Module IV   **(10 hours)**

MATLAB Graphics: Three-dimensional plots - Summary. Control structures: Introduction – *Loops -Branches control structures -Summary. Writing programs and functions: Introduction – MATLAB Editor – Opening the editor – Editor main menu – Tool bar – MATLAB programming– Function sub programs.
Chapter 6(Sections 6.8, 6.9),Chapter 7(Sections7.1 – 7.4), Chapter 8(Sections 8.1 – 8.4)

Module V   **(10 hours)**

Writing Programs and Functions: Some Illustrative Examples – Types of Functions – Function Handles –*Errors and Warnings - MATLAB Debugger. Ordinary Differential Equations and Symbolic Mathematics.
Chapter 8(Sections 8.5 – 8.10), Chapter 9(Sections 9.1 - 9.4)

Book for Study

Raj Kumar Bansal, Ashok Kumar Goel, Manoj Kumar Sharma, MATLAB and its applications in Engineering, Version 7.5, Pearson Education, 2009.

Books for Reference
   1.Duane Hanselman, Bruce Littlefield Mastering MATLAB 7, Dorling Kindersly (India) Pvt
   Ltd,
    Pearson , Seventh impression 2011,
  2.Rudra Pratap , Getting started with MATLAB 7 – A Quick introduction for
    Scientists and Engineers. Oxford university press. Ed. 2006.

<div align="center">

Elective III - COMPUTATIONAL MATHEMATICS LABORATORY –
PRACTICAL   610MEP
[For candidates admitted during the academic year 2011-2012 and onwards]
List of Programs   (25 hours)
</div>

1. Solving a system of linear Equations.
2. Arithmetic operations on arrays.
3. Drawing 2D and 3D plots.
4. Finding derivatives and integrals of polynomials.
5. Creating a structure for an employee data base containing employee code, name,
   designation and salary.
6. A function subprogram to calculate the compound interest, given the initial amount, time
   period of deposit, rate of interest and time of compounding.
7. Program to process the applications for admission to an engineering college and to list the
   candidates eligible for admission based on the following conditions:
   - (a) Marks in Maths ≥ 60
   - (b) Marks in Physics ≥ 55
   - (c) Marks in Chemistry ≥ 55
   - (d) Total marks ≥ 180
8. Program to reverse the digits of a number having minimum three digits.
9. Program to solve first order Ordinary Differential Equations.
10. Program to solve set of Simultaneous Differential Equations.

        Course Designed by   : N.RAJESWARI
        Course Reviewed by   : S.KALAISELVI
        Course Checked by   : A.R.THILAGAVATHI

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B.Sc. Mathematics/Mathematics(CA)
Semester VI
Part IV-Skill Based Course IV MODEL PRESENTATION   612MS4/612DS4
(For students admitted during the academic year 2012-2013 and onwards)
</div>

Preamble

   This Course is unique in the sense that it enables the students to understand the theoretical
concepts and to apply them to construct Models in their area of study.
This course is carried out as group project, thus enabling the student to learn to work as a
team.

PG

Prg code	Year	Course code	Name of the course	Explanation	No. of courses per year
MM	2017-2018	17MGCS	Cyber Security	Helps to know the employee the accessibility of data	5
		17MME1	Elective I Number Theory	Applications in Cryptography and network security	
		17MME3	Elective II Control Theory	To identify and model any system based on physical lawand study the stability of the system	
		15MME3	Elective III Graph Theory	Application to real life situations	
		15MME4	Elective IV Special Functions	Knowledge of various techniques in solving the problems	
	2016-2017	15MGCS	Cyber Security	Helps to know the employee the accessibility of data	5
		15MME1	Elective I Number Theory	Applications in Cryptography and network security	
		15MME2	Elective II Control Theory	To identify and model any system based on physical lawand study the stability of the system	
		15MME3	Elective III Graph Theory	Application to real life situations	
		15MME4	Elective IV Special Functions	Knowledge of various techniques in solving the problems	
	2015-2016	15MGCS	Cyber Security	Helps to know the employee the accessibility of data	5
		15MME1	Elective I Number Theory	Applications in Cryptography and network security	
		15MME2	Elective II Control Theory	To identify and model any system based on physical lawand study the stability of the system	
		14MME3	Elective III Graph Theory	Application to real life situations	
		14MME4	Elective IV Fluid Dynamics	Applications in hydrodynamics and aerodynamics	
	2014-2015	14MME1	Elective I Number Theory	Applications in Cryptography and network security	4
		14MME2	Elective II Control Theory	To identify and model any system based on physical lawand study the stability of the system	
		12MME3	Elective III Graph Theory	Application to real life situations	
		12MME4	Elective IV Fluid Dynamics	Applications in hydrodynamics and aerodynamics	
	2013-2014	12MME1	Elective I Number Theory	Applications in Cryptography and network security	4
		12MME2	Elective II Control Theory	To identify and model any system	

				based on physical law and study the stability of the system	
		12MME3	Elective III Graph Theory	Application to real life situations	
		12MME4	Elective IV Fluid Dynamics	Applications in hydrodynamics and aerodynamics	

Curriculum Design
SRI G.V.G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Mathematics
M.Sc Mathematics
Scheme of Examination – CBCS Pattern

[For the Students admitted from the academic year 2017-18 onwards]

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
17MM01	Core I : Algebra	6	3	25	75	100	4
17MM02	Core II : Real Analysis	6	3	25	75	100	4
17MM03	Core III :Ordinary Differential Equations	6	3	25	75	100	4
17MM04	Core IV : Optimization Techniques I	5	3	25	75	100	4
17MME1/ 17MME2	Elective I: Number Theory / Differential Geometry	6	3	25	75	100	4
	Semester II						
17MM05	Core V : Complex Analysis	5	3	25	75	100	4
17MM06	Core VI : Partial Differential Equations	6	3	25	75	100	4
17MM07	Core VII :Numerical Analysis	6	3	25	75	100	4
17MM08	Core VIII :Optimization Techniques II	5	3	25	75	100	4
17MME3/ 17MME4	Elective II : Control Theory/ Stochastic differential Equations	6	3	25	75	100	4
17MGCS	Cyber Security	2	2	-	-	Grade	Grade
17MMA1/ 17MMA2	Advanced Learners Course I: LATeX Practicals / Statistical Methods	-	-	-	100	100	4*

	Semester III						
17MM09	Core IX : Topology	6	3	25	75	100	4
17MM10	Core X : Classical Mechanics	6	3	25	75	100	4
17MM11	Core XI : Programming with C++	3	3	25	75	100	4
17MMCP	Programming with C++ Practical	3	3	40	60	100	4
17MM12	Core XII : Mathematical Modelling	5	3	25	75	100	4
17MME5/ 17MME6	Elective III : Graph Theory / Fuzzy Topology	6	3	25	75	100	4
17MMIS	Internship /Summer School/Sports Training	-	-	50	-	50	2
	Semester IV						
17MM13	Core XIII : Mathematical Methods	6	3	25	75	100	4
17MM14	Core XIV : Functional Analysis	6	3	25	75	100	4
17MM15	Core XV : Fluid Dynamics	6	3	25	75	100	4
17MME7/ 17MME8	Elective IV : Special Functions/ Operator Theory	6	3	25	75	100	4
17MMPV	Project and Viva-Voce	-	-	-	-	200	8
17MMA3/ 17MMA4	Advanced Learners Course II : Mathematical Biology / Subject viva voce	-	-	-	100	100	4*
	Total					**2250**	**90**

Starred credits are treated as additional credits which are optional.

M.Sc. Mathematics
Semester I
Elective I – NUMBER THEORY 17MME1
[For students admitted from **the academic year 2017-2018** and **onwards] 65 Hours**

The content of the course Number Theory, the great attraction of Mathematicians in the recent years is designed with the following objectives

- to convert all the problems of modern mathematics into the problems of Number theory.
- to improve the problem solving skills using the concepts of the Congruences, Diophantine equations
- to know the applications in Cryptography and Network security
- to help the students to understand and attempt the new problems with more insight

Unit I **(13 Hours)**

Divisibility : Introduction – Divisibility – Primes. Congruences : Congruences – Solutions of congruences
Chapter 1 (Sections 1.1 – 1.3) Chapter 2 (Sections 2.1 – 2.2)

Unit II **(13 Hours)**

Congruences : Congruence of Degree 1- The function $\phi(n)$ – Congruences of Higher Degree – Prime Power Moduli- Prime Modulus
Chapter 2 (Sections 2.3 – 2.7)

Unit III   **(13 Hours)**

Congruences : Congruences of Degree two, Prime modulus – Power Residues. Quadratic Reciprocity: Quadratic Residues – Quadratic Reciprocity – The Jacobi symbol.
Chapter 2 (Sections 2.8 – 2.9) Chapter 3 (Sections 3.1 – 3.3)

*Unit IV   **(13 Hours)**

Some Functions of Number Theory: Greatest Integer Function – Arithmetic Functions – The Moebius Inversion Formula – The multiplication of Arithmetic Functions – Recurrence functions.
Chapter 4 (Sections 4.1 – 4.5)

Unit V   **(13 Hours)**

Some Diophantine Equations: Diophantine Equations-The equation $ax + by=c$ – Positive Solutions – Other Linear equations – The equation $x^2+y^2=z^2$ –The equation $x^4+y^4=z^2$ – Sums of four and five squares – Waring's problems – Sum of fourth powers – Sum of two squares – The equation $4x^2+y^2 = n$ – The equation $ax^2+by^2+cz^2=0$ – Binary Quadratic Forms – Equivalence of Quadratic Forms.
Chapter 5 (Sections 5.1 – 5.14)

Book for Study

Ivan Niven and Herbert S. Zuckerman, An Introduction to Theory of Numbers,
Wiley Eastern Ltd, Third Edition, 1991 Reprint.

Books for Reference:

1.T.M. Apostol, Introduction to Analytic Number Theory, Springer International Student Edition, Narosa Publishing House, Seventh Reprint 2010.
2. David M.Burton, Elementary Number Theory, University Press, 2008.

Course Designed by : S.KALAISELVI
Course Reviewed by : A.R.THILAGAVATHI
Course Checked by   : S.KALAISELVI

M.Sc Mathematics
Semester II
Elective II -CONTROL THEORY   17MME3
[For students admitted from the academic year 2017-2018 and onwards]   75 Hours

The objectives of this course are

- to model any system based on physical law
- to identify a system based on physical law
- to analyze the controllability and stability of the system
- to synthesize the control input and apply it to the system

Unit I   **(15Hours)**

Observability: Linear systems – Nonlinear systems - Exercises. Chapter 2

Unit II   **(15 Hours)**

Controllability: Linear systems – Nonlinear systems – Exercises [problems related to the Given topics]. Chapter 3 (Sections 3.1 – 3.2, 3.5)

Unit III   **(15 Hours)**

Stability: Linear systems – Perturbed Linear Systems - Nonlinear Systems – Exercises. [Problems related to the given topics]. Chapter 4 (Sections 4.1-4.3, 4.5)

Unit IV   **(15 Hours)**

Stabilizability: Stabilization via Linear Feedback control – The Controllable
Subspace– Stabilization with Restricted Feedback - Exercises
Chapter 5

*Unit V   **(15 Hours)**

Optimal control: Linear Time Varying Systems – Linear Time Invariant Systems –
Nonlinear Systems – Exercises.Chapter 6

Book for Study

K.Balachandran and J.P.Dauer, Elements of Control Theory, Narosa Publishing
House, New Delhi, Second Edition 2012.

Books for Reference

1.Naresh K.Sinha, Control Systems, New Age International Limited, Publishers,
  Third Edition, 1998.

2.Robert H.Martin,Jr , Ordinary Differential Equations, International Student
  Edition Mc GrawHill Book Company, New Delhi,2nd Printing – 1985.

3.A.C.King , J.Billingham and S.R. Otto, Differential Equations Linear, Non-Linear,
  Ordinary, Partial , Cambridge University Press (2003), First South Asian Edition, 2005

Course Designed by : R.ANGEL JOY
Course Reviewed by : P.JAYALAKSHMI
Course Checked by   : A.R.THILAGAVATHI

Curriculum Design
SRI G.V.G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University

Department of Mathematics

M.Sc Mathematics

Scheme of Examination – CBCS Pattern

[For the Students admitted from the academic year 2015-16 onwards]

Course Code	Course Title	Ins. Hrs/week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
15MM01	Core I : Algebra	6	3	25	75	100	4
15MM02	Core II : Real Analysis	6	3	25	75	100	4
15MM03	Core III :Ordinary Differential Equations	6	3	25	75	100	4
15MM04	Core IV : Optimization Techniques I	5	3	25	75	100	4
15MME1	Elective I: Number Theory	6	3	25	75	100	4
	Semester II						
15MM05	Core V : Complex Analysis	5	3	25	75	100	4
15MM06	Core VI : Partial Differential Equations	6	3	25	75	100	4
15MM07	Core VII :Numerical Analysis	6	3	25	75	100	4
15MM08	Core VIII :Optimization Techniques II	5	3	25	75	100	4
15MME2	Elective II :Control Theory	6	3	25	75	100	4
15MMIS	Internship	-	-	50	-	50	2
15MGCS	Cyber Security	2	2	50	-	Grade	Grade
15MMA1/ 15MMA2	Advanced Learners Course I: Fuzzy Set Theory and its Applications / Mathematical Modelling	-	-	-	100	100	4*
	Semester III						
15MM09	Core IX : Topology	6	3	25	75	100	4
15MM10	Core X : Classical Mechanics	6	3	25	75	100	4
15MM11	Core XI : Programming with C++	3	3	25	75	100	4
15MMCP	Programming with C++ Practical	3	3	40	60	100	4
15MM12	Core XII : Statistical Methods	5	3	25	75	100	4
15MME3	Elective III : Graph Theory	6	3	25	75	100	4

	Semester IV						
15MM13	Core XIII : Mathematical Methods	6	3	25	75	100	4
15MM14	Core XIV : Functional Analysis	6	3	25	75	100	4
15MM15	Core XV : Fluid Dynamics	6	3	25	75	100	4
15MME4	Elective IV : Special Functions	6	3	25	75	100	4
15MMPV	Project and Viva-Voce	-	-	-	-	200	8
15MMA3/ 15MMA4	Advanced Learners Course II: Operator Theory / Differential Geometry	-	-	-	100	100	4*
	Total					**2250**	**90**

Starred credits are treated as additional credits which are optional.

M.Sc. Mathematics
Semester I
Elective I – NUMBER THEORY   15MME1
[For students admitted from the academic year 2015 –16 onwards]
Preamble   **65 Hours**

Number Theory, the great attraction of Mathematicians in the recent years is introduced in the curriculum due to

- Its wide applications in cryptography and network security.
- Its potentiality to convert all the problems of modern mathematics into the problems of   Number theory.
- The topics included in the present syllabus such as Congruences ,Diophantine equations and continued fractions provides ample opportunities for the students to practice the problem solving skills.
- Help the students to understand and attempt the new problems with more insight

Unit I   **(13 Hours)**

Divisibility : Introduction – Divisibility – Primes. Congruences : Congruences – Solutions of congruences
Chapter 1 (Sections 1.1 – 1.3) Chapter 2 (Sections 2.1 – 2.2)

Unit II   **(13 Hours)**

Congruences : Congruence of Degree 1- The function $\phi(n)$ – Congruences of Higher Degree – Prime Power Moduli- Prime Modulus
Chapter 2 (Sections 2.3 – 2.7)

Unit III   **(13 Hours)**

Congruences : Congruences of Degree two, Prime modulus – Power Residues. Quadratic Reciprocity: Quadratic Residues – Quadratic Reciprocity – The Jacobi symbol.
Chapter 2 (Sections 2.8 – 2.9) Chapter 3 (Sections 3.1 – 3.3)

*Unit IV   **(13 Hours)**

Some Functions of Number Theory: Greatest Integer Function – Arithmetic Functions – The Moebius Inversion Formula – The multiplication of Arithmetic Functions – Recurrence functions.
Chapter 4 (Sections 4.1 – 4.5)

Unit V   **(13 Hours)**

Some Diophantine Equations: Diophantine Equations-The equation $ax + by=c$ – Positive Solutions – Other Linear equations – The equation $x^2+y^2=z^2$ –The equation $x^4+y^4=z^2$ – Sums of four and five squares – Waring's problems – Sum of fourth powers – Sum of two squares – The equation $4x^2+y^2 = n$ – The equation $ax^2+by^2+cz^2=0$ – Binary Quadratic Forms – Equivalence of Quadratic Forms.

Chapter 5 (Sections 5.1 – 5.14)

Book for Study

Ivan Niven and Herbert S. Zuckerman, An Introduction to Theory of Numbers, Wiley Eastern Ltd, Third Edition, 1991 Reprint.

Books for Reference:

1. T.M. Apostol, Introduction to Analytic Number Theory, Springer International Student Edition, Narosa Publishing House, Seventh Reprint 2010.
2. David M.Burton, Elementary Number Theory, University Press, 2008.

Course Designed by : S.KALAISELVI
Course Reviewed by : A.R.THILAGAVATHI
Course Checked by   : A.R.THILAGAVATHI

M.Sc Mathematics
Semester II
Elective II-CONTROL THEORY   15MME2
[For students admitted from the academic year 2015-16 onwards]

Preamble   **65 Hours**

The field of control theory is at the forefront of the creative interplay of mathematics, engineering and computer science. Drawing from these disciplines, control theory brings powerful theoretical results to bear upon advanced techniques.

The objectives of this course are

- to model any system based on physical law
- to identify a system based on physical law
- to analyze the controllability and stability of the system
- to synthesize the control input and apply it to the system

Unit I   **(13 Hours)**

Observability: Linear systems – Nonlinear systems.
Exercises.
Chapter 2

Unit II   **(13 Hours)**

Controllability: Linear systems – Nonlinear systems – Exercises [problems related to the Given topics].
Chapter 3 (Sections 3.1 – 3.2, 3.5)

Unit III   **(13 Hours)**

Stability: Linear systems – Perturbed Linear systems - Nonlinear systems – Exercises.[Problems related to the given topics].
.   Chapter 4 (Sections 4.1-4.3, 4.5)

Unit IV   **(13 Hours)**

Stabilizability: Stabilization via Linear feedback control – The controllable subspace– Stabilization with restricted feedback – Exercises. Chapter 5

*Unit V   **(13 Hours)**
Optimal control: Linear time varying systems – Linear time invariant systems –
Nonlinear systems - Exercises.
Chapter 6
Book for Study
K.Balachandran and J.P.Dauer, Elements of Control Theory, Narosa Publishing
House, New Delhi, Second Edition 2012.
Books for Reference
 1. Naresh K.Sinha, Control Systems, New Age International Limited, Publishers,
    Third Edition, 1998.
 2. Robert H.Martin,Jr , Ordinary Differential Equations, International Student
    Edition Mc GrawHill Book Company, New Delhi,2nd Printing – 1985.
 3. A.C.King , J.Billingham and S.R. Otto, Differential Equations Linear, Non-Linear,
    Ordinary, Partial , Cambridge University Press (2003), First South Asian Edition, 2005
                    Course Designed by : R.ANGEL JOY
                    Course Reviewed by : P.JAYALAKSHMI
                    Course Checked by   : A.R.THILAGAVATHI

M.Sc Mathematics
Semester-III
Elective III- GRAPH THEORY   15MME3
[For students admitted from the academic year 2015-16 onwards]
Preamble   **65 Hours**
The concept of graph is extraordinarily simple, which explains the wide applicability of
graph theory. Graphs are among the most ubiquitous models of both natural and human-
made structures. They can be used to model many types of relations and process
dynamics in physical, biological and social systems. Many problems of practical interest
can be represented by graphs.
This course on Graph Theory will
   - Familiarize the basic concepts in Graph Theory
   - Help to apply the knowledge wherever it is possible.
Unit I   **(13 Hours)**
Graphs and Subgraphs : Graphs and Simple Graphs - Graph Isomorphism-The Incidence and
Adjacency Matrices- Sub Graphs-Vertex   Degrees-Paths and Connection - Cycles.
Trees:Trees - Cut Edges and Bonds - Cut Vertices – Cayley's formula.
Chapter 1(Sections 1.1-1.7) , Chapter 2(Sections 2.1-2.4)
Unit II   **(13 Hours)**
Connectivity: Connectivity-Blocks. Euler Tours and Hamilton Cycles: Euler Tours -Hamilton
Cycles.
Chapter 3(Sections 3.1, 3.2) Chapter 4(Sections 4.1, 4.2)
*Unit III   **(13 Hours)**
Matchings: Matchings - Matchings and Coverings in Bipartite Graphs – Perfect Matching.
Edge   Colourings: Edge Chromatic Number - Vizing's Theorem.
Chapter 5(Sections 5.1-5.3) Chapter 6(Sections 6.1,6.2)
Unit IV   **(13 Hours)**
Independent Sets and Cliques: Independent Sets - Ramsey's Theorem.

Vertex Colorings: Chromatic Number - Brook's Theorem - Hajos Conjecture-Chromatic Polynomials.

Chapter 7(Sections 7.1,7.2) Chapter 8(Sections 8.1-8.4)

Unit V   **(13 Hours)**

Planar Graphs: Plane and planar graphs-Dual graphs - Euler's formula – Bridges - The five Color theorem and four Color conjecture – Non Hamiltonian planar graphs.

Chapter 9(Sections 9.1-9.4, 9.6 & 9.7)

Book for study

J.A. Bondy and U.S.R. Murty, Graph theory with Applications, MacMillan London, First Edition ,1976.

Book for Reference

1. J.Clark and D.A. Holton, A First Look at Graph Theory, Allied Publishers New Delhi 1995.
2. Frank. Harary, Graph Theory, Narosa Publishing House,Tenth Reprint,2001.
3. Geir Agnarsson, Raymond Greenlaw, Graph Theory Modelling, Applications and Algorithms, Pearson ,Third Impression 2011.
4. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science, Prentice Hall of India 2005.

Course Designed by   : R.ANGEL JOY
Course Reviewed by   : S.KALAISELVI
Course Checked by   : A.R.THILAGAVATHI

M.Sc Mathematics
Semester IV
ELECTIVE IV– SPECIAL FUNCTIONS
15MME4
[For students admitted from the academic year 2015-16 onwards]

Preamble   **65 Hours**

Modern engineering and physical science applications demand a thorough knowledge of applied mathematics, particularly special functions. These typically arise in applications such as communication systems, electro-optics, nonlinear wave propagation, electromagnetic theory, electric circuit theory, and quantum mechanics.

Five important special functions are included in this course.

- Legendre polynomials have application in various branches of physics and engineering, especially in the transformation of spherical harmonics under co-ordinate rotations.
- Bessel functions appear in problems of wave propagation , static potentials and problems involving cylindrical coordinate systems.
- The Hermite polynomials have their main application in the quantum-mechanical harmonic oscillator.
- The Laguerre polynomials arise in quantum mechanics, in the radial part of the solution of the Schrödinger equation for a one-electron atom.
- Chebyshev polynomials are used in polynomial approximations to arbitrary functions. They also occur in electrical circuit theory.

Unit I   **(14 Hours)**

Legendre's Equation: Legendre's Equation-Solution of Legendre's Equation-Definition of $P_n(x)$ and $Q_n(x)$ – General solution of Legendre's Equation – to show the $P_n(x)$ is the co-efficient of h^n in the expansion of $(1-2xh+h^2)^{-1/2}$ – Laplace's definite integral for $P_n(x)$ – Orthogonal properties of Legendre's polynomials – Recurrence formulae – Beltrami's results – Christoffel's Expansion - Christoffel's summation formula – Rodrigue's formula – Even and odd functions.
Chapter 2 (2.1-2.13)

Unit II   **(14 Hours)**

Bessel's Equation .
Chapter 5.

*Unit III   **(12 Hours)**

Hermite Polynomials .
Chapter 6.

Unit IV   **(13 Hours)**

Laguerre Polynomials.
Chapter 7.

Unit V   **(12 Hours)**

Chebyshev Polynomials .
Chapter 8

Book for Study

J.N. Sharma and Dr.R.K.Gupta , Special Functions, Krishna Prakashan Mandir ,
Sixteenth edition 1992-93.

Books for Reference

1. S. G. Deo, V.Lakshmikantan,V. Raghavendra ,Text book of Ordinary Differential Equations, Tata McGraw-Hill Publishing Company Ltd, New Delhi,Second Edition,16th Reprint – 2010.
2. Gupta B.D., Mathematical physics, Vikas Publishing House, Fourth Edition, 2010
3. Sathyaprakash, Mathematical physics,Sultan Chand & Sons ,5th revised edition,2011

       Course Designed by   : R.ANGEL JOY
       Course Reviewed by : N.RAJESWARI
       Course Checked by   : A.R.THILAGAVATHI

M.Sc. Mathematics
Semesterwise distribution with Scheme of Examination
[For the students admitted during the academic year 2014-15 and onwards]

Sem	Course	Credits	Duration of Exam Hrs (ESE)	Marks		Total
				CIA	ESE	
I	Core I: Algebra	5	3	25	75	100
	Core II: Real Analysis	5	3	25	75	100
	Core III: Ordinary Differential	5	3	25	75	100
	Equations	3	3	25	75	100
	Elective I: Number Theory	3	-	100	-	100
	Diploma Course : I					
II	Core IV : Complex Analysis	5	3	25	75	100
	Core V : Partial Differential Equations	5	3	25	75	100
	Core VI: Numerical Analysis	5	3	25	75	100
	Elective II: Control Theory	3	3	25	75	100
	Diploma Course : II	3	-	100	-	100
	Mini Project	2	-	50	-	50
	Advanced Learner's Course I:Fuzzy Set Theory and its Applications / Mathematical Modelling	4*	3	-	100	100
III	Core VII: Topology	5	3	25	75	100
	Core VIII: Classical Mechanics	5	3	25	75	100
	Core IX: Programming with C++	4	3	25	75	100
	Core IX: Programming with C++	2	3	20	30	50
	Practical	3	3	25	75	100
	Elective III : Graph theory	3	-	100	-	100
	Diploma Course: III	-	-	-	-	-
	Project Work					

IV	Core X: Mathematical Methods	5	3	25	75	100
	Core XI :Functional Analysis	5	3	25	75	100
	Elective IV: Fluid Dynamics	3	3	25	75	100
	Diploma Course : IV	3	-	100	-	100
	Project Work	8	-	100	100	200
	Advanced Learner's Course II : Operator Theory / Differential Geometry	4*	3	-	100	100

Total Credits   **90**

* Starred credits are treated as additional credits.
** Diploma course carries 12 credits.
The Diploma Course offered by the Department is Quantitative Techniques

M.Sc. Mathematics
Semester I
Elective I – NUMBER THEORY   14MME1
(For students admitted during the academic year 2014 –15 and onwards)
65 Hours

Preamble

Number Theory, the great attraction of Mathematicians in the recent years is introduced in the curriculum due to

- Its wide applications in cryptography and network security.
- Its potentiality to convert all the problems of modern mathematics into the problems of Number theory.

The topics included in the present syllabus such as Congruences, Diophantine equations and continued fractions

- Provides ample opportunities for the students to practice the problem solving skills.
- Help the students to understand and attempt the new problems with more insight

Module I   **(13 Hours)**

Divisibility : Introduction – Divisibility – Primes. Congruences : Congruences – Solutions of congruences
Chapter 1 (Sections 1.1 – 1.3) Chapter 2 (Sections 2.1 – 2.2)

Module II   **(13 Hours)**

Congruences : Congruence of Degree 1- The function $\phi(n)$ – Congruences of Higher Degree – Prime Power Moduli- Prime Modulus
Chapter 2 (Sections 2.3 – 2.7)

Module III (13 Hours)

Congruences : Congruences of Degree two, Prime modulus – Power Residues. Quadratic Reciprocity: Quadratic Residues – Quadratic Reciprocity – The Jacobi symbol.

Chapter 2 (Sections 2.8 – 2.9) Chapter 3 (Sections 3.1 – 3.3)

*Module IV (13 Hours)

Some Functions of Number Theory: Greatest Integer Function – Arithmetic Functions – The Moebius Inversion Formula – The multiplication of Arithmetic Functions – Recurrence functions.

Chapter 4 (Sections 4.1 – 4.5)

Module V (13 Hours)

Some Diophantine Equations: Diophantine Equations-The equation $ax + by=c$ – Positive Solutions – Other Linear equations – The equation $x^2+y^2=z^2$ –The equation $x^4+y^4=z^2$ – Sums of four and five squares – Waring's problems – Sum of fourth powers – Sum of two squares – The equation $4x^2+y^2 = n$ – The equation $ax^2+by^2+cz^2=0$ – Binary Quadratic Forms – Equivalence of Quadratic Forms.

Chapter 5 (Sections 5.1 – 5.14)

Book for Study

Ivan Niven and Herbert S. Zuckerman, An Introduction to Theory of Numbers, Wiley Eastern Ltd, Third Edition, 1991 Reprint.

Books for Reference:

1. T.M. Apostol, Introduction to Analytic Number Theory, Springer International Student Edition, Narosa Publishing House, Seventh Reprint 2010.
2. David M.Burton, Elementary Number Theory, University Press, 2008.

Course Designed by : M.THAMILSELVI
Course Reviewed by : S.KALAISELVI
Course Checked by : A.R.THILAGAVATHI

M.Sc Mathematics
Semester II
Elective II-CONTROL THEORY   14MME2
[For students admitted during the academic year 2014-15 and onwards]
65 Hours

Preamble

The field of control theory is at the forefront of the creative interplay of mathematics, engineering and computer science. Drawing from these disciplines, control theory brings powerful theoretical results to bear upon advanced techniques.

The objectives of this course are

- to model any system based on physical law
- to identify a system based on physical law
- to analyze the controllability and stability of the system
- to synthesize the control input and apply it to the system

Module I (13 Hours)

Introduction: Motivation – Basic results of differential equations – Fixed point

Methods - Exercises. Observability: Linear systems – Nonlinear systems - Exercises.

Chapters 1 & 2

Module II   **(13 Hours)**

Controllability: Linear systems – Nonlinear systems – Exercises [problems related to the Given topics].

Chapter 3 (Sections 3.1 – 3.2, 3.5)

Module III   **(13 Hours)**

Stability: Linear systems – Perturbed Linear systems - Nonlinear systems – Exercises.[Problems related to the given topics].

.   Chapter 4 (Sections 4.1-4.3, 4.5)

Module IV   **(13 Hours)**

Stabilizability: Stabilization via Linear feedback control – The controllable subspace– Stabilization with restricted feedback - Exercises

Chapter 5

*Module V   **(13 Hours)**

Optimal control: Linear time varying systems – Linear time invariant systems – Nonlinear systems - Exercises.

Chapter 6

Book for Study

K.Balachandran and J.P.Dauer, Elements of Control Theory, Narosa Publishing House, New Delhi, Second Edition 2012.

Books for Reference

1. Naresh K.Sinha, Control Systems, New Age International Limited, Publishers, Third Edition, 1998.

2. Robert H.Martin,Jr , Ordinary Differential Equations, International Student Edition Mc GrawHill Book Company, New Delhi,2nd Printing – 1985.

3. A.C.King , J.Billingham and S.R. Otto, Differential Equations Linear, Non-Linear, Ordinary, Partial , Cambridge University Press (2003), First South Asian Edition, 2005

Course Designed by : R.ANGEL JOY

Course Reviewed by : P.JAYALAKSHMI

Course Checked by   : A.R.THILAGAVATHI

M.Sc Mathematics
Semester-III
Elective III- GRAPH THEORY   14MME3

(For students admitted during the academic year 2014-15and onwards)

65 Hours

Preamble

The concept of graph is extraordinarily simple, which explains the wide applicability of graph theory. Graphs are among the most ubiquitous models of both natural and human-made structures. They can be used to model many types of relations and process dynamics in physical, biological and social systems. Many problems of practical interest can be represented by graphs.

This course on Graph Theory will

- Familiarize the basic concepts in Graph Theory

- Help to apply the knowledge wherever it is possible.

Module I **(13 Hours)**

Graphs and Subgraphs : Graphs and Simple Graphs - Graph isomorphism-The Incidence and Adjacency matrices- Sub Graphs-Vertex degrees-Paths and connection - Cycles.Trees: Trees-Cut edges and bonds-Cut vertices –Cayley's formula.

Chapter 1(Sections 1.1-1.7) , Chapter 2(Sections 2.1-2.4)

*Module II **(13 Hours)**

Connectivity: Connectivity-Blocks Euler tours and Hamilton cycles: Euler tours - Hamilton cycles.

Chapter 3(Sections 3.1, 3.2) Chapter 4(.Sections 4.1, 4.2)

Module III **(13 Hours)**

Matchings: Matchings - Matchings and coverings in Bipartite Graphs - Perfect Matching. Edge Colourings: Edge Chromatic number - Vizing's theorem.

Chapter 5(Sections 5.1-5.3) Chapter 6(Sections 6.1,6.2)

Module IV **(13 Hours)**

Independent Sets and Cliques: Independent sets - Ramsey's theorem.
Vertex colorings - Chromatic number - Brook's theorem - Hajos Conjecture-Chromatic polynomials - Girth and Chromatic number.

Chapter 7(Sections 7.1,7.2) Chapter 8(Sections 8.1-8.5)

Module V **(13 Hours)**

Planar Graphs: Plane and planar graphs-Dual graphs - Euler's formula – Bridges - Kuratowski's theorem - The five Color theorem and four Color conjecture – Non Hamiltonian planar graphs.

Chapter 9(Sections 9.1-9.7)

Book for study

J.A. Bondy and U.S.R. Murty, Graph theory with Applications, MacMillan London, First Edition ,1976.

Book for Reference

1. J.Clark and D.A. Holton, A First Look at Graph Theory, Allied Publishers New Delhi 1995.

2.Frank. Harary, Graph Theory, Narosa Publishing House,Tenth Reprint,2001.

3.Geir Agnarsson, Raymond Greenlaw, Graph Theory Modelling, Applications and Algorithms, Pearson ,Third Impression 2011.

4.Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science, Prentice Hall of India 2005.

Course Designed by : R.ANGEL JOY
Course Reviewed by : S.KALAISELVI
Course Checked by : A.R.THILAGAVATHI

M.Sc Mathematics
Semester – IV
Elective IV – FLUID DYNAMICS   14MME4
(For students admitted during the academic year 2014– 15 and onwards)
65 Hours

Preamble

This course is introduced in the syllabus in order to offer a through and methodical introductory exposition of the mathematical theory of fluid motion which is useful in applications to both hydrodynamics and aerodynamics. The course facilitates the students

- to understand the general properties of fluid motion such as continuity, pressure, dynamical equation, energy, vorticity etc.,
- to know the tensor methods applied to the flow of viscous fluids.
- to know the outline of the theory of two dimensional laminar flow in boundary layer
- to apply the aerofoil theory in aerodynamics.

Module I   **(13 Hours)**

Bernoulli's equation: Introductory notions – Physical dimensions – Velocity – Stream lines and paths of the particles – Stream tubes and filaments – Density – Pressure. Equations of motion: Differentiation with respect to time – The equation of continuity – Boundary conditions (both kinematical and Physical) – Rate of change of linear momentum – The equation of motion of an inviscid fluid.

Book 1: Chapter I (Sections 1.0-1.3) Chapter III (Sections 3.10-3.31, 3.40, 3.41)

Module II   **(13 Hours)**

Equations of motion: Euler's momentum theorem – Conservative forces – Lagrangian form of the equation of motion – Steady motion – The energy equation – Rate of change of circulation – Vortex motion – permanence of Vorticity.

Book 1: Chapter III (Sections 3.42-3.53)

Module III   **(13 Hours)**

Two dimensional motion: Introduction – Two dimensional functions – Basic singularities – Method of images – Conformal transformation – The Aerofoil.

Book 2: Chapter III (Sections 3.1-3.3, 3.5-3.7)

Module IV   **(13 Hours)**

Dynamics of real fluids: The equations of motion for viscous flow – Some exact solutions of the Navier-Stokes equations.

Book 2: Chapter V (Sections 5.2,5.3.1-5.3.3)

*Module V   **(13 Hours)**

The laminar boundary layer incompressible flow: Introduction – The boundary layer equations – Analytic solutions of the boundary layer equations.

Book 2: Chapter VI (Sections 6.1-6.3)

Books for Study

Book 1: For modules I and II : L.M.Milne – Thomson, Theoretical
        Hydrodynamics, Dover Publications, New york,Fifth Edition, 1996.

Book 2: For modules III to V : N.Curle and H.J.Davies, Modern Fluid Dynamics,
        Volume I, D.Van Nostrand Co., London, 1968.

Books for reference

1. S.W.Yuan, Fundamentals of fluid Mechanics, Prentice Hall of India, Pvt. Ltd., 1988.
2. John F. Douglas, Janusz M.Gasiorek and John A. Swaffield, fluid Mechanics, Pearson Education Ltd., Fourth Edition, 2002.

M.Sc. Mathematics
Semesterwise distribution with Scheme of Examination
[For the students admitted during the academic year 2012-13 and onwards]

Sem	Course	Credits	Duration of Exam Hrs (ESE)	Marks CIA	Marks ESE	Total
I	Core I: Algebra	5	3	25	75	100
	Core II: Real Analysis	5	3	25	75	100
	Core III: Ordinary Differential Equations	5	3	25	75	100
	Elective I: Number Theory	4	3	25	75	100
	Diploma Course : I	3	-	100	-	100
II	Core IV : Complex Analysis	5	3	25	75	100
	Core V : Partial Differential Equations	5	3	25	75	100
	Core VI: Numerical Analysis	5	3	25	75	100
	Elective II: Control Theory	4	3	25	75	100
	Diploma Course : II	2	-	100	-	100
	Advanced Learner's Course I:Fuzzy Set Theory and its Applications / Mathematical Modelling	4*	3	-	100	100
III	Core VII: Topology	5	3	25	75	100
	Core VIII: Classical Mechanics	5	3	25	75	100
	Core IX: Programming with C++	4	3	25	75	100
	Core IX: Programming with C++ Practical	2	3	40	60	100
	Elective III : Graph theory	4	3	25	75	100
	Diploma Course: III	3	-	100	-	100
	Project Work	-	-	-	-	-
IV	Core X: Mathematical Methods	5	3	25	75	100
	Core XI :Functional Analysis	5	3	25	75	100
	Elective IV: Fluid Dynamics	4	3	25	75	100
	Diploma Course : IV	2	-	100	-	100
	Project Work	8	-	-	-	200
	Advanced Learner's Course II : Operator Theory / Differential Geometry	4*	3	-	100	100

Total Credits   **90**

* Starred credits are treated as additional credits.
** Diploma course carries 10 credits.

M.Sc. Mathematics
Semester I
Elective I – NUMBER THEORY   12MME1
(For students admitted during the academic year 2012 – 13 and onwards)   **75 Hours**

Preamble

Number Theory, the great attraction of Mathematicians in the recent years is introduced in the curriculum due to

- Its wide applications in cryptography and network security.
- Its potentiality to convert all the problems of modern mathematics into the problems of Number theory.

The topics included in the present syllabus such as Congruences, Diophantine equations and continued fractions

- Provides ample opportunities for the students to practice the problem solving skills.
- Help the students to understand and attempt the new problems with more insight

Module I   **(15 Hours)**

Divisibility : Introduction – Divisibility – Primes. Congruences : Congruences – Solutions of congruences

Chapter 1 (Sections 1.1 – 1.3) Chapter 2 (Sections 2.1 – 2.2)

Module II   **(15Hours)**

Congruences : Congruence of Degree 1- The function $\phi(n)$ – Congruences of Higher Degree – Prime Power Moduli- Prime Modulus

Chapter 2 (Sections 2.3 – 2.7)

Module III   **(15Hours)**

Congruences : Congruences of Degree two, Prime modulus – Power Residues. Quadratic Reciprocity: Quadratic Residues – Quadratic Reciprocity – The Jacobi symbol.

Chapter 2 (Sections 2.8 – 2.9) Chapter 3 (Sections 3.1 – 3.3)

*Module IV   **(15 Hours)**

Some Functions of Number Theory: Greatest Integer Function – Arithmetic Functions – The Moebius Inversion Formula – The multiplication of Arithmetic Functions – Recurrence functions.

Chapter 4 (Sections 4.1 – 4.5)

Module V   **(15 Hours)**

Some Diophantine Equations: Diophantine Equations-The equation $ax + by=c$ – Positive Solutions – Other Linear equations – The equation $x^2+y^2=z^2$ –The equation $x^4+y^4=z^2$ – Sums of four and five squares – Waring's problems – Sum of fourth powers – Sum of two squares – The equation $4x^2+y^2 = n$ – The equation $ax^2+by^2+cz^2=0$ – Binary Quadratic Forms – Equivalence of Quadratic Forms.

Chapter 5 (Sections 5.1 – 5.14)

Book for Study

Ivan Niven and Herbert S. Zuckerman, An Introduction to Theory of Numbers, Wiley Eastern Ltd, Third Edition, 1991 Reprint.

Books for Reference:

1.T.M. Apostol, Introduction to Analytic Number Theory, Springer International Student Edition, Narosa Publishing House, Seventh Reprint 2010.

2.David M.Burton, Elementary Number Theory, University Press, 2008.

Course Designed by : M.THAMILSELVI
Course Reviewed by : S.KALAISELVI
Course Checked by : A.R.THILAGAVATHI

M.Sc Mathematics
Semester II
Elective II-CONTROL THEORY   **12MME2**
[For students admitted during the academic year 2012-13 and onwards]   75 Hours

Preamble
The field of control theory is at the forefront of the creative interplay of mathematics, engineering and computer science. Drawing from these disciplines, control theory brings powerful theoretical results to bear upon advanced techniques.

The objectives of this course are

- to model any system based on physical law
- to identify a system based on physical law
- to analyze the controllability and stability of the system
- to synthesize the control input and apply it to the system

Module I   **(15 Hours)**

Introduction: Motivation – Basic results of differential equations – Fixed point Methods - Exercises. Observability: Linear systems – Nonlinear systems - Exercises.
Chapters 1 & 2

Module II   **(15 Hours)**

Controllability: Linear systems – Nonlinear systems – Exercises [problems related to the Given topics].
Chapter 3 (Sections 3.1 – 3.2, 3.5)

Module III   **(15 Hours)**

Stability: Linear systems – Perturbed Linear systems - Nonlinear systems – Exercises.
[problems related to the given topics].
.   Chapter 4 (Sections 4.1-4.3, 4.5)

Module IV   **(15 Hours)**

Stabilizability: Stabilization via Linear feedback control – The controllable subspace – Stabilization with restricted feedback - Exercises
Chapter 5

*Module V   **(15 Hours)**

Optimal control: Linear time varying systems – Linear time invariant systems – Nonlinear systems - Exercises.
Chapter 6

Book for Study
K.Balachandran and J.P.Dauer, Elements of Control Theory, Narosa Publishing House , New Delhi, Second Edition 2012.

Books for Reference
1. Naresh K.Sinha ,Control Systems, New Age International Limited,Publishers,Third

Edition, 1998
2. Robert H.Martin,Jr , Ordinary Differential Equations, International Student Edition Mc GrawHill Book Company, New Delhi,2nd Printing – 1985.
3. A.C.King , J.Billingham and S.R. Otto, Differential Equations Linear, Non-Linear, Ordinary, Partial , Cambridge University Press (2003), First South Asian Edition, 2005

Course Designed by : R.ANGEL JOY
Course Reviewed by : P.JAYALAKSHMI
Course Checked by   : A.R.THILAGAVATHI

M.Sc Mathematics
Semester-III
Elective III- GRAPH THEORY   12MME3
[For students admitted during the academic year 2012-13 and onwards]   65 Hours

Preamble
The concept of graph is extraordinarily simple, which explains the wide applicability of graph theory. Graphs are among the most ubiquitous models of both natural and human-made structures. They can be used to model many types of relations and process dynamics in physical, biological and social systems. Many problems of practical interest can be represented by graphs.
This course on Graph Theory will
- Familiarize the basic concepts in Graph Theory
- Help to apply the knowledge where ever it is possible.

Module I   (13 Hours)
Graphs, Subgraphs and Trees: Graphs and sub-graphs: Graphs and simple Graphs- Graph isomorphism-The incidence and adjacency matrices- Sub Graphs-Vertex degrees-Paths and connections-Cycles, Trees: Trees-Cut edges and bonds-Cut vertices –Cayley's formula.
Chapter 1(Sections 1.1-1.7) Chapter 2(Sections 2.1-2.4)

*Module II   (13 Hours)
Connectivity: Connectivity-Blocks-Euler tours and Hamilton cycles: Euler tours –Hamilton cycles.
Chapter 3(Sections 3.1, 3.2) Chapter4(.Sections 4.1, 4.2)

Module III   (13 Hours)
Matchings: Matchings- Matchings and coverings in Bipartite Graphs-Perfect Matching -Edge colourings: Edge chromatic number-Vizing's theorem.
Chapter 5(Sections 5.1-5.3) Chapter 6(Sections 6.1,6.2)

Module IV   (13 Hours)
Independent sets and cliques: Independent sets- Ramsey's theorem-Vertex colorings-Chromatic number-Brook's theorem -Hajos Conjecture-Chromatic polynomials- Girth and Chromatic number.
Chapter 7(Sections 7.1-7.2) Chapter 8(Sections 8.1-8.5)

Module V   (13 Hours)
Planar Graphs: Plane and planar graphs-Dual graphs-Euler's formula-Bridges-Kuratowski's theorem-The five color theorem and four color conjecture-Non Hamiltonian planar graphs.
Chapter 9(Sections 9.1-9.7)

Book for study

J.A. Bondy and U.S.R. Murty, Graph theory with Applications, MacMillan London, 1976.

Book for Reference

5. J.Clark and D.A. Holton, A First Look at Graph Theory, Allied Publishers New Delhi 1995.
6. Frank. Harary, Graph Theory, Narosa Publishing House,Tenth Reprint,2001.
7. Geir Agnarsson, Raymond Greenlaw, Graph Theory Modelling, Applications and Algorithms, Pearson ,Third Impression 2011.
8. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science, Prentice Hall of India 2005.

Course Designed by : S.KALAISELVI
Course Reviewed by : N.JEYANTHI
Course Checked by : A.R.THILAGAVATHI

M.Sc Mathematics
Semester – IV
Elective IV – FLUID DYNAMICS   12MME4
[For students admitted during the academic year 2012– 13 and onwards]   65 Hours

Preamble

This course is introduced in the syllabus in order to offer a through and methodical introductory exposition of the mathematical theory of fluid motion which is useful in applications to both hydrodynamics and aerodynamics. The course facilitates the students

- to understand the general properties of fluid motion such as continuity, pressure, dynamical equation, energy, vorticity etc.,
- to know the tensor methods applied to the flow of viscous fluids.
- to know the outline of the theory of two dimensional laminar flow in boundary layer
- to apply the aerofoil theory in aerodynamics.

Module I   **(13 Hours)**

Bernoulli's equation: Introductory notions – Physical dimensions – Velocity – Stream lines and paths of the particles – Stream tubes and filaments – Density – Pressure. Equations of motion: Differentiation with respect to time – The equation of continuity – Boundary conditions (both kinematical and Physical) – Rate of change of linear momentum – The equation of motion of an inviscid fluid.

Book 1: Chapter I (Sections 1.0-1.3) Chapter III (Sections 3.10-3.31, 3.40, 3.41)

Module II   **(13 Hours)**

Equations of motion: Euler's momentum theorem – Conservative forces – Lagrangian form of the equation of motion – Steady motion – The energy equation – Rate of change of circulation – Vortex motion – permanence of Vorticity.

Book 1: Chapter III (Sections 3.42-3.53)

Module III   **(13 Hours)**

Two dimensional motion: Introduction – Two dimensional functions – Basic singularities – Method of images – Conformal transformation – The Aerofoil.

Book 2: Chapter III (Sections 3.1-3.3, 3.5-3.7)

Module IV **(13 Hours)**

Dynamics of real fluids: The equations of motion for viscous flow – Some exact solutions of the Navier-Stokes equations.

Book 2: Chapter V (Sections 5.2,5.3)

*Module V **(13 Hours)**

The laminar boundary layer incompressible flow: Introduction – The boundary layer equations – Analytic solutions of the boundary layer equations.

Book 2: Chapter VI (Sections 6.1-6.3)

Books for Study

Book 1: For modules I and II : L.M.Milne – Thomson, Theoretical Hydrodynamics, Dover Publications, New york,Fifth Edition, 1996.

Book 2: For modules III to V : N.Curle and H.J.Davies, Modern Fluid Dynamics, Volume I, D.Van Nostrand Co., London, 1968.

Books for reference

3. S.W.Yuan, Fundamentals of fluid Mechanics, Prentice Hall of India, Pvt. Ltd., 1988.
4. John F. Douglas, Janusz M.Gasiorek and John A. Swaffield, fluid Mechanics, Pearson Education Ltd., Fourth Edition, 2002.

       Course Designed by : A.R.THILAGAVATHI
       Course Reviewed by : N.JEYANTHI
       Course Checked by : A.R.THILAGAVATHI

Curriculum Framework for the students admitted in the academic year 2017-2018

Department of Physics

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
Affiliated to Bharathiar University
B.Sc Physics
Scheme of Examination – CBCS Pattern

Sem	Course code	Course Title	Ins Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
I	117TA1/ 117MY1/ 117HD1/ 117FR1	**Part I -** Language I	6	3	25	75	100	4
	117EN1	**Part II -** English I	6	3	25	75	100	4
	117P01	**Part III -** Core I- Mechanics, Properties of Matter and Sound	7	3	25	75	100	5
		Core Practical I	3	-	-	-	-	-
	117AP1	Allied I-Chemistry I	4	3	25	50	75	3
		Allied Chemistry Practical	2	-	-	-	-	-
	117EVS	**Part IV -** Environmental Studies	2	2	50	-	50	2
II	217TA2/ 217MY2/ 217HD2/ 217FR2	**Part I -** Language II	6	3	25	75	100	4
	217EN2	**Part II -** English II	6	3	25	75	100	4
	217P02	**Part III -** Core II - Heat and Thermodynamics	4	3	25	75	100	4
	217P03	**Part III -** Core III - Optics	3	3	25	75	100	3
	217PP1	Core Practical I	3	3	40	60	100	4
	217AP2	Allied II- Chemistry II	4	3	25	50	75	3
	217APP	Allied Chemistry Practical	2	3	20	30	50	2
	217VEC	**Part IV-** Value Education	2	2	50	-	50	2

III	317TA3/ 317MY3/ 317HD3/ 317FR3	**Part I -** Language III	6	3	25	75	100	4
	317EN3	**Part II -** English III	6	3	25	75	100	4
	317P04	**Part III -** Core IV- Atomic and Solid State Physics	4	3	25	75	100	4
		Core Practical II	3	-	-	-	-	-
	317AP3	Allied III - Mathematics I	6	3	25	75	100	4
	317NSE	**Part IV** Non-Major Elective Science in everyday life	2	2	50	-	50	2
	317PS1	**Part IV** Skill Enhancement Course I- Mechanical & Medical Instrumentation	3	3	75	-	75	3
IV	417TA4/ 417MY4/ 417HD4/ 417FR4	**Part I -** Language IV	6	3	25	75	100	4
	417EN4	**Part II-** English IV	6	3	25	75	100	4
	417P05	**Part III-** Core V Mathematical Physics	4	3	25	75	100	4
	417PP2	Core Practical II	3	3	40	60	100	4
	417AP4	Allied IV- Mathematics II	6	3	25	75	100	4
	417NGA	**Part IV** General Awareness	-	1	50	-	50	2
	417PS2	**Part IV-** Skill Enhancement Course –II Electrical Instrumentation	3	3	75	-	75	3
	417GIS	Information Security	2	2	50	-	Grade	Grade
	417ALP	**Advanced Learners Course I -** Space Physics	-	3	-	100	100	4*

	517P06	**Part III -** Core VI - Electronic Devices and Circuits	5	3	25	75	100	4
V	517P07	Core VII - Nanosciences	6	3	25	75	100	4
	517PP3	Core Practical III	6	3	40	60	100	4
	517PE1 517PE2	Elective I – Scilab (T &P) / Astrophysics	5 5	3 3	40 25	60 75	100 100	4
	517PE3	Elective II – Project and Viva - voce	5	3	50	50	100	4
	517PS3	**Part IV-** Skill Enhancement Course-III Electronic Instrumentation	3	3	75	-	75	3
VI	617P08	**Part III -** Core VIII - Electricity and Magnetism	5	3	25	75	100	4
	617P09	Core IX - Quantum Mechanics and Relativity	5	3	25	75	100	4
	617P10	Core X - Digital Electronics and Microprocessors	5	3	25	75	100	4
	617PP4	Core Practical IV	6	3	40	60	100	4
	617PE4 617PE5	Elective III- Programming in C / Programming in MATLAB	4	3	25	75	100	4
	617PE6 617PE7	Elective Practical - Programming in C / Programming in MATLAB	2	3	20	30	50	2
	617PS4	**Part IV-**Skill Enhancement Course-IV Institutional Training	3	-	75	-	75	3
	617EX1/ 617EX2/ 617EX3/ 615EX4/ 617EX 5	**Part V-** Extension activity	-	-	50	-	50	2
	617ALP	**Advanced Learners Course II -** Energy Physics	-	3	-	100	100	4 *
Total							**3500**	**140**

* Starred credits are treated as additional credits (Optional).

Institutional training during summer vacation after II and IV semesters for one week.

B.Sc. Physics
Semester I
Part III - Core I - Mechanics, Properties of Matter and Sound
117P01

Credits: 5   **Hours: 105 (C-90, A-5, Tu-10)**

The main objectives of this course are

➢ To familiarize the basic principles, theory and concepts of gravitation   and properties of   matter.
➢ To impart knowledge in the conservation laws, energy, force and momentum in mechanics.
➢ To develop the problem solving skills in gravitation, elasticity and surface tension
➢ To define the parameters of sound such as origin, pitch and quality and ultrasonics
➢ To develop a basic understanding of acoustics

Unit I Conservation Laws   **(18 hrs)**

Conservation laws in general – Concepts of work, power and energy – Conservative forces – Energy – Conservative force as negative gradient of potential energy – Law of conservation of mechanical energy – Linear restoring force – Potential energy curve – Non-conservative force – General law of conservation of energy - Law of conservation of momentum – Centre of mass – Collision – Calculation of final velocities of colliding particles (Elastic and In-elastic Collision quantative analysis only).

UnitII   **(20 hrs)**
Gravitation

Kepler's law of motion – Derivation of law of gravitation – Newton's universal law of gravitation – Determination of 'G' by Boy's method – Merits of Boy's method – Acceleration due to gravity – Compound pendulum – Bar pendulum – Points of suspension and oscillations are interchangeable – Minimum time period – **Worked out examples**.

Elasticity

Definitions – Yield point, Elastic limit – Elastic fatigue – Three types of elasticity : Young's Modulus, Bulk Modulus, Modulus of Rigidity – Work done per unit volume in a strain - Poisson's ratio - Twisting couple of a cylinder – Torsion pendulum – Bending of beams – Cantilever - **Worked out examples.**

Unit III Viscosity   **(18hrs)**

        Stream line motion and Turbulent flow – Poiseullie's formula – Correction to Poiseullie's formula – Poiseullie's experiment (Variable pressure head)- Ostwald's viscometer – Terminal velocity and Stoke's formula – Stoke's method – Variation of viscosity with temperature and pressure – Friction and lubrication – Searle's viscometer – Rankine's method for the determination of viscosity of gas.

Unit IV Surface tension   **(18 hrs)**

        Surface tension – Explanation of surface tension on kinetic theory – Work done in increasing the area of a surface – Work done in blowing a bubble – Angle of contact – Spreading of one liquid over another – Pressure difference across a liquid surface – Excess pressure inside a curved liquid surface – Force between two plates separated by a thin layer of a liquid – Determination of surface tension of a liquid by Jaeger's method – Variation of surface tension with temperature – Quincke's method – Interfacial surface tension between two liquids – **Worked out examples**.

Unit V Acoustics   **(16 hrs)**

        Free vibrations – Undamped vibrations - Damped vibrations – Forced vibrations – Origin of Sound – Practical applications: Gramophone – Microphone & Loud speaker – Tape recorder – Reverberation – Sabine's Reverberation formula – Factors Affecting the Acoustics of Buildings – Sound Distribution in an Auditorium – Requisites for good Acoustics.

        Ultrasonics - Production of Ultrasonic waves – Piezoelectric Oscillator – Determination of velocity of Ultrasonic waves.

C – Contact hours   A – Assignment   Tu – Tutorial

Books for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I	Mechanics	D.S.Mathur	N.Chand Company	2004 Edition
II, III & IV	Properties of Matter	Brijlal, N.Subramanyam	Eurasia Publishing house, New Delhi	XIII Edition 2001
V	A Text book of Sound	N.Subramanyam, Brijlal	Vikas Publishing House Pvt Ltd.	Reprint 2006

Books for reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1.	Mechanics and Electrodynamics	Brijlal, N.Subramanyam and Jivan, Sehan	Eurasia Publishing House Private Ltd, New Delhi	Reprint 2005
2.	Elements of Properties of Matter	D.S Mathur	Shyamalal Charitable trust, New Delhi	Reprint 2009
3	A Text book of Sound	M.Ghosh	S.Chand &company Ltd	Reprint 2005

Course outcome:

On the completion of this course the student will be able to

CO1: use concepts of kinetic and potential energy and energy
conservation to solve dynamical problems

CO2: interpret the term ″elasticity″ and be able to determine the
stresses due to bending in beams of different cross sections

CO3: gain knowledge about viscous nature of the fluids and methods to
determine the property

CO4: understand the surface tension of liquids and correlate the
property with different natural phenomena

CO5: gain knowledge about perception of sound and building
acoustics and will be able to develop a fundamental knowledge of
building design

B.Sc. Physics
Semester II
Part III - Core II – Heat and Thermodynamics   217P02
Credits: 4   Hours: 60 (C-52, A-4, Tu-4)

The main objectives of this course are

➢ To provide a fundamental understanding on the behaviour of the gases
and their transport properties
➢ To educate about the basic laws of heat and its effect on the systems

- ➢ To develop an understanding on the laws of thermodynamics and thermodynamical systems and the balancing of the same in the universe
- ➢ To bring about a perception on the heat transfer phenomena during various thermodynamical processes
- ➢ To facilitate an understanding on the statistics involved in the particle distribution in the different energy levels in the thermodynamical systems
- ➢ To provide an opportunity to learn and develop the problem solving skills under heat transfer systems.

Unit I Behavior of real gases   (10 hrs)

Kinetic Theory of Gases – Expression for the Pressure of a Gas – Kinetic interpretation of Temperature – Degrees of Freedom and Maxwell's Law of Equipartition of Energy – Mean Free Path – Andrew's Experiments on Carbon dioxide – Behavior of gases at high Pressure – Vander Waals Equation of State – Critical constants - **Worked out examples**..

Unit II Transport Phenomena in gases   (10 hrs)

Inter Molecular Attraction – Porous Plug Experiment – Theory of Porous Plug Experiment – Joule - Kelvin Effect – Temperature of Inversion – Relation between Boyle Temperature, Temperature of Inversion and Critical Temperature – Liquefaction of Helium – K. Onne's Method – Helium I and Helium II – Adiabatic Demagnetization.

Unit III Thermodynamics   (10 hrs)

First Law of Thermodynamics – Application of First Law of Thermodynamics –   Isothermal Process – Adiabatic Process – Isochoric Process – Isobaric Process – Gas Equation during Adiabatic Process – Irreversible Process – Reversible Process – Second Law of Thermodynamics – Carnot's Reversible Engine – Carnot's Engine and Refrigerator –Carnot's Theorem- **Worked out examples**..

Unit IV Thermodynamics and Entropy   (12 hrs)

Thermodynamic (or Work or Absolute) Scale of Temperature – Absolute Zero on Work Scale – Work Scale and Ideal Gas Scale- Clapeyron's Latent Heat Equation – Entropy – Change in Entropy in a Reversible Process (Carnot's cycle) – Change in Entropy in an Irreversible Process – Third Law of Thermodynamics – Maxwell's Thermodynamical Relations - **Worked out examples**..

Unit V Statistical thermodynamics   (10 hrs)

Three Kinds of Particles – Maxwell-Boltzmann Energy distribution law – Bose – Einstein distribution law – Photon gas – Fermi-Dirac distribution law – Free Electrons in Metal: Electron gas – Comparison of three statistics.

C – Contact hours   A – Assignment   Tu – Tutorial

Book for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I-V	Heat and Thermodynamics	Brijlal and Subramaniam	S.Chand & Co.	Reprint 2006

Books for reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1.	Heat and Thermodynamics	S. Singhal & J.B. Agarwal	Pragathi Prakash an Publishing	Reprint 1995
2.	Text book of Heat and Thermodynamics	J.B. Rajam & C.L. Arora	Chand & Co	10th Reprint 1981

Course outcome:

On the completion of this course the student will be able to

CO1: gain knowledge in the fundamental behavior of the gases and the heat transport phenomena in them

CO2: understand the terms involving temperature and the effect of them on the mechanical systems

CO3: learn the thermodynamical laws and the disorder associated with the universal systems

CO4: comprehend on the Statistical distribution of particles in the thermodynamical systems

CO5: evolve the techniques of solving problems under thermodynamics of universal systems

<center>

B.Sc. Physics
Semester III

</center>

Part IV - Skill Enhancement Course I – Mechanical & Medical
<center>**Instrumentation   317PS1**</center>

Credits: 3   Hours: 45 (C-33, P-12)

The main objectives of this course are

➤ To provide a strong foundation in the working concepts of instruments used for parametric measurements.

- ➢ To impart basic knowledge in the production and the measurement of low Pressure.
- ➢ To facilitate the learners to understand about the measurement of various levels of temperature using thermometers.
- ➢ To provide a knowledge about electrodes and physiological assist devices used in Bio-medical systems.
- ➢ To familiarize the handling and maintaining of simple mechanical and medical instruments and their purposes by performing practical activity.

Unit I Characteristics of instruments and measurements system

(8 hrs)

Methods of measurements – Classification of instruments – Analog and digital modes of operation – Static characteristics – True value – Static error – Static correction – Scale range and Scale pan – Reproducibility and Drift – Repeatability – noise – Accuracy and Precision – Significant figures – Limiting errors – Types of errors – Gross errors – Systematic errors – Instrumental errors – Observational errors – Random errors.

Unit II Production and measurement of low pressure   (8 hrs)

Exhaust pumps – Characteristics – Rotary oil pump – Mercury Geissler pump – Diffusion-Condensation pump – Measurement of low pressure – The Bourdon gauge – McLeod gauge – The Pirani resistance gauge – Knudsen gauge.

Unit III Measurement of Temperature   (8   hrs)

Electrical resistance thermometer: Platinum resistance thermometer – Salient features of resistance wire thermometers – Thermocouple thermometer – Thermocouple construction – Measurement of thermocouple output – Advantages and Disadvantages – Optical pyrometers – Disappearing filament type.

Unit IV Electrodes & Physiological Assist Devices   (9 hrs)

Design and Components of the Bio-medical instrument system – Electrodes-half cell potential – Electrode paste – Metallic Microelectrode – Depth and Needle electrode – Surface electrode – Chemical Electrode – pH Electrode.

Model of the heart lung machine – Oxygenators – Bubble oxygenators – Blood pumps – Non-Pulsatile pump.

Unit V Practicals: (12 hrs)

1. Handling and maintaining microscope

2.Handling and maintaining spectrometer

3.Handling and maintaining telescope

4. Handling and maintaining glucometer and digital pressure meter

5. Measurements in Physics (Vernier calipers& Screw gauge)

6. Errors in measurements.

C-Contact hours P- Practicals

Books for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I-III	Electrical and Electronic Measurements and instrumentation	A.K.Sawhney	Dhantpat Rai & Sons Publications	4th Edition 1991
IV	Biomedical Instrumentation	Dr.M.Arumugam	Anuradha Agencies, Kumbakonam.	2nd Edition 2003

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1.	Instrumentation Devices and Systems	C.S. Rangan, G.R.Sharma and V.S.V.Mani	TataMcGraw Hill Publishing Ltd, New Delhi	11th Reprint 1992
2.	Experimental methods for Engineers	J.P.Holman	Mc Graw Hill International Book Company	Fifth edition
3	Biomedical Instrumentation and Measurements	Leslie Cromwell and Fred S.Weibeil	Printice Hall of India, New Delhi	1980
4	Hand book Biomedical Instrumentation	R.S Khandpur	Tata McGraw Hill publishing co	9th Edition 1996.

Course outcome:

On the completion of this course the student will be able to

CO1: interpret characteristics of measuring instruments and errors in the measurements.

CO2: gain knowledge about the construction and working of various pumps and gauges.

CO3: understand the working of different thermometers and temperature measurements.

CO4: understand different bio signals through ionic potentials generated and also interpret the purpose of using different electrodes.

CO5: develop skill in handling and maintaining instruments

B.Sc. Physics
Semester IV
Part IV-Skill Enhancement Course II-Electrical
Instrumentation   417PS2

Credits: 3   **Hours: 45 (T-33, P-12)**

The main objectives of this course are

➢ To impart fundamental knowledge about the principle, construction and working of the types of D'Arsonval movement.

➢ To provide an understanding about basics of voltmeters, ammeters, and their parameters such as sensitivity, loading effect, advantage etc.

➢ To enable the students to know about the construction and characteristic of current transformer.

➢ To provide an understanding about measuring of powers in AC, DC circuits.

➢ To conduct a hands on training in the handling of electrical instruments that are used for general purpose.

Unit I Galvanometers & Ammeters   (9hrs)

D'Arsonval Galvanometers – Construction of D'Arsonval Galvanometer – Torque Equation – Dynamic Behaviour of Galvanometers – Equation of Motion – Ballistic Galvanometer – Construction of ballistic galvanometer – Types of Instruments - Errors in Ammeters and Voltmeters - Permanent magnet Moving Coil Instruments (PMMC) – construction of PMMC Instruments – Torque Equation – Ammeter Shunts - Multi range Ammeters.

Unit II Voltmeters and Ohmmeters   (8hrs)

Multirange d.c. Voltmeters - Sensitivity of PMMC Voltmeters - Sensitivity of PMMC Voltmeters and their Loading Effects – Advantage s and Disadvantages of PMMC Instruments - Series type Ohmmeter - Shunt type Ohmmeters – Multimeter or Volt - Ohm - Milli – ammeter(V.O.M) - Megger .

Unit III Transformers   (8hrs)

Use of Instrument Transformers – Current Transformers – Characteristics of Current Transformers – Causes of Errors in Current Transformers – Means to reduce Errors in Current Transformers – Construction of Current Transformers**.**

Unit IV Measurement of Power and Watt meters   (8hrs)

Power in D.C. Circuits – Power in A.C. Circuits – Electrodynamometer Wattmeter – Construction of Electrodynamometer wattmeter – Measurement of Medium Resistance – Ammeter Voltmeter Method – Wheatstone Bridge – Application of D.C. Potentiometers.

Unit V Practicals   (12 hrs)

1. Handling and maintaining power supply

2. Handling and maintaining multimeter

3. Voltage measurement using Voltmeter

4. Current measurement using Ammeter

5. Handling and maintaining step down transformer

6. Calibrating resistance boxes.

T – Theory   P – practical

Books for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I-IV	A course in Electrical and Electronic Measurements and Instrumentation	A.K.Sawhney	Dhanpat Rai & Sons publications	Reprint 2008

Books for reference:

S.No.	Name of the Book	Authors	Publishers	Year & Edition
1.	Modern Electronic Instrumentation and Measurement technique	Albert D Helfrick and William D.Hooper	Prentice Hall of India, New Delhi	Reprint 2008

Course outcome:

On the completion of this course the student will be able to

CO1: understand the construction and working of the types of galvanometers and ammeters.

CO2: gain knowledge about meter movements, their sensitivity, loading effects and merits.

CO3: acquire a clear knowledge about current transformers, their errors and rectification.

CO4: develop knowledge about power measurements in AC, DC circuits.

CO5: acquire practical skill in handling and maintaining electrical instruments.

B.Sc. Physics - Semester IV
Advanced Learner's Course I   417ALP
Space Physics

Credits: 4

The main objectives of this course are

➢ To provide an understanding about the universe, celestial bodies and gravity existing among them.

➢ To acquaint oneself with the informations regarding the planets and moon.

➢ To instill an awareness regarding the planetary probes and SLVs.

➢ To provide a learning in the areas of developments in satellite communication.

➢ To inculcate a curiosity and interest to probe into the space.

Unit I

Atmosphere and beyond – Gravity – Escape velocity – Rockets – Artificial satellites – Geostationary orbit – Polar orbits.

Unit II

Lunar probes and planetary probes – Expedition to the moon – Conquest of moon – Moon probes, Asteroids – Mars – Jupiter – Venus – Mercury –Saturn – Distant planets.

Unit III

Planetary probes and Indian launch vehicle – Genesis – Aryabhatta – Bhaskara – SLV3 – Apple.

Unit IV

ASLV – PSLV – GSLV – Polar Satellite Launch Vehicle – Geosynchronous Satellite Launch Vehicle – Indian National Satellite Systems – Chandhrayan – Mangalyan.

Unit V

Satellite Application – Introduction – Satellite television – Telephone service via satellite – Data communication satellite – Satellite for earth observation.Satellite for weather forecast – Satellite for scientific studies – Satellite for military applications.

Books for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I to IV	Space research	Prof.S.Kumaravelu, Prof. N. Suseela Kumaravelu	Senthil Art Printers, Sivakasi,	2002
V	Satellite Communications	Dr. D.C.A.Agarwal, A.K. Mani	Khanna Publishers	4th edition 2000

Course outcome:

The self learning of this course will be able to

CO1: develop an interest in the knowing of universe.
CO2: provide an understanding of the satellite probes and planets.
CO3: create an awareness on the types of launch vechicles used for various purpose.
CO4: facilitate an understanding on the Indian satellite system.
CO5: generate a responsibility to contribute oneself for the Indian space mission.

Curriculum Framework for the students admitted in the academic year 2016-2017

Department of Physics

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
Affiliated to Bharathiar University
B.Sc. Physics
Scheme of Examination – CBCS Pattern

Sem	Course code	Course Title	Ins Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	115TA1/ 115MY1/ 115HD1/ 115FR1	**Part I -** Language I	6	3	25	75	100	4
	115EN1	**Part II -** English I	6	3	25	75	100	4
	115P01	**Part III -** Core I- Mechanics and Properties of Matter	7	3	25	75	100	4
		Core Practical I	3	-	-	-	-	-
	115AP1	Allied I-Chemistry I	4	3	25	50	75	3
I		Allied Chemistry Practical	2	-	-	-	-	-
	115EVS	**Part IV -** Environmental Studies	2	2	50	-	50	2
	215TA2/ 215MY2/ 215HD2/ 215FR2	**Part I -** Language II	6	3	25	75	100	4
	215EN2	**Part II -** English II	6	3	25	75	100	4
II	215P02	**Part III -** Core II - Heat and Thermodynamics	7	3	25	75	100	4
	215PP1	Core Practical I	3	3	40	60	100	4
	215AP2	Allied II- Chemistry II	4	3	25	50	75	3
	215APP	Allied Chemistry Practical	2	3	20	30	50	2
	215VEC	**Part IV-** Value Education	2	2	50	-	50	2
	315TA3/ 315MY3/ 315HD3/ 315FR3	**Part I -** Language III	6	3	25	75	100	4
	315EN3	**Part II -** English III	6	3	25	75	100	4
	315P03	**Part III -** Core III- Optics	4	3	25	75	100	4
III		Core Practical II	3	-	-	-	-	-
	315AP3	Allied III - Mathematics I	6	3	25	75	100	4
		Part IV						
	315PS1	Skill Based Course I- Mechanical Instrumentation	3	3	75	-	75	3
	315NSE	Non-Major Elective Course I: Science in everyday life	2	2	50	-	50	2

Sem	Code	Title						
IV	415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I -** Language IV	6	3	25	75	100	4
	415EN4	**Part II-** English IV	6	3	25	75	100	4
	415P04	**Part III-** Core IV- Waves and Oscillations	4	3	25	75	100	4
	416PP2	Core Practical II	3	3	40	60	100	4
	415AP4	Allied IV- Mathematics II	6	3	25	75	100	4
	415PS2	**Part IV-** Skill Based Course -II Medical Instrumentation	3	3	75	-	75	3
	415NGA	Non-Major Elective Course II: General Awareness (On-line)	-	1	50	-	50	2
	415GIS	Information Security	2	2	50	-	Grade	Grade
	415ALP	Advanced Learners Course I - Space Physics	-	3	-	100	100	3*
V	515P05	Part III - Core V- Mathematical Physics	5	3	25	75	100	4
	515P06	Core VI- Atomic and Solid State Physics	4	3	25	75	100	4
	515P07	Core VII- Electronic Devices and Circuits	4	3	25	75	100	4
	515PP3	Core Practical III	6	3	40	60	100	4
	515PE1	Elective I – Nanosciences	4	3	25	75	100	4
	515PE2	Elective II – Project and Viva - voce	4	3	50	50	100	4
	515PS3	Part IV- Skill Based Course-III Electrical and Electronic Instrumentation	3	3	75	-	75	3
VI	615P08	Part III - Core VIII- Electricity and Magnetism	5	3	25	75	100	4
	615P09	Core IX - Quantum Mechanics and Relativity	5	3	25	75	100	4
	615P10	Core X - Digital Electronics and Microprocessors	5	3	25	75	100	4
	615PE3	Elective III- Programming in C	4	3	25	75	100	4
	615PP4	Core Practical IV	6	3	40	60	100	4
	615PPE	Elective Practical Programming in C	2	3	20	30	50	2
	615PS4	Part IV-Skill Based Course-IV Institutional Training	3	-	75	-	75	3
	615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V- Extension activity	-	-	50	-	50	2
	615ALP	Advanced Learners Course II - Energy Physics	-	3	-	100	100	3*
Total							**3500**	**140**

B.Sc Physics
Semester I
Part III - Core I - Mechanics and Properties of Matter   115P01

Credits: 4   **Hours: 105 (C-80, A-10, Tu-15)**
Preamble:

  The purpose of this paper is to give an introductory account of basic ideas in conservation principles and properties of matter.

Objectives:
- To enable the students in order to learn the basic principles, theory and concepts of Matter and Mechanics.
- To impart knowledge about the physical properties of liquids such as viscosity and surface tension of liquids.

Learning outcome:
- Will be able to understand the conservation laws and gravity governing the bodies in motion.
- Will be able to acquire knowledge about elasticity, viscosity and surface tensional properties of matter.

Unit I Conservation Laws   **(16hrs)**

  Conservation laws in general – Concepts of work, power and energy – Conservative forces – Energy – Conservative force as negative gradient of potential energy – Law of conservation of momentum – Centre of mass – Motion of the Centre of mass – Centre of mass frame of reference – Collision – Calculation of final velocities of colliding particles.

Unit II Gravitation   **(16hrs)**

  Kepler's law of motion – Derivation of law of gravitation – Newton's universal law of gravitation – Determination of 'G' by Boy's method – Merits of Boy's method – Acceleration due to gravity – Compound pendulum – Bar pendulum – Points of suspension and oscillations are interchangeable – Minimum time period – **Worked out examples**.

Unit III Elasticity   **(18hrs)**

  Definitions – Yield point, Elastic limit – Elastic fatigue – Poisson's ratio – Poisson's ratio for Rubber – Work done in Deforming a body – Bulk modulus (Relation between K, Y and σ) Modulus of Rigidity – Relation between elastic constants (Y, η, K and σ) – Twisting of a cylinder – Torsion pendulum – Bending of beams – Bending moment – Cantilever – Beam supported at its ends and loaded in the middle – I Section girders – Determination of elastic constants by Searle's method – **Worked out examples.**

Unit IV Viscosity   **(16hrs)**

  Stream line motion and Turbulent flow – Poiseullie's formula – Correction to Poiseullie's formula – Poiseullie's experiment (Variable pressure head)- Ostwald's viscometer – Terminal velocity and Stoke's formula – Stoke's method –

Variation of viscosity with temperature and pressure – Friction and lubrication – Searle's viscometer – Rankine's method for the determination of viscosity of gas.

Unit V Surface tension (14hrs)

Surface tension – Explanation of surface tension on kinetic theory – Work done in increasing the area of a surface – Work done in blowing a bubble – Angle of contact – Spreading of one liquid over another – Pressure difference across a liquid surface – Excess pressure inside a curved liquid surface – Force between two plates separated by a thin layer of a liquid – Determination of surface tension of a liquid by Jaeger's method – Variation of surface tension with temperature – Quincke's method – Interfacial surface tension between two liquids – **Worked out examples**.

Books for study:

1. Mechanics, D.S.Mathur, N.Chand & Company, 2nd edition **(Unit I)**.
2. Properties of Matter, Brijlal N.Subramanyam Eurasia Publishing house, New Delhi, 2nd edition **(Unit II, III)**.
3. Properties of Matter and Acoustics, R.Murugesan & Kiruthiga Sivaprasath, Chand & Co. 2012 edition **(Unit IV and V)**.

Books for reference:

1. Mechanics and Electrodynamics, Brijlal, N.Subramanyam and Jivan, Sehan,Eurasia Publishing House Private Ltd, New Delhi, Revised and enlarged edition, 2005.
2. Elements of Properties of Matter, D.S Mathur,Shyamalal Charitable trust, New Delhi, Reprint, 2010.

B.Sc Physics
Semester II
Part III - Core II – Heat and Thermodynamics   215P02

Credits: 4   **Hours: 105 (C-80, A-10, Tu-15)**

Preamble:

The revolution in Physics can be attributed to the study of Thermodynamics and Statistical Physics. A deep understanding of Thermodynamics is essential in order to appreciate the environmental concepts in Physics.

Objectives:
➢ To impart knowledge about behavior of gases and concepts about low temperature Physics
➢ To study about the Thermodynamical laws and their applications in day –today life.

Learning outcome:
➢ Will learn about the behavior of gases.
➢ Will be able to understand liquefaction process of gases.
➢ Will gain knowledge about the application of statistics in Thermodynamics.

Unit I Ideal gas and Behavior of real gases   **(18hrs)**

Three states of Matter – Kinetic model - Kinetic theory of gases – Expression for the pressure Exerted by a gas – Derivation of Gas equation – Derivation of gas laws – Charles law – Boyle's law – Degree of Freedom – Andrew's experiment on CO_2 – Critical Constants – Behavior of gases at high pressure – Boyle Temperature – Vanderwaal's equation of state – Comparison with Experimental PV Curves – Estimation of critical constants – Constants of Vanderwaal's Equation – Critical Coefficient – Limitations of Vanderwaal's Equation – Reduced Equation of State – Properties of Matter near critical point – Experimental determination – **Worked out examples**.

Unit II Transport phenomena in gases   **(16hrs)**

Joule's Law for a perfect gas(Intermolecular attraction) – Joule-Thomson Effect – Joule-Thomson Porous Plug experiment – Regenerative Cooling(Theory Porous Plug experiment) – Joule-Kelvin effect – Temperature of Inversion – Relation between T_B , T_i and T_c – Mean free path – Sphere of influence – Expression for Mean free path(Clausius Expression) – Viscosity: Transport of momentum- Thermal Conductivity: Transport of Thermal energy – Liquefaction of Hydrogen – Liquefaction of Helium – Properties of liquid He I and He II – Production of low temperature – Adiabatic demagnetization – Measurement of low temperature: (Helium Vapour Pressure Thermometer)

Unit III Thermodynamics   **(18hrs)**

Zeroth law of Thermodynamics – First law of thermodynamics – Application of first law of thermodynamics – Specific heat capacity of a gas – Isochoric process – Isobaric process – Adiabatic process -Isothermal process – Reversible and Irreversible process – Carnot's Ideal heat engine – Carnot's cycle – Carnot's engine and refrigerator – Second law of thermodynamics Carnot's theorem – Clapeyron's Latent heat equation using Carnot's Cycle – Concept of Entropy – Change in Entropy – Change in entropy in a reversible cycle – Change in entropy in a irreversible process – Kelvin's Thermodynamic Scale of Temperature – Third law of thermodynamics : Nernst's Heat Theorem – Maxwell's thermodynamical relations – **Worked out examples**.

Unit IV Statistical aspects of Thermodynamics   **(14hrs)**

Probability **–** Principle of equal A priori probability – Some basic rules of probability theory – Permutations and Combinations – Macrostate and Microstate – Thermodynamical probability – Fluctuations and their dependence **–** Constraints on a system – Static and Dynamic systems – Most probable State – Concept of a cell in a component – Phase Space – Applications: One-Dimensional Harmonic Oscillator – Entropy and Probability – Boltzmann's Canonical distribution law – The equipartition of energy – Partition function and its relation with thermodynamic quantities – **Worked out examples**.

Unit V Thermodynamical distribution   **(14hrs)**

Three Kinds of Particles – Maxwell-Boltzmann Energy distribution law – Bose – Einstein distribution law – Photon gas – Fermi-Dirac distribution law – Free

Electrons in Metal: Electron gas – Comparison of three statistics – Difference between Classical and Quantum Statistics.

Books for study:
1. Heat and Thermodynamics, Brijlal and Subramaniam, S.Chand & Co. Reprint
   2006 **(Unit I – V).**

Books for reference:
1. Heat and Thermodynamics, S. Singhal & J.B. Agarwal, Pragathi Prakashan
   Publishing, Reprint 1995.
2. Text book of Heat and Thermodynamics, J.B. Rajam & C.L. Arora,
   Chand & Co. 10th Reprint.

B.Sc Physics
Semester III
Part IV - Skill Based Course I - Mechanical Instrumentation   315PS1
Credits: 3   **Hours: 45 (C-40, A-5)**
Preamble:

Experiment is an act or operation carried out under condition determined by experimental in order to discover some unknown principle and effect to test establish and illustrate some suggested or known truth. Experimentation is vital for progress in any field where information is lagging. The measurements and the correct interpretation thereof might be used to study the functioning of different components which comprise a particular system, determine the cause of malfunctioning of the system and have a thorough understanding of its operation.

Objectives:
➢ To provide a good foundation in measurement concepts.
➢ To introduce knowledge of the parameters that needs to be measured.
➢ To provide a knowledge of the functioning of instruments for parametric
   measurement.

Learning outcome:
➢ Will learn the characteristics of each type instrument and the errors associated in
   the measurement.
➢ Will acquire information about the working principle and the parameters of
   measurements

Unit I Characteristics of instruments and measurements system   (8 hrs)

Methods of measurements – Classification of instruments – Analog and digital modes of operation – Static characteristics – True value – Static error – Static correction – Scale range and Scale pan – Reproducibility and Drift – Repeatability – noise – Accuracy and Precision – Significant figures – Limiting errors – Types of errors – Gross errors – Systematic errors – Instrumental errors – Observational errors – Random errors.

Unit II Production and measurement of low pressure   (8 hrs)

Exhaust pumps – Characteristics – Rotary oil pumps – Mercury pumps (Geissler pumps) – Diffusion-Condensation pumps – Measurement of low pressure –

The Bourdon gauge – McLeod gauge – The Pirani resistance gauge – Ionization gauge (Hot cathode) – Knudsen gauge.

Unit III Measurement of Temperature   **(8hrs)**

        Electrical resistance thermometer: Platinum resistance thermometer – Salient features of resistance wire thermometers – Thermocouple thermometer – Thermocouple construction – Measurement of thermocouple output – Advantages and Disadvantages – Optical pyrometers – Disappearing filament type.

Unit IV Measurement of flow and liquid level   **(8 hrs)**

        Turbine flow meter – Orifice flow meter – Hot wire Anemometer – Measurement of liquid level: Resistive method – Capacitive method – Inductive method – Measurement of liquid level using float.

Unit V Measurement of Humidity and thickness   **(8 hrs)**

        Hygrometer – Due point hygrometer – Surface conductivity method – Measurement of thickness: Inductive method – Measurement of thickness using ultra sonic vibrations – Nuclear radiation method.

Books for study:

1. Electrical and Electronic Measurements and instrumentation, A.K.Sawhney – Dhantpat Rai & Sons Publications – 1991 Revised 4th Edition.

2. Industrial Instrumentation, K.Krishnaswamy and S. Vijaya chitra – New age International Publishers 1st edition – Reprint 2008.

Books for Reference:

1. Instrumentation Devices and Systems, C.S. Rangan, G.R.Sharma and V.S.V.Mani–11th Reprint 1992, TataMcGraw Hill Publishing Ltd, New Delhi.

2. Experimental methods for Engineers, J.P.Holman – Fifth edition – Mc Graw, Hill International Book Company.

B.Sc Physics
Semester IV
Part IV - Skill Based Course II - Medical Instrumentation   415PS2

Credits: 3   **Hours: 45 (C-4, A-5)**

Preamble:

        Medical instrumentation is in the designing and developing era and every year the hospitals and research institutes are adding modern medical equipments for the medical study. Therefore, it is necessary for every student to understand the Physics principles and functioning of various medical equipments. This paper would enable the students to acquire knowledge about the functioning of some of these medical equipments.

Objectives:
➢ To familiarize the Biomedical assist devices.
➢ To develop an understanding about the working principle of specialized medical equipments like CT scan, MRI, Ultra sonogram.

Learning outcome:
➢   Will be able to know the names of the hospital equipments and their purpose.
➢   Will be able to learn and appreciate the Physics principles of the equipments.

Unit I   Electrodes (8 hrs)

Transport of ions through the cell membrane – Resting and action potentials – Characteristics of resting potential – Design and Components of the Bio-medical instrument system – Electrodes- half cell potential – Electrode paste – Metallic Microelectrode – Depth and Needle electrode – Surface electrode – Chemical Electrode – pH Electrode.

Unit II Bio Potential Recorders (8hrs)

Characteristics of the recording system – Mechanical functions of the heart – Electro Cardiography – Origin of Cardiac Action potential – ECG lead configurations – ECG recording setup – Practical considerations for ECG recording – Analysis of recorded ECG signals

Unit III Physiological Assist Devices (8hrs)

Pacemakers – Energy requirements to excite heart muscle – Methods of stimulation – External and Internal Pacemakers – Different modes of operation – Ventricular asynchronous pacemaker – Pacemaker batteries – Lithium cells.

Defibrillators – Internal and External defibrillators – synchronized DC defibrillator – Model of the heart lung machine – Oxygenators – Bubble oxygenators – Blood pumps – Non-Pulsatile pump – Kidney machine – Renal function – Dialysis – Peritoneal dialysis.

Unit IV Operation Theatre Equipment (8hrs)

Surgical diathermy : Electro surgery techniques – Electrosurgical diathermy unit – Range and area of irritation of different diathermy techniques – Ventilators – Anesthesia machine – Flow meters – Electromagnetic blood flow meters.

Unit V Advances in Biomedical Instrumentation (8hrs)

Endoscopes – Computer tomography – Principle – CT scanner – Thermography – Infrared thermography – Ultrasonic imaging systems: Ultrasonic propagation through tissues – Display modes – A Mode – B Mode – T-M Mode – Recording devices – Ultrasonic imaging instrumentation

Magnetic resonance imaging: Magnetic Resonance phenomenon – MRI instrumentation.

Book for study:

Biomedical Instrumentation, Dr.M.Arumugam, Anuradha Agencies, Vidyakaruppur, Kumbakonam, 2ⁿᵈ edition 6ᵗʰ Reprint, 2003.

Books for reference:

1. Biomedical Instrumentation and Measurements, Leslie Cromwell and Fred S.Weibeil Printice Hall of India Rt,New Delhi.
2. Hand book Biomedical Instrumentation, R.S Khandpur, Tata Mc Graw Hill publishing co, 9ᵗʰ Edition 1996

B.Sc Physics
Semester IV
Advanced Learner's Course I   415ALP
Space Physics   Credits: 4

Preamble:

This paper is introduced for the advanced learners to inculcate an interest and curiosity to know about space. This paper also imparts knowledge about the recent development in satellite communication.

Objectives:

➢ The main objective of this Self learning paper is to make the students understand the existence of the celestial bodies and the forces between them.

➢ Secondly this paper will facilitate the students to learn about the attempts being made by our country in the space exploration.

Unit I

Atmosphere and beyond – Gravity – Escape velocity – Rockets – Artificial satellites – Geostationary orbit – Polar orbits.

Unit II

Lunar probes and planetary probes – Expedition to the moon – Conquest of moon – Moon probes, Asteroids – Mars – Jupiter – Venus – Mercury –Saturn – Distant planets.

Unit III

Planetary probes and Indian launch vehicle – Genesis – Aryabhatta – Bhaskara – SLV3 – Apple.

Unit IV

ASLV – PSLV – GSLV – Polar Satellite Launch Vehicle – Geosynchronous Satellite Launch Vehicle – Indian National Satellite Systems – Chandhrayan – Mangalyan.

Unit V

Satellite Application – Introduction – Satellite television – Telephone service via satellite – Data communication satellite – Satellite for earth observation.

Satellite for weather forecast – Satellite for scientific studies – Satellite for military applications.

Books for study:

1. Space research, Prof. S.Kumaravelu, Prof. N. Suseela Kumaravelu, Senthil Art Printers, Sivakasi, 2002 **(Unit I to IV)**.

2. Satellite Communications, Dr. D.C.A.Agarwal, A.K. Mani, Khanna Publishers, 4th edition, 2000 **(Unit V)**.

B.Sc Physics
Semester V
Part III - Elective I - Nano Sciences   515PE1

Credits: 4   **Hours: 60 (C-56, A-4)**

Preamble:

"There's Plenty of Room at the Bottom" – so said Richard Feymann describing a process by which the ability to manipulate individual atoms and molecules might be developed, using one set of precise tools to build and operate, another a smaller set and so on down to the needed scale.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule. The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs). At present the practice of Nanotechnology embraces both Stochastic and deterministic approach.

Objectives:
➢ To impart knowledge about properties and synthesis of Nanomaterials
➢ To develop an understanding about characterization techniques and applications of Nanomaterials.

Learning outcome:
➢ Will learn about the basic classification of nanomaterials and special Nanomaterials
➢ Will acquire knowledge about Nanomaterials, analytical instrumentation and applications in cosmetics, textiles, sensors etc.,

Unit I Generations of Nanomaterials and Properties   **(13hrs)**

Nanotechnology Generation – Definition of Nanoscience, Nanotechnology **–** Surface to Volume Ratio at Nanoscale – Mechanical properties – Thermal properties – Optical properties – Electrical properties – Magnetic properties.

Unit II Classification and Special Nanomaterials   **(13hrs)**

Classification of Nanomaterials: 2D, 1D and 0D Nanomaterials – Fullerene – Carbon Nano tubes – Types of Nanotubes – Synthesis of CNT – Properties of CNT – Applications of CNT – Porous Silicon.

Unit III Nanomaterial Synthesis   **(13hrs)**

Top Down and Bottom up Techniques – Chemical methods of synthesis: Sol-Gel method – Hydrothermal synthesis – Microwave synthesis.
Physical methods of synthesis: High energy Ball milling – Laser ablation – Sputter deposition – Plasma Arc discharge.

Unit IV Characterization Techniques   **(13hrs)**

(Portion covers Instrumentation, working principle and analysis technique towards Nanoscale).
Electron Microscopes: SEM – AFM
Nano manipulator – Nanotweezers.
Optical Microscope: Confocal Microscope
Diffraction Method: X-ray Diffraction Technique Debye-Scherrer Relation

Unit V Applications of Nanomaterials **(13hrs)**

Nano sensors : Nano pressure sensor – Bio sensors

Nano electronics: Single Electron Transistor

Nanotechnology in energy : Quantum Dot solar cells

Nanotechnology in textiles: Characteristics of nano finishing in garments – UV protection of textiles – Antibacterial textiles

Nano technology in Cosmetics :Sun screen lotion – Anti ageing creams-Tattoos.

Books for study:

1. Nanotechnology Principles and Practices, Sulabha K Kulkarni, 2nd edition,
   Capital publishing company, New Delhi.

2. Introduction to NanoScience and Nanotechnolgy, K.K.Chattopadhyaya and A.N
   Banerjee First Edition, PHI learning Private Ltd., New Delhi.

3. Nanotechnology, Technology Revolution of 21st Century, Er. Rakesh Rathi,
   S.Chand &Company Ltd, New Delhi,   1st edition 2009.

4. Nanomaterials, Nanotechnologies and Design, Micheael F.Ashby, Pauloj. Ferreira,
   Daniel L. Schodel, First Printed in India 2011, Elsevier India Pvt. Ltd.

B.Sc Physics
Semester V
Part IV-Skill Based Course III-Electrical and Electronic Instrumentation
515PS3

Credits: 3 **Hours: 45 (C-40, A-5)**

Preamble:

An instrument may be defined as a device for determining the value or magnitude of a quantity or a variable. The electronic instrument as its name implies is based on the electrical or electronic principles for its measurements function. An electronic instrument may be a relatively uncomplicated device of simple construction such as a basic DC current meter. To use the instruments intelligently, one needs to understand their operating principles and upraise their suitability for the intended applications.

Objectives:

➢ To provide a good foundation in Electrical and electronic quality measurements

➢ To provide a knowledge of the behavior of instruments

Learning outcome:

➢ Students will acquire a knowledge about the instruments and the parameters
   measured in the instrument measurements.

➢ Students will also learn about the applications of these measurements.

Unit I Electro mechanical operating instruments (8hrs)

Torque and deflection of the galvanometer – Steady state deflection – Dynamic behavior – Damping mechanism – Permanent Magnet Moving Coil Mechanism (PMMC) – D'Arsonval Movement

Power, energy and Power factor Measurements – Electrodynamometer – Wattmeter – Power factor meter.

Unit II Ammeters, Voltmeters and Ohmmeters (8hrs)

DC Ammeters **–** Shunt resistor – Ayrton shunt – DC Voltmeters – Multiplier Resistor – Multirange Voltmeter – Voltmeter Sensitivity – Series Type Ohmmeter – Shunt type Ohmmeter – Multimeter or VOM – Calibration of DC instruments.

Unit III Oscilloscopes (8hrs)

Oscilloscope block diagram – CRT – Electrostatic – Deflection – Screens – Graticules – CRT circuits – Vertical deflection system – Horizontal deflection system – Oscilloscope techniques – Determination of frequency – Digital storage oscilloscope – Block diagram explanation only.

Unit IV Data converters, Analog and Digital data acquisition systems. **(8hrs)**

Digital to analog converters – Basic inputs and outputs – Weighted resistor network technique – Analog to Digital converters – Basic inputs and outputs – Successive approximation technique.

A/D data acquisition systems – Block diagram – Interfacing transducers to electronic control and measuring systems – Instrumentation amplifier – Voltage to current converter (current loop) – Digital to Analog multiplexing – Analog to Digital Multiplexing.

Unit V Computer controlled – Test systems (8hrs)

Testing a Radio receiver – Instruments used in computer controlled instrumentation – Frequency counter for operation with IEEE 488 bus – Signal generator interfaced with IEEE 488 bus – IEEE 488 electrical interface.

Books for study:

1. Modern Electronic Instrumentation and Measurement technique, Albert D

    Helfrick and William D.Hooper Prentice Hall of India, Reprint 2008, New Delhi **(Units I, II, III, IV & V)**.

2. PC based instrumentation concepts and practice, N.Mathivanan – Prentice Hall & India – 2007 print – New Delhi **(Unit IV (partly))**.

 Book for Reference:

 A course in Electrical and Electronic Measurements and Instrumentation,

 A.K.Sawhney, Dhanapat Rai & Sons publications, Reprint 2008.

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B.Sc Physics

Semester VI

Part III - Core IX - Electricity and Magnetism   615P09

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Credits: 4   Hours: 75 (C-60, A-5, Tu-10)

Preamble:

Electricity, Magnetism and Electromagnetic theory are subject topics of all times. These topics have many applications in our day-to-day life.

Objectives:
- ➢ To impart the knowledge about the basic concepts of electric and magnetic field.
- ➢ To facilitate an understand of the applications of electrostatics, Electromagnetics and circuit analysis.

Learning outcome:
- ➢ Will learn to understand the electrical circuits by finding the current and voltage in the electrical loops.
- ➢ Will gain knowledge about electromagnetic oscillations, RLC circuits and electromagnetic theory.

Unit I Electrostatics (12hrs)

Gauss's law & proof – Gauss's law in differential form – Gauss's law and Coulomb's law – Laplace and Poisson's equation – Applications: Electric field due to an uniformly charged sphere – field due to two concentric spherical conductors – Field of a line charge – Field of a charged conductor – Force on the surface of a charged conductor – Demonstration of mechanical force – **Worked out examples.**

Unit II Capacitors (12hrs)

Parallel plate capacitor – Cylindrical capacitor – Spherical capacitor – Guard Ring Capacitor – Energy stored in a capacitor – Force of attraction between capacitor plates – Dielectric constant - Dielectric strength – **Problems *.**

Magnetic field due to steady current **:** Bio-Savart Law - Ampere's circuital law and proof – Applications of Ampere's law – **B** near a long wire – B for a Solenoid – B for a Toroid – Character of **B** lines and the divergence of **B** – Ampere's law in curl form – **Worked out examples.**

Unit III Electromagnetic Induction (12hrs)

Inductor and inductance – Self inductance – Physical significance of self inductance – Self inductance of a Solenoid – Two parallel wires – Toroidal coil of circular cross section – Energy stored in magnetic field – Measurement of self inductance by Rayleigh's method – Mutual inductance – Mutual inductance of concentric solenoids – Relation between mutual inductance and self inductance – Inductances in series and in parallel Measurement of mutual inductance – **Worked out examples.**

Unit IV Electromagnetic oscillations (12hrs)

Simple R-L circuit: Growth and decay of current (Helmolholtz Equation) – RC Circuit Charge and discharge of a condenser – Determination of high resistance by leakage method – Series LCR circuit – Charge and discharge – **Worked out examples.**

A.C circuit: A Parallel (or Anti) resonant circuit – Parallel resonant circuit when inductance L have some resistance – Condition for unity power factor – Current magnification – Selectivity of a parallel resonance circuit – Comparative study of a series resonant and parallel resonant circuit – Power in AC circuit – Choke coil – **Worked out examples.**

Unit V Circuit Analysis (12hrs)

Classification of circuits – Laws and Theorems for Circuit Analysis: Superposition theorem – Thevenin's theorem – Norton's theorem – Maximum power transfer theorem – **Worked out examples.**

Electromagnetic theory: Basic equations – Maxwell's equations in free space – Electromagnetic waves in free space – Electromagnetic waves in isotropic non-conducting media – Index of refraction.

Book for study:

1. Electricity and Magnetism, Dr. K.K. Tewari, S.Chand & Co. Ltd., New Delhi, Revised edition 2011.

Books for reference:

1. Electricity and Magnetism, R. Murugeshan, S.Chand &Co. Ltd., New Delhi, 1995 edition.

2. Electricity and Magnetism, A.S.Mahajan, A.A. Rangawala, Tata McGraw Hill Publishing Co.Ltd, New Delhi, 1998 edition.

B.Sc Physics
Semester VI
Part III - Core X - Quantum Mechanics and Relativity   615P10

Credits: 4   **Hours: 75 (C-60, A-5, Tu-10)**

Preamble:

In the modern age, Quantum Mechanics is an indispensable part of the Physicist education. It has handled problems ranging from stellar constellation to that of atomic nuclei, elementary particles and to the level of the particle-Bosons and neutrinos.

Objectives:

➢ To educate the principles of Quantum Mechanics and its applications to various problems.

➢ To impart basic knowledge about theory of relativity.

Learning outcome:

➢ Students will learn about the wave nature of matter, the properties associated with these waves nature.

➢ Students will be able to understand the concepts such as Uncertainty and representation of various classical parameters such as energy, momentum using QM operators.

➢ Will be able to understand the relative concepts matter and motion.

Unit I Foundations of Wave Mechanics   **(12hrs)**

Dual nature of light and matter – Experimental evidences for matter waves – Davisson and Germer experiment – G.P. Thomson's experiment – Velocity of DeBroglie waves: Quantum picture of a material particle – Relation between group velocity and phase velocity for a non-relativistic free particle – Equation of motion of matter waves – Time dependent and time independent Schroedinger's equation – Physical interpretation of the wave function – **Worked out examples.**

Unit II Applications of Schrödinger wave equation   (12hrs)

Normalized and Orthogonal wave function – Conditions satisfied by a wave function – Solution of the Schrödinger equation – Expectation values of dynamical quantities – Probability current density: Particle flux – Ehrenfest's theorem.

The free particle –Particle in a box (one dimensional case) – Rectangular potential Barrier – Application of Barrier penetration (α-Decay) – One dimensional Linear Harmonic Oscillator.

Unit III The Uncertainty principle & Operators   (12hrs)

The uncertainty principle – Examples of position-momentum uncertainty – Proof of uncertainty principle for one dimension wave packet – Application of uncertainty principle – The Non-existence of the electron in the Nucleus – Light quanta

Operators and Linear operators – Eigen values and Eigen functions – The operator formalism in Quantum mechanics – Momentum operator – Hamiltonian operator – Hermitian operators – Properties of Hermitian operators – Commutation relation between (i) Position and momentum (ii) Hamiltonian and momentum (iii) The Commutation rules for the components of orbital angular momentum (i.e.) L^2 with Lx, Ly and Lz (iv) Ladder operators – **Worked out examples.**

Unit IV Reference frames and Galilean invariance   (12hrs)

Reference frame – Newton's laws and its limitations – Inertial frames of reference – Galilean transformation – Transformation of position, length, velocity and acceleration.

Classical relativity – Newton's laws of motion – The law of conservation of momentum and energy – Transformation equation for a frame of reference inclined to an inertial frame – Transformation equation for a rotating frame of reference – Non-inertial force: Fictitious forces – Effect of centrifugal and corliolis forces due to earth rotation.

Unit V Special theory of relativity   (12hrs)

Michelson and Morley experiment – Einstein concept of special theory of relativity – Lorentz transformation co-ordinate equations – Results following from Lorentz transformation equations – Length contraction – Time dilation – Verification of time dilation – Simultaneity – Transformation of velocity – The relativity of mass – Relation between relativistic momentum and energy – **Worked out examples**.

Books for study:

1. Quantum Mechanics, Satya Prakash & Swathi Saluja, Kedar Nath Ramnath & Co., Meerut, edition 2010 **(Unit, II & III)**.

2. Mechanics, D.S. Mathur, S.Chand & Co.Ltd., Ramnagar, New Delhi, 2nd edition 1981, Reprint 2005 **(Unit IV & V)**.

Books for reference:

1. Quantum Mechanics, S.P.Singh & M.K. Bagde – S.Chand & Co. Ltd.

2. Basic concepts of Quantum mechanics, Ajoy Ghatak , McMillan Co., Edition 2002.

B.Sc Physics
Semester VI
Part III - Core XI - Digital Electronics and Microprocessors 615P11

Credits: 4   Hours: 75 (C-60, A-10, Tu-5)

Preamble:

      The digital electronics and digital devices with the integrated circuit technology are playing a significant role in the day-to-day life. The designing and fabrication technology of these devices paves a vivid understanding at the UG level. Also the binary logic with which these digital devices operate would facilitate the students to learn and appreciate the applications of the digital devices.

Objectives:

➢ To familiarize the technology involved in the manufacturing of the linear and digital ICs and their applications

➢ To instill the foundation level knowledge in the digital circuits for arithmetic, logic and sequential operations such as counting, storing etc.

Learning Outcome:

➢ Students will learn about the step-by-step industrial method of IC fabrication.

➢ Students will develop an understanding of binary concepts, circuits which generate binary outputs and also the arithmetic and logic operations carried out by circuits such as Microprocessors.

Unit I Arithmetic Circuits   **(11hrs)**

      Binary addition – Binary subtraction – Logic gates – NAND and NOR as Universal gates – Postulates of Boolean Algebra – Theorems of Boolean Algebra – Simplification of Boolean expressions using Karnaugh maps and gates – Half adder – Full adder – Half subtractor – Full subtractor – Encoder – Decimal to BCD encoder – Decoder – Seven-segment decoders – **Worked out examples.**

Unit II Sequential circuits   **(10hrs)**

      Flip flops – RS flip flop – D flip flop – JK flip flop – Asynchronous counter – MOD-16 ripple counter – Synchronous counter – Decade counter and wave forms – Shift registers – Serial IN Serial OUT Shift registers – Ring counter – application to digital clock.

Unit III IC Technology and its applications   **(11hrs)**

      Introduction – Advantages of ICs-Classification by structure and function – IC terminology – IC technology: Fabrication of components like transistors, diodes, resistors and capacitors – Operational amplifiers – Ideal OPAMP – Virtual ground and summing point – Applications – Inverting amplifier – Non-inverting amplifier – Adder, Subtractor – Peaking amplifier – **Worked out examples.**

Unit IV Memory   **(9hrs)**

Semiconductor memory – Characteristics – RAM – ROM – ROM, PROMs and EPROMs : Programming – EEPROM : Flash memory – RAMs – SRAM – Sequential programming logic devices – PLD – CPLD – Magnetic memory – Magnetic recording – Magnetic bubble memories.

Unit V INTEL 8085 Microprocessor   **(11hrs)**

Organization of a Microprocessor based system – Operating system – Single board Microprocessors – Microprocessor INTEL 8085 – Architecture details – Instruction Format – Instruction set of 8085 – Microprocessor addressing modes (with examples) – Programs to add two 8 bit numbers, to subtract two 8 bit numbers, to sort 8 bit numbers in ascending and descending order.

Books for study:

1. Basic electronics solid state, B.L.Theraja, S.Chand & Co. Ltd., Reprint 2002, New Delhi **(Unit I)**.

2. Digital Principles and applications, A.P.Malvino and D.P.Leach, McGraw Hill Publishing 4th edition **(Unit II, III & IV)**.

3. Microprocessor, Architecture Programing and Application with 8085, Ramesh S.Gaonkar, Penram International Publishing, 3rd edition **(Unit V)**.

4. Digital Electronics and Microcomputers, R.K.Gaur, Dhanpat Rai Publications, 3rd Revised and enlarged Edition **(Unit V)**.

Books for Reference:

1. Introduction to Microprocessors, Aditya Mathur.

2. Digital Principles and applications, A.P. Malvino and D.P.Leach, McGraw Hill Publishing 3rd and 6th edition, New Delhi.

B.Sc Physics
Semester VI
Part III - Elective II - Programming in C   615PE2
(Theory)

Credits: 4   **Hours: 60 (C-56, A-4)**

Preamble:

C has emerged as the language of choice for most of the scientific applications due to speed, portability and compactness of code. This paper enables the student to understand the high level language and to specialize in C programming.

Objectives:

➢ Bring about an understanding of the programming concepts of C language.

➢ To familiarize the C programming features such as structures, filemangement, error handling etc.

Learning outcome:

➢ Students will be able to write programmes for scientific and mathematical problems.

➢ Students will learn the applications of the language for coding purpose during their higher studies and research etc., because of its versatility.

Unit I   **(12hrs)**

Constants, Variables and Data types Basic structure of a C program – Character set – C tokens – Key words and identifiers – Constants, Variables – Data types – Declaration of variables – Assigning values to variables – Defining symbolic constants.

Operators and expressions - Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operators – Bit wise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of operators – Mathematical functions.

Unit II   **(11hrs)**

Managing input and output operations - Reading a character – Writing a character – Formatted input – Formatted output.

Decision Making and Branching - Decision making with if statement – Simple if statement – The ..if. else statement – Nesting of if…else statement – The else… if ladder – The switch statement – The ? Operator – The go to statement.

Unit III   **(11hrs)**

Decision Making and Looping - The While statement – The do statement – The for statement – Jumps in loops.

Arrays – One dimensional arrays – Declaration of one dimensional arrays – Initialization of one dimensional arrays – Two dimensional arrays – Initializing two dimensional arrays.

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Unit IV   **(11hrs)**

Handling of character arrays and strings – Declaring and initializing string variables – Reading strings from terminal – Writing string to screen – String handling functions.

User defined functions: Elements of user defined function – Definition of function – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns values – Recursion.

Unit V (11hrs)

       Structure – Defining a structure – Declaring structure variable – Accessing a structure member – Structure initialization – Structures within structures.

       File management in C – Defining and opening a file – Closing a file – Input/Output operations on files – Error handling in files.

Books for study:

Programming in ANSI C, E.Balagurusamy, Tata McGraw Hill Publishing Co. Ltd., 3rd edition, 2004, New Delhi.

Books for reference:

1. Let us C, Yashavant Kanetkar, BPB Publications, 3rd edition, 1999, New Delhi.
2. Spoken Tutorial Project (C) as e-Resource for Learning, IIT, Mumbai under National Mission on Education through ICT, MHRD,Govt. of India. www.spoken-tutorial.org

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B.Sc Physics
Semester VI
Advanced Learner's Course II   **615ALP**
Energy Physics

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Preamble:

       This course is intended to introduce students to the range and potential of energy resources, available methods of conversion and utilization of energy. The contents are so designed to make the students   understand various forms of energy and its importance as sources of energy.

Unit I Introduction to energy sources

       Energy consumption as a measure of prosperity – World Energy Futures – Energy sources and their available conventional energy sources – Non-conventional energy sources – Renewable energy sources – Advantages – Prospects of renewable energy sources**.**

Unit II Solar Energy

       Solar radiation measurements – Conversion of solar radiation into Heat – Solar energy collectors – Flat Plate Collector – Solar energy storage system – Solar ponds – Applications of solar energy – Solar water heating – Photovoltaic electric conversion.

Unit III Wind Energy

       Basic principles of the wind energy – Conversion – Power in the wind – Basic components of a wind energy conversion system – Classification of WEC system – Advantages and Disadvantages of WEC systems – Application of wind energy.

Unit IV Biomass Energy

Introduction – Biomass conversion technologies – Biogas generation factors affecting generation of gas – Classification of biogas plants – Biogas from plant wastes – Problems related to bio-gas plants – Advantages & Disadvantages of biological conversion of solar energy.

Unit V Chemical Energy

Introduction – Fuel Cells – Design and Principles of operation – Advantages & Disadvantages – Conversion – efficiency of fuel cells – Application of fuel cells – Batteries – Different types of Battery arrangement – Classification of Battery : Nickel – Cadmium battery – Advantages of Batteries for Bulk energy storage (Qualitative ideas).

Books for study:

1. Non-conventional energy sources, G.D.Rai, Kanna publishers, New Delhi, 3rd edition, reprint 1995.
2. Solar Energy utilization, G.D.Rai, 4th edition, 1991.

Books for Reference:

1. Solar Energy Principles of Thermal collection and storage, S.P.Sukhatme, 2nd edition.
2. Renewable energy, Maheswar Dayal, 1st edition 1989.
3. Non-Conventional Energy systems, K.M.Mittal, 1st edition, 1991.

Curriculum Framework for the students admitted in the academic year 2015-2016

Department of Physics
Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
Affiliated to Bharathiar University
B.Sc Physics
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2015-2016 only)

Sem	Course code	Course Title	Ins Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	115TA1/ 115MY1/ 115HD1/ 115FR1	**Part I -** Language I	6	3	25	75	100	4
	115EN1	**Part II -** English I	6	3	25	75	100	4
	115P01	**Part III -** Core I- Mechanics and Properties of Matter	7	3	25	75	100	4
		Core Practical I	3	-	-	-	-	-
	115AP1	Allied I-Chemistry I	4	3	25	50	75	3
I		Allied Chemistry Practical	2	-	-	-	-	-
	115EVS	**Part IV -** Environmental Studies	2	2	50	-	50	2
	215TA2/ 215MY2/ 215HD2/ 215FR2	**Part I -** Language II	6	3	25	75	100	4
	215EN2	**Part II -** English II	6	3	25	75	100	4
II	215P02	**Part III -** Core II - Heat and Thermodynamics	7	3	25	75	100	4
	215PP1	Core Practical I	3	3	40	60	100	4
	215AP2	Allied II- Chemistry II	4	3	25	50	75	3
	215APP	Allied Chemistry Practical	2	3	20	30	50	2
	215VEC	**Part IV-** Value Education	2	2	50	-	50	2
	315TA3/ 315MY3/ 315HD3/ 315FR3	**Part I -** Language III	6	3	25	75	100	4
	315EN3	**Part II -** English III	6	3	25	75	100	4
	315P03	**Part III -** Core III- Optics	4	3	25	75	100	4
		Core Practical II	3	-	-	-	-	-
III	315AP3	Allied III - Mathematics I	6	3	25	75	100	4
		Part IV						
	315PS1	Skill Based Course I- Mechanical Instrumentation	3	3	75	-	75	3
	315NSE	Non-Major Elective Course I: Science in everyday life	2	2	50	-	50	2

Sem	Code	Course						
IV	415TA4/ 415MY4/ 415HD4/ 415FR4	**Part I -** Language IV	6	3	25	75	100	4
	415EN4	**Part II-** English IV	6	3	25	75	100	4
	415P04	**Part III-** Core IV- Waves and Oscillations	4	3	25	75	100	4
	415PP2	Core Practical II	3	3	40	60	100	4
	415AP4	Allied IV- Mathematics II	6	3	25	75	100	4
	415PS2	**Part IV-** Skill Based Course -II Medical Instrumentation	3	3	75	-	75	3
	415NGA	Non-Major Elective Course II: General Awareness (On-line)	-	1	50	-	50	2
	415GIS	Information Security	2	2	50	-	Grade	Grade
	415ALP	**Advanced Learners Course I -** Space Physics	-	3	-	100	100	3*
V	515P05	**Part III -** Core V- Mathematical Physics	5	3	25	75	100	4
	515P06	**Core VI- Atomic and Solid State Physics**	4	3	25	75	100	4
	515P07	Core VII- Electronic Devices and Circuits	4	3	25	75	100	4
	515PP3	Core Practical III	6	3	40	60	100	4
	515PE1	Elective I – Nanosciences	4	3	25	75	100	4
	515PE2	**Elective II – Project and Viva -voce**	4	3	50	50	100	4
	515PS3	**Part IV-** Skill Based Course-III Electrical and Electronic Instrumentation	3	3	75	-	75	3
VI	615P08	**Part III -** Core VIII- Electricity and Magnetism	5	3	25	75	100	4
	615P09	Core IX - Quantum Mechanics and Relativity	5	3	25	75	100	4
	615P10	Core X - Digital Electronics and Microprocessors	5	3	25	75	100	4
	615PE3	Elective III- Programming in C	4	3	25	75	100	4
	615PP4	Core Practical IV	6	3	40	60	100	4
	615PPE	Elective Practical Programming in C	2	3	20	30	50	2
	615PS4	**Part IV-**Skill Based Course-IV Institutional Training	3	-	75	-	75	3
	615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	**Part V-** Extension activity	-	-	50	-	50	2
	615ALP	**Advanced Learners Course II -** Energy Physics	-	3	-	100	100	3*
		Total					3500	140

B.Sc Physics
Semester I
Part III - Core I - Mechanics and Properties of Matter   115P01

Credits: 4   **Hours: 105 (C-80, A-10, Tu-15)**

Preamble:
       The purpose of this paper is to give an introductory account of basic ideas in conservation principles and properties of matter.

Objectives:
➢ To enable the students in order to learn the basic principles, theory and concepts of Matter and Mechanics.
➢ To impart knowledge about the physical properties of liquids such as viscosity and surface tension of liquids.

Learning outcome:
➢ Will be able to understand the conservation laws and gravity governing the bodies in motion.
➢ Will be able to acquire knowledge about elasticity, viscosity and surface tensional properties of matter.

Unit I Conservation Laws   **(16hrs)**
       Conservation laws in general – Concepts of work, power and energy – Conservative forces – Energy – Conservative force as negative gradient of potential energy – Law of conservation of momentum – Centre of mass – Motion of the Centre of mass – Centre of mass frame of reference – Collision – Calculation of final velocities of colliding particles.

Unit II Gravitation   **(16hrs)**
       Kepler's law of motion – Derivation of law of gravitation – Newton's universal law of gravitation – Determination of 'G' by Boy's method – Merits of Boy's method – Acceleration due to gravity – Compound pendulum – Bar pendulum – Points of suspension and oscillations are interchangeable – Minimum time period – **Worked out examples**.

Unit III Elasticity   **(18hrs)**
       Definitions – Yield point, Elastic limit – Elastic fatigue – Poisson's ratio – Poisson's ratio for Rubber – Work done in Deforming a body – Bulk modulus (Relation between K, Y and σ) Modulus of Rigidity – Relation between elastic constants (Y, η, K and σ) – Twisting of a cylinder – Torsion pendulum – Bending of beams – Bending moment – Cantilever – Beam supported at its ends and loaded in

the middle – I Section girders – Determination of elastic constants by Searle's method – **Worked out examples.**

Unit IV Viscosity   (16hrs)

Stream line motion and Turbulent flow – Poiseullie's formula – Correction to Poiseullie's formula – Poiseullie's experiment (Variable pressure head)- Ostwald's viscometer – Terminal velocity and Stoke's formula – Stoke's method – Variation of viscosity with temperature and pressure – Friction and lubrication – Searle's viscometer – Rankine's method for the determination of viscosity of gas.

Unit V Surface tension   (14hrs)

Surface tension – Explanation of surface tension on kinetic theory – Work done in increasing the area of a surface – Work done in blowing a bubble – Angle of contact – Spreading of one liquid over another – Pressure difference across a liquid surface – Excess pressure inside a curved liquid surface – Force between two plates separated by a thin layer of a liquid – Determination of surface tension of a liquid by Jaeger's method – Variation of surface tension with temperature – Quincke's method – Interfacial surface tension between two liquids – **Worked out examples**.

Books for study:

1. Mechanics, D.S.Mathur, N.Chand & Company, 2nd edition **(Unit I)**.
2. Properties of Matter, Brijlal N.Subramanyam Eurasia Publishing house, New
    Delhi, 2nd edition **(Unit II, III)**.
3. Properties of Matter and Acoustics, R.Murugesan & Kiruthiga Sivaprasath,
    Chand & Co. 2012 edition **(Unit IV and V)**.

Books for reference:

1. Mechanics and Electrodynamics, Brijlal, N.Subramanyam and Jivan,
    Sehan,Eurasia Publishing House Private Ltd, New Delhi, Revised and enlarged
    edition, 2005.
2. Elements of Properties of Matter, D.S Mathur,Shyamalal Charitable trust, New
    Delhi, Reprint, 2010.

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B.Sc Physics
Semester II
Part III - Core II – Heat and Thermodynamics   215P02

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Credits: 4   **Hours: 105 (C-80, A-10, Tu-15)**

Preamble:

The revolution in Physics can be attributed to the study of Thermodynamics and Statistical Physics. A deep understanding of Thermodynamics is essential in order to appreciate the environmental concepts in Physics.

Objectives:
➢ To impart knowledge about behavior of gases and concepts about low temperature Physics
➢ To study about the Thermodynamical laws and their applications in day –today life.

Learning outcome:
➢ Will learn about the behavior of gases.
➢ Will be able to understand liquefaction process of gases.
➢ Will gain knowledge about the application of statistics in Thermodynamics.

Unit I Ideal gas and Behavior of real gases   **(18hrs)**
      Three states of Matter – Kinetic model - Kinetic theory of gases – Expression for the pressure Exerted by a gas – Derivation of Gas equation – Derivation of gas laws – Charles law – Boyle's law – Degree of Freedom – Andrew's experiment on CO_2 – Critical Constants – Behavior of gases at high pressure – Boyle Temperature – Vanderwaal's equation of state – Comparison with Experimental PV Curves – Estimation of critical constants – Constants of Vanderwaal's Equation – Critical Coefficient – Limitations of Vanderwaal's Equation – Reduced Equation of State – Properties of Matter near critical point – Experimental determination – **Worked out examples**.

Unit II Transport phenomena in gases   **(16hrs)**
      Joule's Law for a perfect gas(Intermolecular attraction) – Joule-Thomson Effect – Joule-Thomson Porous Plug experiment – Regenerative Cooling(Theory Porous Plug experiment) – Joule-Kelvin effect – Temperature of Inversion – Relation between T_B , T_i and T_c – Mean free path – Sphere of influence – Expression for Mean free path(Clausius Expression) – Viscosity: Transport of momentum-Thermal Conductivity: Transport of Thermal energy – Liquefaction of Hydrogen – Liquefaction of Helium – Properties of liquid He I and He II – Production of low temperature – Adiabatic demagnetization – Measurement of low temperature: (Helium Vapour Pressure Thermometer)

Unit III Thermodynamics   **(18hrs)**
      Zeroth law of Thermodynamics – First law of thermodynamics – Application of first law of thermodynamics – Specific heat capacity of a gas – Isochoric process – Isobaric process – Adiabatic process -Isothermal process – Reversible and Irreversible process – Carnot's Ideal heat engine – Carnot's cycle – Carnot's engine and refrigerator – Second law of thermodynamics Carnot's theorem – Clapeyron's Latent heat equation using Carnot's Cycle – Concept of Entropy – Change in Entropy – Change in entropy in a reversible cycle – Change in entropy in a irreversible process – Kelvin's Thermodynamic Scale of Temperature – Third law of thermodynamics : Nernst's Heat Theorem – Maxwell's thermodynamical relations – **Worked out examples**.

Unit IV Statistical aspects of Thermodynamics   (14hrs)

      Probability – Principle of equal A priori probability – Some basic rules of probability theory – Permutations and Combinations – Macrostate and Microstate – Thermodynamical probability – Fluctuations and their dependence – Constraints on a system – Static and Dynamic systems – Most probable State – Concept of a cell in a component – Phase Space – Applications: One-Dimensional Harmonic Oscillator – Entropy and Probability – Boltzmann's Canonical distribution law – The equipartition of energy – Partition function and its relation with thermodynamic quantities – **Worked out examples**.

Unit V Thermodynamical distribution   (14hrs)

      Three Kinds of Particles – Maxwell-Boltzmann Energy distribution law – Bose – Einstein distribution law – Photon gas – Fermi-Dirac distribution law – Free Electrons in Metal: Electron gas – Comparison of three statistics – Difference between Classical and Quantum Statistics.

Books for study:
1. Heat and Thermodynamics, Brijlal and Subramaniam, S.Chand & Co. Reprint
   2006 **(Unit I – V)**.

Books for reference:
1. Heat and Thermodynamics, S. Singhal & J.B. Agarwal, Pragathi Prakashan
    Publishing, Reprint 1995.
2. Text book of Heat and Thermodynamics, J.B. Rajam & C.L. Arora,
    Chand & Co. 10th Reprint.

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B.Sc Physics
Semester III
Part IV - Skill Based Course I - Mechanical Instrumentation   315PS1

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Credits: 3   Hours: 45 (C-40, A-5)

Preamble:

      Experiment is an act or operation carried out under condition determined by experimental in order to discover some unknown principle and effect to test establish and illustrate some suggested or known truth. Experimentation is vital for progress in any field where information is lagging. The measurements and the correct interpretation thereof might be used to study the functioning of different components which comprise a particular system, determine the cause of malfunctioning of the system and have a thorough understanding of its operation.

Objectives:
➢ To provide a good foundation in measurement concepts.

- ➢ To introduce knowledge of the parameters that needs to be measured.
- ➢ To provide a knowledge of the functioning of instruments for parametric measurement.

Learning outcome:
- ➢ Will learn the characteristics of each type instrument and the errors associated in the measurement.
- ➢ Will acquire information about the working principle and the parameters of measurements

Unit I Characteristics of instruments and measurements system   (8 hrs)

      Methods of measurements – Classification of instruments – Analog and digital modes of operation – Static characteristics – True value – Static error – Static correction – Scale range and Scale pan – Reproducibility and Drift – Repeatability – noise – Accuracy and Precision – Significant figures – Limiting errors – Types of errors – Gross errors – Systematic errors – Instrumental errors – Observational errors – Random errors.

Unit II Production and measurement of low pressure   (8 hrs)

      Exhaust pumps – Characteristics – Rotary oil pumps – Mercury pumps (Geissler pumps) – Diffusion-Condensation pumps – Measurement of low pressure – The Bourdon gauge – McLeod gauge – The Pirani resistance gauge – Ionization gauge (Hot cathode) – Knudsen gauge.

Unit III Measurement of Temperature   (8hrs)

      Electrical resistance thermometer: Platinum resistance thermometer – Salient features of resistance wire thermometers – Thermocouple thermometer – Thermocouple construction – Measurement of thermocouple output – Advantages and Disadvantages – Optical pyrometers – Disappearing filament type.

Unit IV Measurement of flow and liquid level   (8 hrs)

      Turbine flow meter – Orifice flow meter – Hot wire Anemometer – Measurement of liquid level: Resistive method – Capacitive method – Inductive method – Measurement of liquid level using float.

Unit V Measurement of Humidity and thickness   (8 hrs)

      Hygrometer – Due point hygrometer – Surface conductivity method – Measurement of thickness: Inductive method – Measurement of thickness using ultra sonic vibrations – Nuclear radiation method.

Books for study:
1. Electrical and Electronic Measurements and instrumentation, A.K.Sawhney – Dhantpat Rai & Sons Publications – 1991 Revised 4th Edition.
2. Industrial Instrumentation, K.Krishnaswamy and S. Vijaya chitra – New age International Publishers 1st edition – Reprint 2008.

Books for Reference:

1. Instrumentation Devices and Systems, C.S. Rangan, G.R.Sharma and V.S.V.Mani–11th Reprint 1992, TataMcGraw Hill Publishing Ltd, New Delhi.
2. Experimental methods for Engineers, J.P.Holman – Fifth edition – Mc Graw, Hill International Book Company.

B.Sc Physics
Semester IV
Part IV - Skill Based Course II - Medical Instrumentation   415PS2

Credits: 3   **Hours: 45 (C-4, A-5)**

Preamble:

      Medical instrumentation is in the designing and developing era and every year the hospitals and research institutes are adding modern medical equipments for the medical study. Therefore, it is necessary for every student to understand the Physics principles and functioning of various medical equipments. This paper would enable the students to acquire knowledge about the functioning of some of these medical equipments.

Objectives:
- To familiarize the Biomedical assist devices.
- To develop an understanding about the working principle of specialized medical equipments like CT scan, MRI, Ultra sonogram.

Learning outcome:
- Will be able to know the names of the hospital equipments and their purpose.
- Will be able to learn and appreciate the Physics principles of the equipments.

Unit I   Electrodes   **(8 hrs)**

      Transport of ions through the cell membrane – Resting and action potentials – Characteristics of resting potential – Design and Components of the Bio-medical instrument system – Electrodes- half cell potential – Electrode paste – Metallic Microelectrode – Depth and Needle electrode – Surface electrode – Chemical Electrode – pH Electrode.

Unit II Bio Potential Recorders   **(8hrs)**

      Characteristics of the recording system – Mechanical functions of the heart – Electro Cardiography – Origin of Cardiac Action potential – ECG lead configurations – ECG recording setup – Practical considerations for ECG recording – Analysis of recorded ECG signals

Unit III Physiological Assist Devices   (8hrs)

Pacemakers – Energy requirements to excite heart muscle – Methods of stimulation – External and Internal Pacemakers – Different modes of operation – Ventricular asynchronous pacemaker – Pacemaker batteries – Lithium cells.

Defibrillators – Internal and External defibrillators – synchronized DC defibrillator – Model of the heart lung machine – Oxygenators – Bubble oxygenators – Blood pumps – Non-Pulsatile pump – Kidney machine – Renal function – Dialysis – Peritoneal dialysis.

Unit IV Operation Theatre Equipment   (8hrs)

Surgical diathermy : Electro surgery techniques – Electrosurgical diathermy unit – Range and area of irritation of different diathermy techniques – Ventilators – Anesthesia machine – Flow meters – Electromagnetic blood flow meters.

Unit V Advances in Biomedical Instrumentation   (8hrs)

Endoscopes – Computer tomography – Principle – CT scanner – Thermography – Infrared thermography – Ultrasonic imaging systems: Ultrasonic propagation through tissues – Display modes – A Mode – B Mode – T-M Mode – Recording devices – Ultrasonic imaging instrumentation

Magnetic resonance imaging: Magnetic Resonance phenomenon – MRI instrumentation.

Book for study:

Biomedical Instrumentation, Dr.M.Arumugam, Anuradha Agencies, Vidyakaruppur, Kumbakonam, 2nd edition 6th Reprint, 2003.

Books for reference:

1. Biomedical Instrumentation and Measurements, Leslie Cromwell and Fred S.Weibeil Printice Hall of India Rt,New Delhi.
2. Hand book Biomedical Instrumentation, R.S Khandpur, Tata Mc Graw Hill publishing co, 9th Edition 1996

B.Sc Physics
Semester IV
Advanced Learner's Course I   415ALP
Space Physics

Credits: 4
Preamble:

This paper is introduced for the advanced learners to inculcate an interest and curiosity to know about space. This paper also imparts knowledge about the recent development in satellite communication.

Objectives:

➢ The main objective of this Self learning paper is to make the students understand the existence of the celestial bodies and the forces between them.

➢ Secondly this paper will facilitate the students to learn about the attempts being made by our country in the space exploration.

Unit I

Atmosphere and beyond – Gravity – Escape velocity – Rockets – Artificial satellites – Geostationary orbit – Polar orbits.

Unit II

Lunar probes and planetary probes – Expedition to the moon – Conquest of moon – Moon probes, Asteroids – Mars – Jupiter – Venus – Mercury –Saturn – Distant planets.

Unit III

Planetary probes and Indian launch vehicle – Genesis – Aryabhatta – Bhaskara – SLV3 – Apple.

Unit IV

ASLV – PSLV – GSLV – Polar Satellite Launch Vehicle – Geosynchronous Satellite Launch Vehicle – Indian National Satellite Systems – Chandhrayan – Mangalyan.

Unit V

Satellite Application – Introduction – Satellite television – Telephone service via satellite – Data communication satellite – Satellite for earth observation.

Satellite for weather forecast – Satellite for scientific studies – Satellite for military applications.

Books for study:

1. Space research, Prof. S.Kumaravelu, Prof. N. Suseela Kumaravelu, Senthil Art Printers, Sivakasi, 2002 **(Unit I to IV)**.

2. Satellite Communications, Dr. D.C.A.Agarwal, A.K. Mani, Khanna Publishers, 4th edition, 2000 **(Unit V)**.

B.Sc Physics
Semester V
Part III - Elective I - Nano Sciences   515PE1

Credits: 4   **Hours: 60 (C-56, A-4)**

Preamble:

"There's Plenty of Room at the Bottom" – so said Richard Feymann describing a process by which the ability to manipulate individual atoms and

molecules might be developed, using one set of precise tools to build and operate, another a smaller set and so on down to the needed scale.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule. The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs). At present the practice of Nanotechnology embraces both Stochastic and deterministic approach.

Objectives:
➢ To impart knowledge about properties and synthesis of Nanomaterials
➢ To develop an understanding about characterization techniques and applications of Nanomaterials.

Learning outcome:
➢ Will learn about the basic classification of nanomaterials and special Nanomaterials
➢ Will acquire knowledge about Nanomaterials, analytical instrumentation and applications in cosmetics, textiles, sensors etc.,

Unit I Generations of Nanomaterials and Properties   (13hrs)
Nanotechnology Generation – Definition of Nanoscience, Nanotechnology – Surface to Volume Ratio at Nanoscale – Mechanical properties – Thermal properties – Optical properties – Electrical properties – Magnetic properties.

Unit II Classification and Special Nanomaterials   (13hrs)
Classification of Nanomaterials: 2D, 1D and 0D Nanomaterials – Fullerene – Carbon Nano tubes – Types of Nanotubes – Synthesis of CNT – Properties of CNT – Applications of CNT – Porous Silicon.

Unit III Nanomaterial Synthesis   (13hrs)
Top Down and Bottom up Techniques – Chemical methods of synthesis: Sol-Gel method – Hydrothermal synthesis – Microwave synthesis.
Physical methods of synthesis: High energy Ball milling – Laser ablation – Sputter deposition – Plasma Arc discharge.

Unit IV Characterization Techniques   (13hrs)
(Portion covers Instrumentation, working principle and analysis technique towards Nanoscale).
Electron Microscopes: SEM – AFM
Nano manipulator – Nanotweezers.
Optical Microscope: Confocal Microscope
Diffraction Method: X-ray Diffraction Technique Debye-Scherrer Relation

Unit V Applications of Nanomaterials   (13hrs)
Nano sensors : Nano pressure sensor – Bio sensors
Nano electronics: Single Electron Transistor
Nanotechnology in energy : Quantum Dot solar cells
Nanotechnology in textiles: Characteristics of nano finishing in garments – UV protection of textiles – Antibacterial textiles

Nano technology in Cosmetics :Sun screen lotion – Anti ageing creams-Tattoos.

Books for study:

1. Nanotechnology Principles and Practices, Sulabha K Kulkarni, 2nd edition, Capital publishing company, New Delhi.
2. Introduction to NanoScience and Nanotechnolgy, K.K.Chattopadhyaya and A.N Banerjee First Edition, PHI learning Private Ltd., New Delhi.
3. Nanotechnology, Technology Revolution of 21st Century, Er. Rakesh Rathi, S.Chand &Company Ltd, New Delhi,   1st edition 2009.
4. Nanomaterials, Nanotechnologies and Design, Micheael F.Ashby, Pauloj. Ferreira, Daniel L. Schodel, First Printed in India 2011, Elsevier India Pvt. Ltd.

B.Sc Physics
Semester V
Part IV-Skill Based Course III-Electrical and Electronic Instrumentation
515PS3

Credits: 3   **Hours: 45 (C-40, A-5)**

Preamble:

        An instrument may be defined as a device for determining the value or magnitude of a quantity or a variable. The electronic instrument as its name implies is based on the electrical or electronic principles for its measurements function. An electronic instrument may be a relatively uncomplicated device of simple construction such as a basic DC current meter. To use the instruments intelligently, one needs to understand their operating principles and upraise their suitability for the intended applications.

Objectives:
➢ To provide a good foundation in Electrical and electronic quality measurements
➢ To provide a knowledge of the behavior of instruments

Learning outcome:
➢ Students will acquire a knowledge about the instruments and the parameters measured in the instrument measurements.
➢ Students will also learn about the applications of these measurements.

Unit I Electro mechanical operating instruments   (8hrs)
        Torque and deflection of the galvanometer – Steady state deflection – Dynamic behavior – Damping mechanism – Permanent Magnet Moving Coil Mechanism (PMMC) – D'Arsonval Movement

Power, energy and Power factor Measurements – Electrodynamometer – Wattmeter – Power factor meter.

Unit II Ammeters, Voltmeters and Ohmmeters   **(8hrs)**

DC Ammeters – Shunt resistor – Ayrton shunt – DC Voltmeters – Multiplier Resistor – Multirange Voltmeter – Voltmeter Sensitivity – Series Type Ohmmeter – Shunt type Ohmmeter – Multimeter or VOM – Calibration of DC instruments.

Unit III Oscilloscopes   **(8hrs)**

Oscilloscope block diagram – CRT – Electrostatic – Deflection – Screens – Graticules – CRT circuits – Vertical deflection system – Horizontal deflection system – Oscilloscope techniques – Determination of frequency – Digital storage oscilloscope – Block diagram explanation only.

Unit IV Data converters, Analog and Digital data acquisition systems.   **(8hrs)**

Digital to analog converters – Basic inputs and outputs – Weighted resistor network technique – Analog to Digital converters – Basic inputs and outputs – Successive approximation technique.

A/D data acquisition systems – Block diagram – Interfacing transducers to electronic control and measuring systems – Instrumentation amplifier – Voltage to current converter (current loop) – Digital to Analog multiplexing – Analog to Digital Multiplexing.

Unit V Computer controlled – Test systems   **(8hrs)**

Testing a Radio receiver – Instruments used in computer controlled instrumentation – Frequency counter for operation with IEEE 488 bus – Signal generator interfaced with IEEE 488 bus – IEEE 488 electrical interface.

Books for study:

1. Modern Electronic Instrumentation and Measurement technique, Albert D

   Helfrick and William D.Hooper Prentice Hall of India, Reprint 2008, New Delhi **(Units I, II, III, IV & V)**.

2. PC based instrumentation concepts and practice, N.Mathivanan – Prentice Hall & India – 2007 print – New Delhi **(Unit IV (partly))**.

Book for Reference:

 A course in Electrical and Electronic Measurements and Instrumentation,
 A.K.Sawhney, Dhanapat Rai & Sons publications, Reprint 2008.

B.Sc Physics
Semester VI
Part III - Core IX - Electricity and Magnetism   615P09

Credits: 4   Hours: 75 (C-60, A-5, Tu-10)

Preamble:

Electricity, Magnetism and Electromagnetic theory are subject topics of all times. These topics have many applications in our day-to-day life.

Objectives:
➢ To impart the knowledge about the basic concepts of electric and magnetic field.
➢ To facilitate an understand of the applications of electrostatics, Electromagnetics and circuit analysis.

Learning outcome:
➢ Will learn to understand the electrical circuits by finding the current and voltage in the electrical loops.
➢ Will gain knowledge about electromagnetic oscillations, RLC circuits and electromagnetic theory.

Unit I Electrostatics (12hrs)

Gauss's law & proof – Gauss's law in differential form – Gauss's law and Coulomb's law – Laplace and Poisson's equation – Applications: Electric field due to an uniformly charged sphere – field due to two concentric spherical conductors – Field of a line charge – Field of a charged conductor – Force on the surface of a charged conductor – Demonstration of mechanical force – **Worked out examples.**

Unit II Capacitors (12hrs)

Parallel plate capacitor – Cylindrical capacitor – Spherical capacitor – Guard Ring Capacitor – Energy stored in a capacitor – Force of attraction between capacitor plates – Dielectric constant - Dielectric strength – **Problems *.**

Magnetic field due to steady current **:** Bio-Savart Law - Ampere's circuital law and proof – Applications of Ampere's law – **B** near a long wire – B for a Solenoid – B for a Toroid – Character of **B** lines and the divergence of **B** – Ampere's law in curl form – **Worked out examples.**

Unit III Electromagnetic Induction (12hrs)

Inductor and inductance – Self inductance – Physical significance of self inductance – Self inductance of a Solenoid – Two parallel wires – Toroidal coil of circular cross section – Energy stored in magnetic field – Measurement of self inductance by Rayleigh's method – Mutual inductance – Mutual inductance of concentric solenoids – Relation between mutual inductance and self inductance – Inductances in series and in parallel Measurement of mutual inductance – **Worked out examples.**

Unit IV Electromagnetic oscillations (12hrs)

Simple R-L circuit: Growth and decay of current (Helmolholtz Equation) – RC Circuit Charge and discharge of a condenser – Determination of high resistance by leakage method – Series LCR circuit – Charge and discharge – **Worked out examples.**

A.C circuit: A Parallel (or Anti) resonant circuit – Parallel resonant circuit when inductance L have some resistance – Condition for unity power factor – Current magnification – Selectivity of a parallel resonance circuit – Comparative

study of a series resonant and parallel resonant circuit – Power in AC circuit – Choke coil – **Worked out examples.**

Unit V Circuit Analysis   **(12hrs)**
        Classification of circuits – Laws and Theorems for Circuit Analysis: Superposition theorem – Thevenin's theorem – Norton's theorem – Maximum power transfer theorem – **Worked out examples.**
        Electromagnetic theory: Basic equations – Maxwell's equations in free space – Electromagnetic waves in free space – Electromagnetic waves in isotropic non-conducting media – Index of refraction.

Book for study:
1. Electricity and Magnetism, Dr. K.K. Tewari, S.Chand & Co. Ltd., New Delhi, Revised edition 2011.

Books for reference:
1. Electricity and Magnetism, R. Murugeshan, S.Chand &Co. Ltd., New Delhi, 1995 edition.
2. Electricity and Magnetism, A.S.Mahajan, A.A. Rangawala, Tata McGraw Hill Publishing Co.Ltd, New Delhi, 1998 edition.

B.Sc Physics
Semester VI
Part III - Core X - Quantum Mechanics and Relativity   615P10

Credits: 4   **Hours: 75 (C-60, A-5, Tu-10)**

Preamble:
        In the modern age, Quantum Mechanics is an indispensable part of the Physicist education. It has handled problems ranging from stellar constellation to that of atomic nuclei, elementary particles and to the level of the particle-Bosons and neutrinos.
Objectives:
➢ To educate the principles of Quantum Mechanics and its applications to various
    problems.
➢ To impart basic knowledge about theory of relativity.

Learning outcome:
➢ Students will learn about the wave nature of matter, the properties associated
    with these waves nature.
➢ Students will be able to understand the concepts such as Uncertainty and
    representation of various classical parameters such as energy, momentum using
    QM operators.

➤ Will be able to understand the relative concepts matter and motion.

Unit I Foundations of Wave Mechanics (12hrs)

Dual nature of light and matter – Experimental evidences for matter waves – Davisson and Germer experiment – G.P. Thomson's experiment – Velocity of DeBroglie waves: Quantum picture of a material particle – Relation between group velocity and phase velocity for a non-relativistic free particle – Equation of motion of matter waves – Time dependent and time independent Schroedinger's equation – Physical interpretation of the wave function – **Worked out examples.**

Unit II Applications of Schrödinger wave equation (12hrs)

Normalized and Orthogonal wave function – Conditions satisfied by a wave function – Solution of the Schrödinger equation – Expectation values of dynamical quantities – Probability current density: Particle flux – Ehrenfest's theorem.

The free particle –Particle in a box (one dimensional case) – Rectangular potential Barrier – Application of Barrier penetration (α-Decay) – One dimensional Linear Harmonic Oscillator.

Unit III The Uncertainty principle & Operators (12hrs)

The uncertainty principle – Examples of position-momentum uncertainty – Proof of uncertainty principle for one dimension wave packet – Application of uncertainty principle – The Non-existence of the electron in the Nucleus – Light quanta

Operators and Linear operators – Eigen values and Eigen functions – The operator formalism in Quantum mechanics – Momentum operator – Hamiltonian operator – Hermitian operators – Properties of Hermitian operators – Commutation relation between (i) Position and momentum (ii) Hamiltonian and momentum (iii) The Commutation rules for the components of orbital angular momentum (i.e.) L^2 with Lx, Ly and Lz (iv) Ladder operators – **Worked out examples.**

Unit IV Reference frames and Galilean invariance (12hrs)

Reference frame – Newton's laws and its limitations – Inertial frames of reference – Galilean transformation – Transformation of position, length, velocity and acceleration.

Classical relativity – Newton's laws of motion – The law of conservation of momentum and energy – Transformation equation for a frame of reference inclined to an inertial frame – Transformation equation for a rotating frame of reference – Non-inertial force: Fictitious forces – Effect of centrifugal and corliolis forces due to earth rotation.

Unit V Special theory of relativity (12hrs)

Michelson and Morley experiment – Einstein concept of special theory of relativity – Lorentz transformation co-ordinate equations – Results following from Lorentz transformation equations – Length contraction – Time dilation – Verification

of time dilation – Simultaneity – Transformation of velocity – The relativity of mass – Relation between relativistic momentum and energy – **Worked out examples**.

Books for study:

1. Quantum Mechanics, Satya Prakash & Swathi Saluja, Kedar Nath Ramnath & Co., Meerut, edition 2010 **(Unit, II & III)**.

2. Mechanics, D.S. Mathur, S.Chand & Co.Ltd., Ramnagar, New Delhi, 2nd edition 1981, Reprint 2005 **(Unit IV & V)**.

Books for reference:

1. Quantum Mechanics, S.P.Singh & M.K. Bagde – S.Chand & Co. Ltd.

2. Basic concepts of Quantum mechanics, Ajoy Ghatak , McMillan Co., Edition 2002.

B.Sc Physics
Semester VI
Part III - Core XI - Digital Electronics and Microprocessors   615P11

Credits: 4   **Hours: 75 (C-60, A-10, Tu-5)**

Preamble:
          The digital electronics and digital devices with the integrated circuit technology are playing a significant role in the day-to-day life. The designing and fabrication technology of these devices paves a vivid understanding at the UG level. Also the binary logic with which these digital devices operate would facilitate the students to learn and appreciate the applications of the digital devices.

Objectives:
➢ To familiarize the technology involved in the manufacturing of the linear and digital ICs and their applications
➢ To instill the foundation level knowledge in the digital circuits for arithmetic, logic and sequential operations such as counting, storing etc.

Learning Outcome:
➢ Students will learn about the step-by-step industrial method of IC fabrication.
➢ Students will develop an understanding of binary concepts, circuits which generate binary outputs and also the arithmetic and logic operations carried out by circuits such as Microprocessors.

Unit I Arithmetic Circuits   **(11hrs)**
          Binary addition – Binary subtraction – Logic gates – NAND and NOR as Universal gates – Postulates of Boolean Algebra – Theorems of Boolean Algebra – Simplification of Boolean expressions using Karnaugh maps and gates – Half adder

– Full adder – Half subtractor – Full subtractor – Encoder – Decimal to BCD encoder – Decoder – Seven-segment decoders – **Worked out examples.**

Unit II Sequential circuits (10hrs)

Flip flops – RS flip flop – D flip flop – JK flip flop – Asynchronous counter – MOD-16 ripple counter – Synchronous counter – Decade counter and wave forms – Shift registers – Serial IN Serial OUT Shift registers – Ring counter – application to digital clock.

Unit III IC Technology and its applications (11hrs)

Introduction – Advantages of ICs-Classification by structure and function – IC terminology – IC technology: Fabrication of components like transistors, diodes, resistors and capacitors – Operational amplifiers – Ideal OPAMP – Virtual ground and summing point – Applications – Inverting amplifier – Non-inverting amplifier – Adder, Subtractor – Peaking amplifier – **Worked out examples.**

Unit IV Memory (9hrs)

Semiconductor memory – Characteristics – RAM – ROM – ROM, PROMs and EPROMs : Programming – EEPROM : Flash memory – RAMs – SRAM – Sequential programming logic devices – PLD – CPLD – Magnetic memory – Magnetic recording – Magnetic bubble memories.

Unit V INTEL 8085 Microprocessor (11hrs)

Organization of a Microprocessor based system – Operating system – Single board Microprocessors – Microprocessor INTEL 8085 – Architecture details – Instruction Format – Instruction set of 8085 – Microprocessor addressing modes (with examples) – Programs to add two 8 bit numbers, to subtract two 8 bit numbers, to sort 8 bit numbers in ascending and descending order.

Books for study:

1. Basic electronics solid state, B.L.Theraja, S.Chand & Co. Ltd., Reprint 2002, New Delhi **(Unit I)**.

2. Digital Principles and applications, A.P.Malvino and D.P.Leach, McGraw Hill Publishing 4th edition **(Unit II, III & IV)**.

3. Microprocessor, Architecture Programing and Application with 8085, Ramesh S.Gaonkar, Penram International Publishing, 3rd edition **(Unit V)**.

4. Digital Electronics and Microcomputers, R.K.Gaur, Dhanpat Rai Publications, 3rd Revised and enlarged Edition **(Unit V)**.

Books for Reference:

1. Introduction to Microprocessors, Aditya Mathur.

2. Digital Principles and applications, A.P. Malvino and D.P.Leach, McGraw Hill Publishing 3rd and 6th edition, New Delhi.

B.Sc Physics
Semester VI
Part III - Elective II - Programming in C   615PE2
(Theory)

Credits: 4   **Hours: 60 (C-56, A-4)**

Preamble:

      C has emerged as the language of choice for most of the scientific applications due to speed, portability and compactness of code. This paper enables the student to understand the high level language and to specialize in C programming.

Objectives:

➢ Bring about an understanding of the programming concepts of C language.
➢ To familiarize the C programming features such as structures, filemangement, error handling etc.

Learning outcome:

➢ Students will be able to write programmes for scientific and mathematical problems.
➢ Students will learn the applications of the language for coding purpose during their higher studies and research etc., because of its versatility.

Unit I   **(12hrs)**

      Constants, Variables and Data types Basic structure of a C program – Character set – C tokens – Key words and identifiers – Constants, Variables – Data types – Declaration of variables – Assigning values to variables – Defining symbolic constants.

      Operators and expressions - Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operators – Bit wise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of operators – Mathematical functions.

Unit II   **(11hrs)**

      Managing input and output operations - Reading a character – Writing a character – Formatted input – Formatted output.

      Decision Making and Branching - Decision making with if statement – Simple if statement – The ..if. else statement – Nesting of if…else statement – The else… if ladder – The switch statement – The ? Operator – The go to statement.

Unit III (11hrs)

Decision Making and Looping - The While statement – The do statement – The for statement – Jumps in loops.

Arrays – One dimensional arrays – Declaration of one dimensional arrays – Initialization of one dimensional arrays – Two dimensional arrays – Initializing two dimensional arrays.

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Unit IV (11hrs)

Handling of character arrays and strings – Declaring and initializing string variables – Reading strings from terminal – Writing string to screen – String handling functions.

User defined functions: Elements of user defined function – Definition of function – Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns values – Recursion.

Unit V (11hrs)

Structure – Defining a structure – Declaring structure variable – Accessing a structure member – Structure initialization – Structures within structures.

File management in C – Defining and opening a file – Closing a file – Input/Output operations on files – Error handling in files.

Books for study:

Programming in ANSI C, E.Balagurusamy, Tata McGraw Hill Publishing Co. Ltd., 3rd edition, 2004, New Delhi.

Books for reference:

1. Let us C, Yashavant Kanetkar, BPB Publications, 3rdedition, 1999, New Delhi.
2. Spoken Tutorial Project (C) as e-Resource for Learning, IIT, Mumbai under National Mission on Education through ICT, MHRD,Govt. of India.

B.Sc Physics
Semester VI
Advanced Learner's Course II **615ALP**
Energy Physics

Preamble:

This course is intended to introduce students to the range and potential of energy resources, available methods of conversion and utilization of energy. The contents are so designed to make the students understand various forms of energy and its importance as sources of energy.

Unit I Introduction to energy sources

Energy consumption as a measure of prosperity – World Energy Futures – Energy sources and their available conventional energy sources – Non-conventional energy sources – Renewable energy sources – Advantages – Prospects of renewable energy sources.

Unit II Solar Energy

Solar radiation measurements – Conversion of solar radiation into Heat – Solar energy collectors – Flat Plate Collector – Solar energy storage system – Solar ponds – Applications of solar energy – Solar water heating – Photovoltaic electric conversion.

Unit III Wind Energy

Basic principles of the wind energy – Conversion – Power in the wind – Basic components of a wind energy conversion system – Classification of WEC system – Advantages and Disadvantages of WEC systems – Application of wind energy.

Unit IV Biomass Energy

Introduction – Biomass conversion technologies – Biogas generation factors affecting generation of gas – Classification of biogas plants – Biogas from plant wastes – Problems related to bio-gas plants – Advantages & Disadvantages of biological conversion of solar energy.

Unit V Chemical Energy

Introduction – Fuel Cells – Design and Principles of operation – Advantages & Disadvantages – Conversion – efficiency of fuel cells – Application of fuel cells – Batteries – Different types of Battery arrangement – Classification of Battery : Nickel – Cadmium battery – Advantages of Batteries for Bulk energy storage (Qualitative ideas).

Books for study:
1. Non-conventional energy sources, G.D.Rai, Kanna publishers, New Delhi, 3rd edition, reprint 1995.
2. Solar Energy utilization, G.D.Rai, 4th edition, 1991.

Books for Reference:
1. Solar Energy Principles of Thermal collection and storage, S.P.Sukhatme, 2nd edition.
2. Renewable energy, Maheswar Dayal, 1st edition 1989.
3. Non-Conventional Energy systems, K.M.Mittal, 1st edition, 1991.

Curriculum Framework for the students admitted in the academic year 2014-2015
Department of Physics
B.Sc. Physics
Semester wise distribution with Scheme of Examination & Credits

Sem	Title of the course	Credits	Exam Hrs (ESE)	Marks CIA	Marks ESE	Total
I	Part I Language I	3	3	25	75	100
	Part II English I	3	3	25	75	100
	Part III Core I Kinetic theory, Thermodynamics & Statistical Thermodynamics	6	3	25	75	100
	Allied I Chemistry I	4	3	15	60	75
	Part IV Environmental Studies	2	-	50	-	50
II	Part I Language II	3	3	25	75	100
	Part II English II	3	3	25	75	100
	Part III Core II Optics and Spectroscopy	4	3	25	75	100
	Part III Core III Properties of matter and Sound	4	3	25	75	100
	Core Practical I	2	3	40	60	100
	Allied I Chemistry II	4	3	15	60	75
	Allied Chemistry Practical	2	3	20	30	50
	ALC I Energy Physics	*3	3	-	100	100
	Part IV Value Education	2	-	50	-	50
III	Part I Language III	3	3	25	75	100
	Part II English III	3	3	25	75	100
	Part III Core IV Mathematical Physics	6	3	25	75	100
	Allied III Mathematics I	5	3	25	75	100
	Part IV Skill Based Course Instrumentation I	3	-	100	-	100

	Mechanical Instrumentation				
	Part IV Non-Major Elective	2	-	75	-	75
IV	Part I Language IV	3	3	25	75	100
	Part II English IV	3	3	25	75	100
	Part III Core V Atomic, Nuclear & Particle Physics	5	3	25	75	100
	Core Practical II	2	3	40	60	100
	Allied IV Mathematics II	5	3	25	75	100
	Part IV Skill Based Course Instrumentation II Medical Instrumentation	3	-	100	-	100
	Part IV General Awareness	2	Online Test	75	-	75
	ALC II Space Physics	*3	-	-	100	100
	Extension Activities	1	-	50	-	50
V	Part III Core VI Nanotechnology I	4	3	25	75	100
	Core VII Electricity and Magnetism	4	3	25	75	100
	Core VIII Solid State Physics	4	3	25	75	100
	Core IX Electronic Devices & Circuits	4	3	25	75	100
	Elective I Programming in C(Theory & Practical)	5	3	40	60	100
	Core Practical III	2	3	40	60	100
	Part IV **Skill Based Course Instrumentation III** Electrical and Electronic Instrumentation	3	-	100	-	100
VI	Part III Core X- Nanotechnology II	4	3	25	75	100
	Core XI Quantum Mechanics and Relativity	4	3	25	75	100
	Core XII Laser Physics and Fiber Optics	4	3	25	75	100
	Elective II Digital Electronics & Microprocessor	4	3	25	75	100

	5	3	40	60	100
Core, Digital Electronics & Microprocessor Practical IV	2	3	40	60	100
Part IV **Skill Based Course Instrumentation** Institutional Training	3	-	100	-	100
ALC III Thin Film Technology	***3**	3	-	100	100

B.Sc Physics – Semester I

Part III Core I   **Subject Code: 112P01**

Kinetic Theory, Thermodynamics and Statistical Thermodynamics (90 hours)

Preamble:
   The revolution in Physics can be attributed to the study of thermodynamics and statistical physics. A deep understanding of thermodynamics is essential in order to appreciate the modern concepts in Physics.

Module I   **(18hrs)**
Kinetic theory of gases – Expression for the pressure of the gas – Kinetic interpretation of temperature –Derivation of gas laws - Charles law – Boyle's law -   Mean free path – Viscosity of gases – Thermal conductivity of gases – Andrew's experiment on CO_2 - Amagat's experiment – Behavior of gases at high pressures – Vanderwaal's equation of state – Critical constants – Coefficients of Vanderwaal's constants – Properties of matter near the critical point – Experimental determination of critical constants – **Problems of direct applications**.

Module II   **(18hrs)**
   Intermolecular attraction – Porous Plug experiment – Theory - Temperature of Inversion – Relation between T_B , T_i and T_c – Liquefaction of Hydrogen - Liquefaction of Helium – Properties of liquid He I and He II – Production of low temperature – Adiabatic demagnetization – Measurement of low temperature – Helium Vapour Pressure Thermometer - Conversion of magnetic temperature to Kelvin temperature.

Module III   **(18hrs)**
   First law of thermodynamics – Application of first law of thermodynamics – Specific heat capacity of a gas – Isothermal process – Adiabatic process – Isochoric process – Isobaric process - Gas equation during an adiabatic process – Irreversible process – Reversible process – Second law of thermodynamics – Carnot's engine and refrigerator – Carnot's theorem - Absolute zero and work Scale – Work scale and Ideal gas scale - Clapeyron's Latent heat equation – Entropy – Change in entropy in a reversible process – Change in entropy in a irreversible process – Third law of thermodynamics – Maxwell's thermodynamical relations – **Problems of direct applications**.

Module IV (18hrs)

First order phase transitions in thermodynamical process – Thermodynamical functions – Gibb's function – Enthalpy.

Statistical thermodynamics: Probability - Probability of particular distribution of N particles in two boxes – Most probable distribution and fluctuation – Phase space – Thermodynamical probability – Systems in thermal equilibrium – Probability and entropy – Probability of a perfect gas - Boltzmann canonical distribution – Partition function – Energy states of a quantum oscillator – **Problems of direct applications in Probability**.

Module V (18hrs)

Statistical equilibrium – Probability theorems in statistical thermodynamics – Classical Vs Quantum statistics – Maxwell - Boltzmann distribution law – Maxwell – Boltzmann distribution and Ideal gas - Fermi –Dirac distribution law – Electron gas – Bose – Einstein distribution law – Photon gas - Comparison of three statistics.

Books for study:
1. Modules I, II,   : Heat and Thermodynamics - Brijlal and Subramaniam,
   III and V   S.Chand & Co. Reprint 2006.
2. Module IV   : Thermodynamics and Statistical Physics - Sharma and Sarkar,
                            Himalaya publishing house, 3rd edition.

Books for reference:
1. Heat and Thermodynamics   :   S. Singhal & J.B. Agarwal , Pragathi
                                      Prakashan publishing, reprint 1995.
2. Text book of Heat and Thermodynamics   :   J.B. Rajam & C.L. Arora,
                                      Chand & Co. 10th reprint.

B.Sc Physics – Semester II

Part III Core III   **Subject Code: 212P03**

Properties of Matter and Sound (52 hours)

Preamble:

The purpose of this paper is to give an introductory account of basic ideas in conservation principles and properties of matter. The module Acoustics is introduced to know about the application of sound and ultrasonic waves in various fields.

Module I Gravitation (10hrs)

Kepler's law of motion – Derivation of law of gravitation – Determination of 'G' by Boy's method – Merits of Boy's method – Acceleration due to gravity – Compound pendulum – Theory – Bar pendulum – Points of suspension and oscillations are interchangeable – **Problems of direct applications**.

Module II Elasticity (11hrs)

Definitions – Yield point, Elastic limit – Elastic fatigue – Poisson's ratio for Rubber – Work done in Deforming a body – Bulk modulus (Relation between K, Y and σ) Modulus of Rigidity – Relation between elastic constants (Y, η, K and σ) – Twisting of a cylinder – Torsion pendulum – Bending of beams – Bending moment – Cantilever – Beam supported at its ends and

loaded in the middle – I Section girders - Determination of elastic constants by Searle's method – **Problems of direct applications**.

Module III Viscosity and surface tension   **(11hrs)**
<u>Stream line motion and Rate of flow - Equation of continuity - Energy of a liquid in motion</u> – Viscosity – Correction to Poiseullie's Equation – Rotation viscometer –   Surface tension – Examples of surface tension – Determination of surface tension of a liquid by Jaeger's method – **Problems of direct applications**.

Module IV Production and Measurement of low Pressure   **(10hrs)**
Exhaust pumps – characteristics – Rotary oil pumps – Mercury pumps (Geissler pumps) – Diffusion-Condensation pumps –– Measurement of low pressure – The Bourdon gauge – McLeod gauge – The Pirani resistance gauge – Ionization gauge (Hot cathode)

Module V Acoustics   **(10hrs)**
Free vibrations – Undamped vibrations – Damped vibrations – Forced vibrations – Origin of sound – Practical applications: Gramophone – Microphone & Loud speaker – Tape recorder – Reverberation – Sabine's reverberation formula – Factors affecting the Acoustics of buildings – Sound distribution in an Auditorium – Requisites for good Acoustics .
Ultrasonics - Production of ultrasonic wave   – Piezo electric oscillator – Determination of velocity of ultrasonic waves.

Books for study:
1. Module I and IV	: Elements of Properties of Matter – D.S Mathur ,Shyama lal Charitable trust, New Delhi. Revised and enlarged edition 1992, Reprint 2010.
2. Module II and III	: Mechanics and Electrodynamics – Brijlal N.Subramanyam and Jivan Sehan, Eurasia Publishing House Private Ltd, New Delhi, Revised and enlarged edition 2005.
3. Module V	: A Text book of sound – N.Subramanyam Brijlal, Vikas publishing House Pvt Ltd, NewDelhi, 2nd Revised edition, reprint 2006.

Books for reference:
1. Mechanics   : D.S.Mathur, N.Chand & Company, 2nd edition.
2.Waves & Oscillations   : Ashok K.Ganguly, S.Chand & Company Ltd, 1st edition, reprint 1994.

B.Sc Physics – Semester II
Advanced Learner's Course (ALC) I   **Subject Code:212ALP**
* Energy Physics
(Self Study)

Preamble:
This course is intended to introduce students to the range and potential of energy resources, available methods of conversion and utilization of energy. The contents are so designed to make the students understand various forms of energy and the importance of energy sources.

Module I Introduction to energy sources

Energy consumption as a measure of prosperity – World Energy Futures – Energy sources and their available conventional energy sources – non-conventional energy sources – Renewable energy sources – Advantages – Prospects of renewable energy sources.

Module II Solar Energy

Solar radiation measurements – Conversion of solar radiation into Heat – Solar energy collectors – Flat Plate Collector – Solar energy storage system – Solar ponds – Applications of solar energy – Solar water heating – Photovoltaic electric conversion

Module III Wind Energy

Basic principles of the wind energy – Conversion – Power in the wind – Basic components of a wind energy conversion system – Classification of WEC system – Advantages and Disadvantages of WEC systems – Application of wind energy.

Module IV Biomass Energy

Introduction – Biomass conversion technologies – Biogas generation factors affecting generation of gas – Classification of biogas plants – Biogas from plant wastes – Problems related to bio-gas plants –Advantages & Disadvantages of biological conversion of solar energy.

Module V Chemical Energy

Introduction – Fuel Cells – Design and Principles of operation – Advantages & Disadvantages – Conversion – efficiency of fuel cells – Application of fuel cells – Batteries – Different types of Battery arrangement – Classification of Battery : Nickel –Cadmium battery – Advantages of Batteries for Bulk energy storage (Qualitative ideas).

Books for study:
1. Non-conventional energy sources   : G.D.Rai, Kanna publishers, New Delhi,
                                          3rd edition, reprint 1995.
2. Solar Energy utilization   : G.D.Rai, 4th edition, 1991.

Books for Reference:
1. Solar Energy Principles of
   Thermal collection and storage   : S.P.Sukhatme, 2nd edition.
2. Renewable energy   : Maheswar Dayal, 1st edition 1989.
3. Non-Conventional Energy systems   : K.M.Mittal, 1st edition, 1991.

B.Sc. Physics – Semester III

Part III Core IV   **Subject Code:312P04**

Mathematical Physics (75 hours)

Preamble:

All Physical phenomena are represented by simple and compact expressions of mathematics. For proper understanding of the basic concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, the topics such as Vector calculus, Differential equations and Numerical methods are required. Therefore "Mathematical Physics" is introduced in the third semester as Core Course IV.

Module I   **(15hrs)**

      Line, Surface and Volume integrals- Divergence and Curl of a vector-Vector identities - Gauss divergence theorem and Proof - Problems using Gauss divergence theorem - Equation of Continuity- Euler's equation of motion- Bernoulli's equation.

Module II   **(15hrs)**

      Stoke's theorem and Proof- Problems using Stoke's theorem- Green's theorem and its Proof using Gauss divergence theorem- Green's theorem in a plane- Classification of vector fields

      Orthogonal curvilinear coordinates - Gradient, Divergence, Laplacian and Curl in terms of orthogonal curvilinear coordinates- Spherical polar coordinates and differential operators- Cylindrical coordinates and differential operators.

Module III   **(15hrs)**

      Legendre differential equation and Legendre functions: Solution of Legendre's Equation in descending power of x - Generating function of Legendre polynomial - Rodrigue's formula for Legendre polynomials- Recurrence formulae.

      Bessel's differential equation- Bessel's function of first kind- Bessel's half orders- Recurrence formulae for $Jn(x)$.

Module IV Classical Mechanics   **(15hrs)**

      Constraints and degrees of freedom – Holonomic and non- holonomic constraints – Generalised co-ordinates – Generalised notations – Generalised displacement – Generalised velocity – Generalised momentum – Generalised force

      Hamilton's variational principle – Deduction of Lagrange's equations of motion from Hamilton's principle for conservative system - D'Alembert's principle – Lagrange's equations from D'Alembert's principle for Conservative system – Application of Lagrange's equation of motion – Simple Pendulum.

Module V   Numerical Methods   **(15hrs)**

      Solution of algebraic equations- Bisection method- Newton - Raphson method- Solution of linear algebraic equation - Gauss elimination method

    Numerical integration - Quadrature formula for equidistant co-ordinates - Trapezoidal rule - Simpson's rule - Numerical solution of ordinary differential equations - Taylor's series method- Euler's method - Fourth order Runge-Kutta method.

Books for study:
1. Module I, II, & III   : Mathematical physics - Satya Prakash,
                   Sultan & sons- 5th revised edition reprint 2010.
2. Module IV   : Classical Mechanics – Dr. S.L. Gupta, Dr.V. Kumar &
                   Dr. H.V. Sharma, Pragati Prakashan Publishing,
                   Meerut , 21st edition.
3.Module V   : Numerical methods - A.Singaravelu-
                   Meenakshi   publications- 2nd edition.

Books for Reference:
1**.** Mathematical Physics – Rajput, Pragathi Prakashan,Meerut 1995 edition.
2. Numerical methods for Scientists and Engineers Shastry

B.Sc. Physics – Semester III

Part IV Skill Based Course Instrumentation I   **Subject Code:312PS1**

Mechanical Instrumentation (38 hrs)

Module I   **(8 hrs)**

Characteristics of instruments and measurements system : Methods of measurements – classification of instruments – analog and digital modes of operation – static characteristics – true value – static error – static correction – scale range and scale pan – reproducibility and drift – repeatability – noise – accuracy and precision –significant figures.

Errors in measurements: Limiting errors – Types of errors – Gross errors – systematic errors – instrumental errors – observational errors – random errors.

Module II (Principle & Working)   **(8 hrs)**

Measurement of linear velocity: Electromagnetic transducers – Moving magnet type and moving coil type velocity transducers.

Measurement of angular velocity: DC and AC Tachometer generator.

Measurement of vibrations: Seismic transducers – LVDT – accelerometers – quantities involved in vibration measurement.

Module III (Principle & Working)   **(7 hrs)**

Measurement of Temperature: Electrical resistance thermometer: Platinum resistance thermometer – salient features of resistance wire thermometers – Thermocouple thermometer – Thermocouple construction - Measurement of thermocouple output – advantages and disadvantages   - optical pyrometers – disappearing filament type.

Module IV (Principle & Working)   **(7 hrs)**

Measurement of flow: Turbine flow meter – Orifice flow meter – hot wire anemometer

Measurement of Liquid level: Resistive method – capacitive method – inductive method - Measurement of liquid level using float.

Module V (Principle & Working)   **(8 hrs)**

Measurement of Humidity: Hygrometer – Due point hygrometer - surface conductivity method.

Measurement of thickness: Inductive method - Measurement of thickness using ultra sonic vibrations – Nuclear radiation method.

Books for study:

1. Electrical and Electronic   : A.K.Sawhney – Dhantpat Rai & Sons
   Measurements and instrumentation   Publications – 1991 Revised Fourth Edition
2. Industrial Instrumentation   : K.Krishnaswamy and S. Vijaya chitra –
                                                New age international Publishers
                                                First edition – Reprint 2008.

Books for Reference:

1. Instrumentation Devices and Systems   : C.S. Rangan, G.R.Sharma and V.S.V.Mani –
                                                Eleventh reprint 1992 TataMcGraw Hill Publishing

Ltd, New Delhi

2.Experimental methods for Engineers   :J.P.Holman – Fifth edition – Mc Graw Hill
International Book Company.

B.Sc. Physics – Semester IV

Part IV   Skill Based Course Instrumentation II   **Subject Code:412PS2**

Medical Instrumentation (38 hours)

Preamble:
        Medical instrumentation is in the designing and developing era and every year the hospitals and research institutes are adding modern medical equipments for the medical study. Therefore, it is necessary for every student to understand the physics principles and functioning of various medical equipments. This paper would enable the students to acquire knowledge about the functioning of some of these medical equipments.

Module I: Electrodes   (8 hrs)
        Transport of ions through the cell membrane - Resting and action potentials- Characteristics of resting potential – Design and Components of the Bio-medical instrument system - Electrodes- half cell potential – Electrode paste – Metallic Microelectrode -*Depth and Needle electrode - Surface electrode - Chemical Electrode - pH Electrode

Module II: Bio Potential Recorders   (7 hrs)
        Characteristics of the recording system – Mechanical functions of the heart - Electro Cardiography -   Origin of Cardiac Action potential - ECG lead configurations - ECG recording setup - Practical considerations for ECG recording - Analysis of recorded ECG signals

Module III: Physiological Assist Devices   (8hrs)
        Pacemakers – Energy requirements to excite heart muscle - Methods of stimulation – External and Internal Pacemakers - Different modes of operation - Ventricular asynchronous pacemaker – Pacemaker batteries – Lithium cells
        Defibrillators - Internal and External defibrillators - synchronized DC defibrillator - Model of the heart lung machine – Oxygenators – Bubble oxygenators - Blood pumps –Non – Pulsatile pump - Kidney machine – Renal function – Dialysis – Peritoneal dialysis.

Module IV : Operation Theatre Equipment   (7hrs)
        Surgical diathermy : Electro surgery techniques – Electrosurgical diathermy unit - Range and area of irritation of different diathermy techniques – Ventilators - Anesthesia machine – Flow meters – Electromagnetic blood flow meters.

Module V: Advances in Biomedical Instrumentation   (8hrs)
        Computer tomography – Principle – CT scanner –Thermography - Infrared thermography
        Ultrasonic imaging systems : Ultrasonic propagation through tissues – Display modes – A Mode – B Mode – T-M Mode - Recording devices - Ultrasonic imaging instrumentation
        Magnetic resonance imaging : Magnetic Resonance phenomenon - MRI instrumentation.

Book for study:

Biomedical Instrumentation   : Dr.M.Arumugam, Anuradha Agencies, Vidyakaruppur, Kumbakonam, 2nd edition 6th reprint, 2003.

Books for reference:

1. Biomedical Instrumentation   : Leslie Cromwell and Fred S.Weibeil printice and measurements   Hall of India Rt,New Delhi.
2. Hand book Biomedical   : R.S Khandpur, Tata Mc Graw Hill publishing co, Instrumentation.   9th Edition 1996

B.Sc. Physics – Semester IV

Advanced Learner's Course (ALC) II   **Subject Code:412ALP**

* Space Physics
(Self Study)

Preamble:

    This paper is introduced for the advanced learners to inculcate an interest and curiosity to know about space. This paper also imparts knowledge about the recent development in satellite communication.

Module I

    Atmosphere and beyond – Gravity – Escape velocity – Rockets – Artificial satellites – Geostationary orbit – Polar orbits.

Module II

    Lunar probes and planetary probes – Expedition to the moon – Conquest of moon – Moon probes, Asteroids – Mars – Jupiter – Venus – Mercury –Saturn – Distant planets.

Module III

    Planetary probes and Indian launch vehicle – Genesis – Aryabhatta – Bhaskara – SLV3 – Apple.

Module IV

    ASLV – PSLV – GSLV –Polar satellite launch vehicle – Geosynchronous satellite launch vehicle – Indian national satellite systems - Chandhrayan.

Module V

    Satellite Application – Introduction – Satellite television – Telephone service via satellite – Data communication satellite – Satellite for earth observation.

    Satellite for weather forecast – Satellite for scientific studies – Satellite for military applications.

Books for study:

1. Modules I to IV   :   Space research – Prof. S.Kumaravelu, Prof. N. Suseela Kumaravelu, Senthil Art Printers, Sivakasi, 2002.
2. Module V   :   Satellite Communications, Dr. D.C.A.Agarwal, A.K. mani, Khanna Publishers, 4th edition, 2000.

B.Sc. Physics - Semester V

Part III Core VI   **Subject Code:510P06**
Nanotechnology I
Nanomaterials: Synthesis & Characterization (65 hours)

Preamble:

"There's Plenty of Room at the Bottom" – so said Richard Feymann describing a process by which the ability to manipulate individual atoms and molecules might be developed, using one set of precise tools to build and operate, another a smaller set and so on down to the needed scale.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs).

At present the practice of Nanotechnology embraces both Stochastic and deterministic approach.

Module I Introduction to Nanomaterials & Synthesis   **(13hrs)**

Nanotechnology generation - Definition of Nanoscience, Nanotechnology – Low Dimensional Materials: 2D, 1D, 0D

Top Down and Bottom up Techniques – Chemical methods of synthesis : Sol-Gel method – Hydrothermal synthesis – Sonochemical synthesis – Microwave synthesis.

Module II Nanomaterials Synthesis   **(13hrs)**

Physical methods of synthesis: Plasma Arc discharge – Sputter Deposition : DC sputtering, RF sputtering – Evaporation: Thermal evaporation , Electron beam evaporation.- Chemical vapour deposition – Types of CVD process – Pulsed Laser Deposition – Molecular beam Epitaxy - Ball Milling.

Module III Properties of Nanomaterials   **(13hrs)**

Surface to Volume Ratio at Nanoscale – Mechanical properties – Thermal properties – Electrical properties – Magnetic properties – Optical properties – Acoustic properties.

Module IV Characterization Techniques   **(13hrs)**

(Portion covers Instrumentation, working principle and analysis technique towards Nanoscale).

Electron Microscopes: SEM – TEM – SPM – STM – AFM.

Optical Microscope: Confocal Microscope

Diffraction Method: X-ray Diffraction Technique Debye–Scherrer Relation,

Particle Size Analyzer, Spectroscopy Method: (UV-VIS –NIR) Spectrometer.

Module V   **(13hrs)**
Manipulating Nanomaterials

Nanomanipulator – Nanotweezers – Atom Manipulation – Photolithography – Electron Beam Lithography – Dip Pen Nanolithography.

Special Nano materials

New forms of Carbon – Fullerene – Carbon Nano tubes - Types of Nanotubes – Synthesis CNT – Properties of CNT – Graphene – Porous Silicon

Books for study:
  1. Nanotechnology   : Sulabha K Kulkarni, Second edition,
   Principles and Practices   Capital publishing company, New Delhi
  2. Introduction to NanoScience and   : K.K.Chattopadhyaya and A.N Banerjee
   Nanotechnolgy   First Edition, PHI learning Private Ltd.,
              New Delhi
  3. Nanotechnology   : Technology Revolution of 21st Century:
              Er. Rakesh Rathi, S.Chand &Company Ltd,
              New Delhi, First edition 2009
  4. Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
   And Design   Daniel L. Schodel, First Printed in India
              2011, Elsevier India Pvt. Ltd.

B.Sc. Physics - Semester V

Part III Core VII   **Subject Code:512P07**

Electricity and Magnetism (52 hours)

Preamble:
   Electricity, Magnetism and Electromagnetic theory are a time bounded subject which has many applications in our day-to-day life. This paper enables the students to understand the concept of electric and magnetic field, production of electromagnetic waves and their significance.

Module I   **(10hrs)**
  Electrostatics : Gauss's law & proof – Gauss's law in differential form – Gauss's law and Coulomb's law - Laplace and Poisson's equation – Applications: Electric field due to an uniformly charged sphere - field due to two concentric spherical conductors – Field of a line charge - Field of a charged conductor - Force on the surface of a charged conductor - Demonstration of mechanical force – **Problems of direct applications.**

Module II   **(11hrs)**
  Capacitors: Parallel plate capacitor - Cylindrical capacitor - Spherical capacitor – Energy stored in a capacitor - Force of attraction between capacitor plates - Types of capacitors according to shape and dielectrics - Dielectric constant - Dielectric strength – **Problems *.**
  Magnetic field due to steady current : Ampere's circuital law and proof - Applications of Ampere's law - **B** near a long wire – B for a Solenoid – B for a Toroid – Character of **B** lines and the divergence of **B** - Ampere's law in curl form – **Problems of direct applications.**

Module III   **(10hrs)**
  Electromagnetic Induction: Inductor and inductance – Self inductance - Physical significance of self inductance – Self inductance of a Solenoid – <u>Two parallel wires – Toroidal coil of circular cross section</u> – Energy stored in magnetic field - Measurement of self inductance

by Rayleigh's method – Mutual inductance – Mutual inductance of concentric solenoids - Relation between mutual inductance and self inductance - Inductances in series and in parallel Measurement of mutual inductance – **Problems of direct applications.**

Module IV   (11hrs)

Electromagnetic oscillations : Growth and decay of current in a circuit containing L and R (Helmolholtz Equation) –<u>RC Circuit Charge and discharge of a condenser</u> — Determination of high resistance by leakage method – Series LCR circuit - charge and discharge. **Problems of direct applications..**

A.C circuit: A Parallel (or Anti) resonant circuit - Parallel resonant circuit when inductance L have some resistance – Condition for unity power factor – Current magnification - Selectivity of a parallel resonance circuit –<u>Comparative study of a series resonant and parallel resonant circuit</u> – Power in AC circuit - Choke coil – **Problems of direct applications.**

Module V   (10hrs)

Circuit Analysis: Superposition theorem- Thevenin's theorem – Norton's theorem- Maximum power transfer theorem – **Problems of direct applications.**
Electromagnetic theory: Basic equations - Maxwell's equations in free space – Electromagnetic waves in free space – Electromagnetic waves in isotropic non - conducting media – Index of refraction -   Energy density of Electromagnetic wave and Poynting theorem.

Book for study:
Electricity and Magnetism   : K.K. Tewari, S Chand & Company Ltd
                                                              Reprint 2007 , New Delhi.
Books for reference:
1. Electricity and Magnetism   : R. Murugeshan, S.Chand &Co. Ltd., New
                                                              Delhi, 1995 Edition.
2. Electricity and Magnetism   : A.S.Mahajan, A.A. Rangawala
                                                              Tata McGraw Hill Publishing Co.Ltd, New
                                                              Delhi 1998 edition.

B.Sc. Physics - Semester V
Part III Core IX   Subject Code:512P09

Electronic devices and circuits (52 hours)
Preamble:
The field of electronics has occupied the major areas of applications in the field of science and technology. A basic knowledge about the electronic devices and circuits would help the students appreciate their practical applications.

Module I Special diodes   (10hrs)
Introduction – PN-Junction diode – V-I Characteristics – Diode-current equation – Effect of Temperature on diode Characteristics - Static and Dynamic resistance of a diode – Zener diode – V-I Characteristics – Tunnel diode – V-I Characteristics - Diode Parameters and

applications – Varactor diode – Specifications – Application in tuning circuits – <u>LED – LED voltage drop and current – Multicolour LED.</u>

Module II Rectifiers, Filters and Regulated Power Supply (11hrs)

Half wave rectifier – Average values of output voltage and load current – PIV of HWR – Full wave rectifier – Centre-tapped full wave rectifier – Average values of output voltage and load current – Bridge rectifiers – PIV of Bridge rectifiers – Advantages and Disadvantages – Ripple factor and efficiency of HWR and FWR – TUF – Comparison – – **Problems of direct Application***.

Filters – Inductor filter – Capacitor filter – LC filters - π-Filters – – **Problems of direct Application***.

Voltage regulator – Zener diode shunt regulator – Working – Transistor series regulator – Shirt-circuit protection against overload – Monolithic IC voltage regulator – Adjustable voltage regulator – Complete DC power supply circuit – **Problems of direct Application***.

Module III Transistor Amplifiers (11hrs)

Transistor action – CE configuration and characteristics –DC operating point and Load line – Q point and maximum undistorted output – Factors affecting stability of Q-point – Stability factor – Transistor biasing – Voltage divider bias – Stability of voltage divider bias – Classification of amplifiers – Common Emitter transistor amplifier – Amplifier parameters – RC couple amplifier – Frequency response – Advantages , disadvantages and applications (qualitative only) – Power amplifiers – Difference between voltage and power amplifiers – Performance parameters – Class B amplifiers – Class B push-pull amplifiers – Crossover distortion – Efficiency – Feedback amplifiers – Principle – Advantages and disadvantages – Types of feedback – Emitter follower – – **Problems of direct Application***.

Module IV Field Effect Transistors and Switching devices (10hrs)

Junction Field Effect Transistor – Operations – Characteristics – JFET parameters – Comparison between FET and BJT – MOSFET – Depletion type – Enhancement type – Characteristics – Advantages of N-channel over P-channel – Handling precautions.

Thyristors – SCR operation – Triggering ON and OFF – VI characteristics – SCR applications (qualitative only) – UJT – Equivalent circuit – Operation –Characteristics – UJT relaxation oscillator (circuit diagram with applications).

Module V Oscillators and wave shaping circuits (10hrs)

Classification of oscillators – The Barkhausen criterion – Hartely oscillator – Collpitt's oscillator – RC oscillators - Basic principles of RC oscillator – Phase-shift oscillator – Multivibrators – Astable, monostable and bistable multivibrator - Schmitt trigger.

<u>Types of wave-shaping circuits – Linear wave shaping circuits – Differentiating circuits – Applications – Generation of narrow pulse from square wave – Integrating circuits – Generation of triangular wave forms from square wave – Non-linear wave shaping circuits – Clippers – Positive and negative clippers – Biased clippers – Clamping circuits – Practical clamper – Voltage doubler</u> .

Books for study:
  1. A Text book of Applied Electronics: R.S.Sedha, Chand & Co. Ltd., 1ˢᵗ edition,
                                      reprint 1998, NewDelhi
  2. Basic Electronics Solid state   :B.L. Theraja, Chand & Co.Ltd., 1ˢᵗ edition 1998
                                        reprint 2002, NewDelhi

Books for Reference:
  1. Foundations of electronics   : D.Chattopadhayay & Others, Wiley
                                     Eastern Ltd., Edition 1993.
  2. Principles of Electronics   : Albert Malvino, Tata McGraw Hill Publishing.

B.Sc. Physics - Semester V

Part III   Elective I   **Subject Code:512PE1**

Programming in C (75 hours)
(Theory & Practical)(52 +23 hours)

Preamble:
        C has emerged as the language of choice for most of the scientific applications due to speed, portability and compactness of code. This paper enables the student to understand the high level language and to specialize in C programming.

Module I   **(11hrs)**
        Constants, Variables and Data types - Character set – C tokens – Key words and identifiers – Constants, Variables – Data types – Declaration of variables – Assigning values to variables – Defining symbolic constants – Basic structure of a C program.
        Operators and expressions - Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operators – Bit wise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of operators – Mathematical functions.

Module II   **(11hrs)**
        Managing input and output operations - Reading a character – Writing a character – Formatted input – Formatted output.
        Decision Making and Branching - Decision making with if statement – Simple if statement – The ..if. else statement – Nesting of if…else statement – The else… if ladder – The switch statement – The ? Operator – The go to statement.

Module III   **(10hrs)**
        Decision Making and Looping - The While statement – The do statement – The for statement – Jumps in loops.
        Arrays - One dimensional arrays – Declaration of one dimensional arrays – Initialization of one dimensional arrays – Two dimensional arrays - Initializing two dimensional arrays – Multi dimensional arrays.
       .

Module IV **(10hrs)**
Handling of character arrays and strings - Declaring and initializing string variables – Reading strings from terminal – Writing string to screen – Arithmetic operation on functions
User defined functions: Elements of user defined function – Definition of function - Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Nesting of functions – Recursion.

Module V **(10hrs)**
Structure - Defining a structure – Declaring structure variable – Accessing a structure member – Structures within structures.
File management in C - Defining and opening a file – Closing a file – Input/Output operations on files – Error handling in files.

Books for study:
Programming in ANSI C : E.Balagurusamy, Tata McGraw Hill Publishing
                                                Co. Ltd., 3rd edition, 2004, New Delhi.

Books for reference:
 1. Physics through C Programming : S.Palaniswamy, Pragati Prakashan Publishers, 1st
                                                edition, 2004, U.P.

 2. Let us C : Yashavant Kanetkar, BPB Publications, 3rdedition,
                                                1999, New Delhi.

LIST OF PROGRAMS

   1. Temperature conversion.
   2. Roots of a quadratic equation.
   3. Matrix multiplication.
   4. Ascending and Descending order of an array.
   5. Computation of AC current in a circuit that contains resistance, inductance and capacitance in series.
   6. Program using Simpson's rule and Trapezoidal rule.
   7. Projectile problem.
   8. Program for fourth order Runge - Kutta method.
   9. Product of factorials of n numbers using recursion.
   10. Program using string handling functions.
   11. Arranging Strings in alphabetical order
   12. Mark list using files.

B.Sc. Physics - Semester V
Part IV Skill Based Course Instrumentation III **Subject Code:512PS3**
Electrical and Electronic Instrumentation (38 hrs)

Module I **Electro mechanical operating instruments** **(8hrs)**
        Torque and deflection of the galvanometer – Steady state deflection – Dynamic behavior – Damping mechanism – Permanent Magnet Moving Coil Mechanism (PMMC) – D'Arsonval Movement

Power, energy and Power factor Measurements – Electrodynamometer – Wattmeter – Power factor meter.

Module II Ammeters, Voltmeters and Ohmmeters   (7hrs)

DC Ammeters **–** shunt resistor – Ayrton shunt - DC Voltmeters – Multiplier Resistor – Multirange Voltmeter – Voltmeter Sensitivity – Series Type Ohmmeter – Shunt type Ohmmeter - Multimeter or VOM – Calibration of DC instruments.

Module III Oscilloscopes   (8hrs)

Oscilloscope block diagram – CRT – Electrostatic – Deflection – Screens – Graticules – CRT circuits – Vertical deflection system - Horizontal deflection system – Oscilloscope techniques – Determination of frequency – Digital storage oscilloscope – Block diagram explanation only.

Module IV Data converters, Analog and Digital data acquisition systems.   (8hrs)

Digital to analog converters – Basic inputs and outputs - Weighted resistor network technique – Analog to Digital converters – Basic inputs and outputs - Successive approximation technique.

A/D data acquisition systems – Block diagram – Interfacing transducers to electronic control and measuring systems – Instrumentation amplifier – Voltage to current converter (current loop) – Digital to Analog multiplexing – Analog to Digital Multiplexing.

Module V Computer controlled – Test systems   (7hrs)

Testing a Radio receiver – Instruments used in computer controlled instrumentation – Frequency counter for operation with IEEE 488 bus – Signal generator interfaced with IEEE 488 bus – IEEE 488 electrical interface.

Books for study:

Modules I, II, III, IV & V   **:** Modern Electronic Instrumentation and
                                       Measurement technique - Albert D Helfrick and
                                       William D.Hooper – Prentice Hall of India –
                                       India reprint 2008,New Delhi.

Module IV (partly)   **:** PC based instrumentation concepts and practice –
                                       N.Mathivanan – Prentice Hall & India – 2007
                                       print – New Delhi.

Book for Reference :

A course in Electrical and Electronic   : A.K.Sawhney, Dhanapat Rai & Sons
Measurements and Instrumentation   publications, 18[th]revised and enlarged edition
                                                 2007,   Reprint 2008.

B.Sc. Physics - Semester VI

Part III Core X Nanotechnology II   **Subject Code:610P10**

Nanomaterials : Applications(75 hours)

Module I Nanoelectronics **(15hrs)**

Quantum Electronic Devices – Upcoming Electronic Devices: Electrons in Mesoscopic Structure – Short Channel MOS Transistor – Split Gate Transistor – Electron Wave Transistor – Electron Spin Transistor – Quantum Cellular Automata – Quantum Dot Array - Tunnel Effect and Tunneling Elements, Tunnel Diode, Resonant Tunneling Diode - Principle of SET – SET Circuits. **(Basic structure & Principle only)**

Module II Nanosensors **(15hrs)**

Existing Nano Sensors - Electronic tongue and nose – Selected R&D for individual nanosensors – Electrochemical sensors –. Nanosensors in space - Nanopressure sensor- Physical sensors - Chemical sensors –Biosensors- Nanosensor production methods - Easy-to-make nanosensors.

Module III Nanomedicine **(15hrs)**

Approach to developing nanomedicines – Various kinds of nanosystems: Nano shells, Nanopores, Tectodendrimers – Products for Nanodrug administration: Nanoparticle-drug system for oral administration, Nasal administration and Ocular administration – Nanotechnology in diagnostic applications – Materials for use in Diagnostic and Therapeutic applications: Gold Nanoparticles, Quantum dots, Magnetic Nanoparticles.

Module IV Nanotechnology in Optics, Photonics & Solar Energy **(15hrs)**

Properties of Light & Nanotechnology – Interaction of Light & Nanotechnology : photon trapping and Plasmons, dielectric constant, refractive index – Imaging – New Low Cost Energy Efficient Windows & Solar Absorbers based on Nano particles.
Nanotechnology for energy: Thermo electricity – Nanotechnology for energy : Solar - Nanotechnology for energy: Hydrogen.

Module V Nanotechnology in Environment, Textiles & Cosmetics **(15hrs)**

Water cleaning and Purification – Air cleaning and purification – Air pollution reduction – Soil Remediation
Characteristics of nano finishing in garments – Functional, intelligent and smart textiles - Waterproof Textiles – Breathable Textiles - UV Protection Textiles - Odor Control Textiles – Anti-Static Textiles - Anti-Bacterial Textiles - Dust Free Textiles – Stain Resistant Textiles.
Sun Screen Lotion – Anti ageing Creams – Hair coloring – Tattoos.

Books for Study:
1. Nano Electronics & Nano Systems   : K. Goser, P. Glosekotter, V. Dienstuhl,
                                                                     Springer, 2004.
2. Nanotechnology   : Technology Revolution of 21st Century:
                                                                     Er. Rakesh Rathi, S.Chand &Company Ltd,
                                                                     New Delhi,   First edition 2009
3. Nano: The Essentials Understanding : T. Pradeep , Tata McGraw-Hill Publishing
    Nanoscience and Nanotechnology   Company, Second reprint 2008.

4. Nanotecnology – Basic Science   : Mick Wilson, Michelle Simmons and
    & Emerging Technologies   Burkhard Raguse, (1 / e) Overseas Press

India Pvt. Ltd., 2005.

5.Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
 And Design   Daniel L. Schodel, First Printed in India
2011, Elsevier India Pvt. Ltd.

B.Sc Physics – Semester VI

Part III Core XI   **Subject Code:612P11**

Quantum Mechanics & Relativity (52 hours)

Preamble:

In the modern age, Quantum Mechanics is an indispensable part of the physicist education. It has handled problem ranging from structure of stellar system to that of atomic nuclei, elementary particles and semiconductor physics. This paper deals with the principles of quantum Mechanics and the application to various problems. This paper also imparts basic knowledge about theory of relativity.

Module I Foundation of Wave Mechanics   **(10hrs)**

Dual nature of light and matter – Experimental evidences for matter waves – *Davisson and Germer experiment – *G.P. Thomson's experiment – Velocity of DeBroglie waves: Quantum picture of a material particle - Relation between group velocity and phase velocity for a non-relativistic free particle — Equation of motion of matter waves – Time dependent and time–independent Schroedinger's equation - Physical interpretation of the wave function – **Problems of direct applications.**

Module II   Applications of Schrödinger equation   **(10hrs)**

Normalized and Orthogonal wave function – Conditions satisfied by a wave function - Solution of the Schrödinger equation – Expectation values of dynamical quantities – Probability current density: Particle flux – Ehrenfest's theorem.

 The free particle – Particle in a box (one dimensional case) – Rectangular potential Barrier – Application of Barrier penetration (α-Decay) – One dimensional Linear Harmonic Oscillator.

Module III The Uncertainty principle & Operators   **(11hrs)**

The uncertainty principle – Examples of position-momentum uncertainty - Proof of uncertainty principle for one dimension wave packet – Application of uncertainty principle – The Non-existence of the electron in the Nucleus – Light quanta

Operators and Linear operators – Eigen values and Eigen functions – The operator formalism in Quantum mechanics – Momentum operator – Hamiltonian operator – Hermitian operators – Properties of Hermitian operators – Commutation relation between (i) Position and momentum (ii) Hamiltonian and momentum (iii) The Commutation rules for the components of orbital angular momentum (i.e.) L^2 with Lx, Ly and Lz (iv) Ladder operators – **Problems of direct applications.**

Module IV Reference frames and Galilean invariance   **(10hrs)**

 Reference frame – Newton's laws and its limitations – Inertial frames of reference – Galilean transformation – Transformation of position, length, velocity and acceleration.

Classical relativity – Newton's laws of motion – The law of conservation of momentum and energy – Transformation equation for a frame of reference inclined to an inertial frame – Transformation equation for a rotating frame of reference – Non – inertial force: Fictitious forces - Effect of centrifugal and corliolis forces due to earth rotation.

Module V Special theory of relativity (11hrs)

Michelson and Morley experiment – Einstein concept of special theory of relativity – Lorentz transformation co-ordinate equations – Results following from Lorentz transformation equations – Length contraction – Time dilation – Verification of time dilation – Simultaneity – Transformation of velocity – the relativity of mass – Relation between relativistic momentum and energy – **Problems of direct applications**.

Books for study:
1. Module I, II & III   : Quantum Mechanics – Satya Prakash & Swathi Saluja,
                              Kedar Nath Ramnath & Co., Meerut, edition 2007.

2. Module IV & V   : Mechanics – D.S. Mathur, S.Chand & Co.Ltd.,
                              Ramnagar, New Delhi, 2nd edition 1981, reprint 1984.
Books for reference:
1. Quantum Mechanics   : S.P.Singh & M.K. Bagde – S.Chand & Co. Ltd.

2. Basic concepts of   : Ajoy Ghatak , McMillan Co., Edition 2002.
   Quantum mechanics

B.Sc Physics – Semester VI
Part III Elective II   **Subject Code:612PE2**

Digital Electronics and Microprocessors (52 hours)
Preamble:
The digital electronics and digital devices with the integrated circuit technology are playing a significant role in the day-to-day life. The designing and fabrication technology of these devices paves a vivid understanding at the UG level. Also the binary logic with which these digital devices operate would facilitate the students to learn and appreciate the applications of these digital devices.

Module I IC Technology and its applications (11hrs)

Introduction – Advantages of ICs-Classification by structure and function – IC terminology – Fabrication of components like transistors, diodes, resistors and capacitors – Operational amplifiers – Ideal OPAMP – Virtual ground and summing point – Applications – Inverting amplifier – Non-inverting amplifier – Adder, Subtractor, Integrator and Differentiator – Input offset voltage – Peaking amplifier –**Problems of direct applications.**

Module II Arithmetic Circuits (11hrs)

Binary addition – Binary subtraction – Logic gates – NAND and NOR as Universal gates – Postulates of Boolean Algebra – Theorems of Boolean Algebra – Simplification of Boolean

expressions using Karnaugh maps and gates – Half adder – Full adder –Half subtractor – Full subtractor – Binary adder / Subtractor – Multiplexers – Demultiplexers – <u>Decoder – Seven-segment decoders</u> – **Problems of direct applications.**

Module III Sequential circuits   (10hrs)

Flip flops – RS flip flop – Clocked RS flip flop – Edge triggered RS flip flop – D flip flop – Edge triggered JK flip flop – JK master/slave flip flop – Asynchronous counter – Synchronous counter – MOD 5 counter and wave forms – Decade counter and wave forms – <u>Ring counter – application to digital clock.</u>

Module IV Registers and Memory devices   (9hrs)

Shift registers – Serial IN Serial OUT – Serial IN parallel OUT – Parallel IN serial OUT – Parallel IN Parallel OUT.

<u>Semiconductor memories – ROM, PROM , and EPROM – RAM – Dynamic RAM – Magnetic bubble memories – ROM application to seven-segmented visible display.</u>

Module V INTEL 8085 Microprocessor   (11hrs)

Organization of a microprocessor based system – Operating system – Single board microprocessors – Microprocessor INTEL 8085 – Architecture details – Instruction Format/Instruction set of 8085 – Machine cycle of 8085 – Op code fetch and memory load machine cycle (for Instruction code 4FH-MOV C,A & 3EH-MVI A,32H only) – Microprocessor addressing modes (with examples) – Programs to add two 8 bit numbers, to subtract two 8 bit numbers, to sort 8 bit numbers in ascending and descending order.

Books for study:
1. Module I   : Basic electronics solid state – B.L.Theraja, S.Chand & Co.
                                  Ltd., Reprint 2002, New Delhi.
2. Module II,III & IV   : Digital Principles and applications – A.P.Malvino and
                                  D.P.Leach, McGraw Hill Publishing fourth edition.
3. Module V   : Microprocessor, Architecture, Programing and Application
                                  with 8085 – Ramesh S.Gaonkar, Penram International
                                  Publishing, Third edition.
4. Module V   : Digital Electronics and Microcomputers – R.K.Gaur,
                                  Dhanpat Rai Publications , Third Revised and Enlarged
                                  Edition.

Books for Reference:
1. Introduction to Microprocessors   : Aditya Mathur.
2. Digital Principles and applications   : A.P. Malvino and D.P.Leach, McGraw Hill
                                                Publishing 3rd and 6th edition, New Delhi.

B.Sc. Physics – Semester VI

Part III Elective III   **Subject Code:612PE3**

MATLAB (65 hours)
Theory and Practicals (35+30 hours)

Preamble:

MATLAB is an integrated technical computing environment that combines numerical computation, advanced graphics and visualization and a high level programming language. This paper helps the student to solve scientific and numerical problems in an easy and quicker way.

Module I   **(7hrs)**

MATLAB windows – Working in the Command Window – Arithmetic operations with scalars – order of Precedence – Display formats – Elementary Math built-in functions – Assignment operator – Rules about variable names

Creating a one dimensional array -   Creating a two dimensional array – zeros, ones and eye commands – Transpose operator - Array addressing - adding elements to a matrix – deleting elements – Built – in – functions in handling arrays.

Module II   **(7hrs)**

Mathematical operations with arrays : array addition and subtraction – Array Multiplication – array division – element – by – element operations – Relational operations – Logical operations

Trigonometric and exponential functions – character strings - Command line functions, Inline functions – Anonymous functions - Programs.

Module III   **(7hrs)**

Script files : Creating and saving a script file – Running a script file – input to a script file – output commands – disp command – fprintf command

Creating a Function File – function definition line – input and output arguments – Local and Global variables – saving a function file

for loops – while loops – if – elseif – else statements – Switch – case – otherwise – break statement – Programs.

Module IV   **(7hrs)**

Conditional statements : if … end structure – if .. else … end structure – if .. elseif .. else … end structure – switch – case statement –

Loops : for …end loops – while .. end loops - Nested loops and nested conditional statements – break and continue commands.

Module V   **(7hrs)**

Two dimensional plots : Plot command line specifiers – Property name and Property value – fplot command

Plotting multiple graphs in the same plot – Formatting a plot : x label , y label, title, legends, text – subscript and superscript - axis command – grid command – formatting a plot using the plot editor

Book for study:

 MATLAB An introduction with Applications   : Amos Gilat
                                                   Wiley India Pvt Ltd, New Delhi

Books for reference:
  1.   MATLAB 7   : Rudra Pratap, 1st edition, 2006, Oxford University Press, 2002
                             edition
  2. MATLAB and its Applications in Engineering : Raj Kumar Bansal, Ashok Kumar
        Goel and Manoj Kumar Sharma, Published by Dorling Kindersley (India) Pvt Ltd..
  3. A guide to MATLAB   :Brian R. Hunt, Ronald L. Lipsman and Jonathan
          M.Rosenberg, Cambridge University Press, 1st edition, reprinted 2003.

MATLAB Practicals
  1. Temperature Conversion
  2. Projectile Motion
  3. Resistances in series and in parallel and Electrical resistive network analysis.
  4. Lissajou's Figures.
  5. Low Pass and High Pass Filters
  6. Series Resonant Circuit
  7. Parallel Resonant Circuit
  8. AC to DC Converter.
  9.   Numerical integration – Simpson's rule and Trapezoidal rule.
  10. Model creations using relational and logical operators.
  11. Mean, variance and standard deviation.
  12. Voltage divider.
  13. Particle in a box – one dimension

Curriculum Framework for the students admitted in the academic year 2013-2014

Department of Physics

B.Sc. Physics
Semester wise distribution with Scheme of Examination & Credits
(For the candidates admitted during the academic year 2013 – 2014)

Sem	Title of the course	Credits	Exam Hrs (ESE)	Marks CIA	Marks ESE	Total
I	Part I Language I	3	3	25	75	100
	Part II English I	3	3	25	75	100
	Part III Core I Kinetic theory, Thermodynamics & Statistical Thermodynamics	6	3	25	75	100
	Allied I Chemistry I	4	3	15	60	75
	Part IV Environmental Studies	2	-	50	-	50
II	Part I Language II	3	3	25	75	100
	Part II English II	3	3	25	75	100
	Part III Core II Optics and Spectroscopy	4	3	25	75	100
	Part III Core III Properties of matter and Sound	4	3	25	75	100
	Core Practical I	2	3	40	60	100
	Allied I Chemistry II	4	3	15	60	75
	Allied Chemistry Practical	2	3	20	30	50
	ALC I Energy Physics	*3	3	-	100	100
	Part IV Value Education	2	-	50	-	50
	Part I Language III	3	3	25	75	100
	Part II English III	3	3	25	75	100
	Part III Core IV Mathematical Physics	6	3	25	75	100

III	Allied III Mathematics I	5	3	25	75	100
	Part IV Skill Based Course Instrumentation I Mechanical Instrumentation	3	-	100	-	100
	Part IV Non-Major Elective	2	-	75	-	75
IV	Part I Language IV	3	3	25	75	100
	Part II English IV	3	3	25	75	100
	Part III Core V Atomic, Nuclear & Particle Physics	5	3	25	75	100
	Core Practical II	2	3	40	60	100
	Allied IV Mathematics II	5	3	25	75	100
	Part IV Skill Based Course Instrumentation II Medical Instrumentation	3	-	100	-	100
	Part IV General Awareness	2	Online Test	75	-	75
	ALC II Space Physics	*3	-	-	100	100
	Extension Activities	1	-	50	-	50
V	Part III Core VI Nanotechnology I	4	3	25	75	100
	Core VII Electricity and Magnetism	4	3	25	75	100
	Core VIII Solid State Physics	4	3	25	75	100
	Core IX Electronic Devices & Circuits	4	3	25	75	100
	Elective I Programming in C(Theory & Practical)	5	3	40	60	100
	Core Practical III	2	3	40	60	100
	Part IV **Skill Based Course Instrumentation III** Electrical and Electronic Instrumentation	3	-	100	-	100
VI	Part III Core X- Nanotechnology II	4	3	25	75	100
	Core XI Quantum Mechanics and Relativity	4	3	25	75	100
	Core XII Laser Physics and Fiber Optics	4	3	25	75	100

Elective II Digital Electronics & Microprocessor	4	3	25	75	100
Elective III MATLAB (Theory & Practical)	5	3	40	60	100
Core, Digital Electronics & Microprocessor Practical IV	2	3	40	60	100
Part IV **Skill Based Course Instrumentation** Institutional Training	3	-	100	-	100
ALC III Thin Film Technology	***3**	3	-	100	100

B.Sc Physics – Semester I

Part III Core I   **Subject Code: 112P01**

Kinetic Theory, Thermodynamics and Statistical Thermodynamics (90 hours)

Preamble:
       The revolution in Physics can be attributed to the study of thermodynamics and statistical physics. A deep understanding of thermodynamics is essential in order to appreciate the modern concepts in Physics.

Module I   **(18hrs)**
Kinetic theory of gases – Expression for the pressure of the gas – Kinetic interpretation of temperature –Derivation of gas laws - Charles law – Boyle's law -   Mean free path – Viscosity of gases – Thermal conductivity of gases – Andrew's experiment on CO_2 - Amagat's experiment – Behavior of gases at high pressures – Vanderwaal's equation of state – Critical constants – Coefficients of Vanderwaal's constants – Properties of matter near the critical point – Experimental determination of critical constants – **Problems of direct applications**.

Module II   **(18hrs)**
       Intermolecular attraction – Porous Plug experiment – Theory - Temperature of Inversion – Relation between T_B , T_i and T_c – Liquefaction of Hydrogen - Liquefaction of Helium – Properties of liquid He I and He II – Production of low temperature – Adiabatic demagnetization – Measurement of low temperature – Helium Vapour Pressure Thermometer - Conversion of magnetic temperature to Kelvin temperature.

Module III   **(18hrs)**
       First law of thermodynamics – Application of first law of thermodynamics – Specific heat capacity of a gas – Isothermal process – Adiabatic process – Isochoric process – Isobaric process - Gas equation during an adiabatic process – Irreversible process – Reversible process – Second law of thermodynamics – Carnot's engine and refrigerator – Carnot's theorem - Absolute zero and work Scale – Work scale and Ideal gas scale - Clapeyron's Latent heat equation – Entropy – Change in entropy in a reversible process – Change in entropy in a irreversible process – Third law of thermodynamics – Maxwell's thermodynamical relations – **Problems of direct applications**.

Module IV (18hrs)

First order phase transitions in thermodynamical process – Thermodynamical functions – Gibb's function – Enthalpy.

Statistical thermodynamics: Probability - Probability of particular distribution of N particles in two boxes – Most probable distribution and fluctuation – Phase space – Thermodynamical probability – Systems in thermal equilibrium – Probability and entropy – Probability of a perfect gas - Boltzmann canonical distribution – Partition function – Energy states of a quantum oscillator – **Problems of direct applications in Probability**.

Module V (18hrs)

Statistical equilibrium – Probability theorems in statistical thermodynamics – Classical Vs Quantum statistics – Maxwell - Boltzmann distribution law – Maxwell – Boltzmann distribution and Ideal gas - Fermi –Dirac distribution law – Electron gas – Bose – Einstein distribution law – Photon gas - Comparison of three statistics.

Books for study:

1. Modules I, II, III and V	: Heat and Thermodynamics - Brijlal and Subramaniam, S.Chand & Co. Reprint 2006.
2. Module IV	: Thermodynamics and Statistical Physics - Sharma and Sarkar, Himalaya publishing house, 3rd edition.

Books for reference:

1. Heat and Thermodynamics	: S. Singhal & J.B. Agarwal , Pragathi Prakashan publishing, reprint 1995.
2. Text book of Heat and Thermodynamics	: J.B. Rajam & C.L. Arora, Chand & Co. 10th reprint.

B.Sc Physics – Semester II

Part III Core III   **Subject Code: 212P03**

Properties of Matter and Sound (52 hours)

Preamble:

The purpose of this paper is to give an introductory account of basic ideas in conservation principles and properties of matter. The module Acoustics is introduced to know about the application of sound and ultrasonic waves in various fields.

Module I Gravitation (10hrs)

Kepler's law of motion – Derivation of law of gravitation – Determination of 'G' by Boy's method – Merits of Boy's method – Acceleration due to gravity – Compound pendulum – Theory – Bar pendulum – Points of suspension and oscillations are interchangeable – **Problems of direct applications**.

Module II Elasticity (11hrs)

Definitions – Yield point, Elastic limit – Elastic fatigue – Poisson's ratio for Rubber – Work done in Deforming a body – Bulk modulus (Relation between K, Y and σ) Modulus of Rigidity – Relation between elastic constants (Y, η, K and σ) – Twisting of a cylinder – Torsion pendulum – Bending of beams – Bending moment – Cantilever – Beam supported at its ends and

loaded in the middle – I Section girders - Determination of elastic constants by Searle's method – **Problems of direct applications**.

Module III Viscosity and surface tension (11hrs)
Stream line motion and Rate of flow - Equation of continuity - Energy of a liquid in motion – Viscosity – Correction to Poiseullie's Equation – Rotation viscometer – Surface tension – Examples of surface tension – Determination of surface tension of a liquid by Jaeger's method – **Problems of direct applications**.

Module IV Production and Measurement of low Pressure (10hrs)
Exhaust pumps – characteristics – Rotary oil pumps – Mercury pumps (Geissler pumps) – Diffusion-Condensation pumps –– Measurement of low pressure – The Bourdon gauge – McLeod gauge – The Pirani resistance gauge – Ionization gauge (Hot cathode)

Module V Acoustics (10hrs)
Free vibrations – Undamped vibrations – Damped vibrations – Forced vibrations – Origin of sound – Practical applications: Gramophone – Microphone & Loud speaker – Tape recorder – Reverberation – Sabine's reverberation formula – Factors affecting the Acoustics of buildings – Sound distribution in an Auditorium – Requisites for good Acoustics .
Ultrasonics - Production of ultrasonic wave   – Piezo electric oscillator – Determination of velocity of ultrasonic waves.

Books for study:
1. Module I and IV   : Elements of Properties of Matter – D.S Mathur ,Shyama
                              lal Charitable trust, New Delhi. Revised and enlarged
                              edition 1992, Reprint 2010.
2. Module II and III   : Mechanics and Electrodynamics – Brijlal N.Subramanyam
                              and Jivan Sehan, Eurasia Publishing House Private Ltd,
                              New Delhi, Revised and enlarged edition 2005.
3. Module V   : A Text book of sound – N.Subramanyam Brijlal, Vikas
                              publishing House Pvt Ltd, NewDelhi, 2nd Revised edition,
                              reprint 2006.

Books for reference:
1. Mechanics   : D.S.Mathur, N.Chand & Company, 2nd edition.
2.Waves & Oscillations : Ashok K.Ganguly, S.Chand & Company Ltd, 1st edition,
                              reprint 1994.

B.Sc Physics – Semester II
Advanced Learner's Course (ALC) I   **Subject Code:212ALP**
* Energy Physics
(Self Study)

Preamble:
This course is intended to introduce students to the range and potential of energy resources, available methods of conversion and utilization of energy. The contents are so designed to make the students understand various forms of energy and the importance of energy sources.

Module I Introduction to energy sources

Energy consumption as a measure of prosperity – World Energy Futures – Energy sources and their available conventional energy sources – non-conventional energy sources – Renewable energy sources – Advantages – Prospects of renewable energy sources.

Module II Solar Energy

Solar radiation measurements – Conversion of solar radiation into Heat – Solar energy collectors – Flat Plate Collector – Solar energy storage system – Solar ponds – Applications of solar energy – Solar water heating – Photovoltaic electric conversion

Module III Wind Energy

Basic principles of the wind energy – Conversion – Power in the wind – Basic components of a wind energy conversion system – Classification of WEC system – Advantages and Disadvantages of WEC systems – Application of wind energy.

Module IV Biomass Energy

Introduction – Biomass conversion technologies – Biogas generation factors affecting generation of gas – Classification of biogas plants – Biogas from plant wastes – Problems related to bio-gas plants –Advantages & Disadvantages of biological conversion of solar energy.

Module V Chemical Energy

Introduction – Fuel Cells – Design and Principles of operation – Advantages & Disadvantages – Conversion – efficiency of fuel cells – Application of fuel cells – Batteries – Different types of Battery arrangement – Classification of Battery : Nickel –Cadmium battery – Advantages of Batteries for Bulk energy storage (Qualitative ideas).

Books for study:
1. Non-conventional energy sources   : G.D.Rai, Kanna publishers, New Delhi,
                                                 3rd edition, reprint 1995.
2. Solar Energy utilization   : G.D.Rai, 4th edition, 1991.
Books for Reference:
1. Solar Energy Principles of
   Thermal collection and storage   : S.P.Sukhatme, 2nd edition.
2. Renewable energy   : Maheswar Dayal, 1st edition 1989.
3. Non-Conventional Energy systems   : K.M.Mittal, 1st edition, 1991.

B.Sc. Physics – Semester III

Part III Core IV   **Subject Code:312P04**

Mathematical Physics (75 hours)

Preamble:

All Physical phenomena are represented by simple and compact expressions of mathematics. For proper understanding of the basic concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, the topics such as Vector calculus, Differential equations and Numerical methods are required. Therefore "Mathematical Physics" is introduced in the third semester as Core Course IV.

Module I **(15hrs)**

Line, Surface and Volume integrals- Divergence and Curl of a vector-Vector identities - Gauss divergence theorem and Proof - Problems using Gauss divergence theorem - Equation of Continuity- Euler's equation of motion- Bernoulli's equation.

Module II **(15hrs)**

Stoke's theorem and Proof- Problems using Stoke's theorem- Green's theorem and its Proof using Gauss divergence theorem- Green's theorem in a plane- Classification of vector fields

Orthogonal curvilinear coordinates - Gradient, Divergence, Laplacian and Curl in terms of orthogonal curvilinear coordinates- Spherical polar coordinates and differential operators-Cylindrical coordinates and differential operators.

Module III **(15hrs)**

Legendre differential equation and Legendre functions: Solution of Legendre's Equation in descending power of x - Generating function of Legendre polynomial - Rodrigue's formula for Legendre polynomials- Recurrence formulae.

Bessel's differential equation- Bessel's function of first kind- Bessel's half orders-Recurrence formulae for $J_n(x)$.

Module IV Classical Mechanics **(15hrs)**

Constraints and degrees of freedom – Holonomic and non- holonomic constraints – Generalised co-ordinates – Generalised notations – Generalised displacement – Generalised velocity – Generalised momentum – Generalised force

Hamilton's variational principle – Deduction of Lagrange's equations of motion from Hamilton's principle for conservative system - D'Alembert's principle – Lagrange's equations from D'Alembert's principle for Conservative system – Application of Lagrange's equation of motion – Simple Pendulum.

Module V   Numerical Methods **(15hrs)**

Solution of algebraic equations- Bisection method- Newton - Raphson method- Solution of linear algebraic equation - Gauss elimination method

Numerical integration - Quadrature formula for equidistant co-ordinates - Trapezoidal rule - Simpson's rule - Numerical solution of ordinary differential equations - Taylor's series method-Euler's method - Fourth order Runge-Kutta method.

Books for study:

1. Module I, II, & III	: Mathematical physics - Satya Prakash,
	Sultan & sons- 5th revised edition reprint 2010.
2. Module IV	: Classical Mechanics – Dr. S.L. Gupta, Dr.V. Kumar &
	Dr. H.V. Sharma, Pragati Prakashan Publishing,
	Meerut , 21st edition.
3.Module V	: Numerical methods - A.Singaravelu-
	Meenakshi publications- 2nd edition.

Books for Reference:

1**.** Mathematical Physics – Rajput, Pragathi Prakashan,Meerut 1995 edition.
2. Numerical methods for Scientists and Engineers Shastry

B.Sc. Physics – Semester III

Part IV Skill Based Course Instrumentation I   **Subject Code:312PS1**

Mechanical Instrumentation (38 hrs)

Module I   **(8 hrs)**

Characteristics of instruments and measurements system : Methods of measurements – classification of instruments – analog and digital modes of operation – static characteristics – true value – static error – static correction – scale range and scale pan – reproducibility and drift – repeatability – noise – accuracy and precision –significant figures.

Errors in measurements: Limiting errors – Types of errors – Gross errors – systematic errors – instrumental errors – observational errors – random errors.

Module II (Principle & Working)   **(8 hrs)**

Measurement of linear velocity: Electromagnetic transducers – Moving magnet type and moving coil type velocity transducers.

Measurement of angular velocity: DC and AC Tachometer generator.

Measurement of vibrations: Seismic transducers – LVDT – accelerometers – quantities involved in vibration measurement.

Module III (Principle & Working)   **(7 hrs)**

Measurement of Temperature: Electrical resistance thermometer: Platinum resistance thermometer – salient features of resistance wire thermometers – Thermocouple thermometer – Thermocouple construction - Measurement of thermocouple output – advantages and disadvantages - optical pyrometers – disappearing filament type.

Module IV (Principle & Working)   **(7 hrs)**

Measurement of flow: Turbine flow meter – Orifice flow meter – hot wire anemometer

Measurement of Liquid level: Resistive method – capacitive method – inductive method - Measurement of liquid level using float.

Module V (Principle & Working)   **(8 hrs)**

Measurement of Humidity: Hygrometer – Due point hygrometer - surface conductivity method.

Measurement of thickness: Inductive method - Measurement of thickness using ultra sonic vibrations – Nuclear radiation method.

Books for study:

1. Electrical and Electronic   : A.K.Sawhney – Dhantpat Rai & Sons
   Measurements and instrumentation   Publications – 1991 Revised Fourth Edition
2. Industrial Instrumentation   : K.Krishnaswamy and S. Vijaya chitra –
                                                                     New age international Publishers
                                                                     First edition – Reprint 2008.

Books for Reference:

1. Instrumentation Devices and Systems   : C.S. Rangan, G.R.Sharma and V.S.V.Mani –
                                                                     Eleventh reprint 1992 TataMcGraw Hill Publishing

Ltd, New Delhi

2.Experimental methods for Engineers   :J.P.Holman – Fifth edition – Mc Graw Hill
International Book Company.

B.Sc. Physics – Semester IV

Part IV   Skill Based Course Instrumentation II   **Subject Code:412PS2**

Medical Instrumentation (38 hours)

Preamble:
       Medical instrumentation is in the designing and developing era and every year the hospitals and research institutes are adding modern medical equipments for the medical study. Therefore, it is necessary for every student to understand the physics principles and functioning of various medical equipments. This paper would enable the students to acquire knowledge about the functioning of some of these medical equipments.

Module I: Electrodes   **(8 hrs)**
       Transport of ions through the cell membrane - Resting and action potentials- Characteristics of resting potential – Design and Components of the Bio-medical instrument system - Electrodes- half cell potential – Electrode paste – Metallic Microelectrode -*Depth and Needle electrode - Surface electrode - Chemical Electrode - pH Electrode

Module II: Bio Potential Recorders   **(7 hrs)**
       Characteristics of the recording system – Mechanical functions of the heart - Electro Cardiography - Origin of Cardiac Action potential - ECG lead configurations - ECG recording setup - Practical considerations for ECG recording - Analysis of recorded ECG signals

Module III: Physiological Assist Devices   **(8hrs)**
       Pacemakers – Energy requirements to excite heart muscle - Methods of stimulation – External and Internal Pacemakers - Different modes of operation - Ventricular asynchronous pacemaker – Pacemaker batteries – Lithium cells
       Defibrillators - Internal and External defibrillators - synchronized DC defibrillator - Model of the heart lung machine – Oxygenators – Bubble oxygenators - Blood pumps –Non – Pulsatile pump - Kidney machine – Renal function – Dialysis – Peritoneal dialysis.

Module IV : Operation Theatre Equipment   **(7hrs)**
       Surgical diathermy : Electro surgery techniques – Electrosurgical diathermy unit - Range and area of irritation of different diathermy techniques – Ventilators - Anesthesia machine – Flow meters – Electromagnetic blood flow meters.

Module V: Advances in Biomedical Instrumentation   **(8hrs)**
       Computer tomography – Principle – CT scanner –Thermography - Infrared thermography
       Ultrasonic imaging systems : Ultrasonic propagation through tissues – Display modes – A Mode – B Mode – T-M Mode - Recording devices - Ultrasonic imaging instrumentation
       Magnetic resonance imaging : Magnetic Resonance phenomenon - MRI instrumentation.

Book for study:
    Biomedical Instrumentation   : Dr.M.Arumugam, Anuradha Agencies, Vidyakaruppur, Kumbakonam, 2nd edition 6th reprint, 2003.

Books for reference:
1. Biomedical Instrumentation   : Leslie Cromwell and Fred S.Weibeil printice and measurements   Hall of India Rt,New Delhi.
2. Hand book Biomedical   : R.S Khandpur, Tata Mc Graw Hill publishing co, Instrumentation.   9th Edition 1996

B.Sc. Physics – Semester IV
Advanced Learner's Course (ALC) II   **Subject Code:412ALP**
* Space Physics
(Self Study)

Preamble:
    This paper is introduced for the advanced learners to inculcate an interest and curiosity to know about space. This paper also imparts knowledge about the recent development in satellite communication.

Module I
    Atmosphere and beyond – Gravity – Escape velocity – Rockets – Artificial satellites – Geostationary orbit – Polar orbits.

Module II
    Lunar probes and planetary probes – Expedition to the moon – Conquest of moon – Moon probes, Asteroids – Mars – Jupiter – Venus – Mercury –Saturn – Distant planets.

Module III
    Planetary probes and Indian launch vehicle – Genesis – Aryabhatta – Bhaskara – SLV3 – Apple.

Module IV
    ASLV – PSLV – GSLV –Polar satellite launch vehicle – Geosynchronous satellite launch vehicle – Indian national satellite systems - Chandhrayan.

Module V
    Satellite Application – Introduction – Satellite television – Telephone service via satellite – Data communication satellite – Satellite for earth observation.
    Satellite for weather forecast – Satellite for scientific studies – Satellite for military applications.

Books for study:
1. Modules I to IV   :   Space research – Prof. S.Kumaravelu, Prof. N. Suseela Kumaravelu, Senthil Art Printers, Sivakasi, 2002.
2. Module V   :   Satellite Communications, Dr. D.C.A.Agarwal, A.K. mani, Khanna Publishers, 4th edition, 2000.

B.Sc. Physics - Semester V

Part III Core VI   **Subject Code:510P06**
Nanotechnology I
Nanomaterials: Synthesis & Characterization (65 hours)
Preamble:

"There's Plenty of Room at the Bottom" – so said Richard Feymann describing a process by which the ability to manipulate individual atoms and molecules might be developed, using one set of precise tools to build and operate, another a smaller set and so on down to the needed scale.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs).

At present the practice of Nanotechnology embraces both Stochastic and deterministic approach.

Module I Introduction to Nanomaterials & Synthesis   **(13hrs)**

Nanotechnology generation - Definition of Nanoscience, Nanotechnology – Low Dimensional Materials: 2D, 1D, 0D

Top Down and Bottom up Techniques – Chemical methods of synthesis : Sol-Gel method – Hydrothermal synthesis – Sonochemical synthesis – Microwave synthesis.

Module II Nanomaterials Synthesis   **(13hrs)**

Physical methods of synthesis: Plasma Arc discharge – Sputter Deposition : DC sputtering, RF sputtering – Evaporation: Thermal evaporation , Electron beam evaporation.- Chemical vapour deposition – Types of CVD process – Pulsed Laser Deposition – Molecular beam Epitaxy - Ball Milling.

Module III Properties of Nanomaterials   **(13hrs)**

Surface to Volume Ratio at Nanoscale – Mechanical properties – Thermal properties – Electrical properties – Magnetic properties – Optical properties – Acoustic properties.

Module IV Characterization Techniques   **(13hrs)**

(Portion covers Instrumentation, working principle and analysis technique towards Nanoscale).

Electron Microscopes: SEM – TEM – SPM – STM – AFM.
Optical Microscope: Confocal Microscope
Diffraction Method: X-ray Diffraction Technique Debye–Scherrer Relation,
Particle Size Analyzer, Spectroscopy Method: (UV-VIS –NIR) Spectrometer.

Module V   **(13hrs)**
Manipulating Nanomaterials

Nanomanipulator – Nanotweezers – Atom Manipulation – Photolithography – Electron Beam Lithography – Dip Pen Nanolithography.
Special Nano materials

New forms of Carbon – Fullerene – Carbon Nano tubes - Types of Nanotubes – Synthesis CNT – Properties of CNT – Graphene – Porous Silicon

Books for study:
   1. Nanotechnology   : Sulabha K Kulkarni, Second edition,
     Principles and Practices   Capital publishing company, New Delhi
  2. Introduction to NanoScience and   : K.K.Chattopadhyaya and A.N Banerjee
     Nanotechnolgy   First Edition, PHI learning Private Ltd.,
                                            New Delhi
  3. Nanotechnology   : Technology Revolution of 21st Century:
                                         Er. Rakesh Rathi, S.Chand &Company Ltd,
                                         New Delhi,   First edition 2009
  4. Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
     And Design   Daniel L. Schodel, First Printed in India
                                         2011, Elsevier India Pvt. Ltd.

B.Sc. Physics - Semester V

Part III Core VII   **Subject Code:512P07**

Electricity and Magnetism (52 hours)

Preamble:
       Electricity, Magnetism and Electromagnetic theory are a time bounded subject which has many applications in our day-to-day life. This paper enables the students to understand the concept of electric and magnetic field, production of electromagnetic waves and their significance.

Module I   **(10hrs)**
   Electrostatics : Gauss's law & proof – Gauss's law in differential form – Gauss's law and Coulomb's law - Laplace and Poisson's equation – Applications: Electric field due to an uniformly charged sphere - field due to two concentric spherical conductors – Field of a line charge - Field of a charged conductor - Force on the surface of a charged conductor - Demonstration of mechanical force – **Problems of direct applications.**

Module II   **(11hrs)**
   Capacitors: Parallel plate capacitor - Cylindrical capacitor - Spherical capacitor – Energy stored in a capacitor - Force of attraction between capacitor plates - Types of capacitors according to shape and dielectrics - Dielectric constant - Dielectric strength – **Problems *.**
   Magnetic field due to steady current : Ampere's circuital law and proof - Applications of Ampere's law - **B** near a long wire – B for a Solenoid – B for a Toroid – Character of **B** lines and the divergence of **B** - Ampere's law in curl form – **Problems of direct applications.**

Module III   **(10hrs)**
   Electromagnetic Induction: Inductor and inductance – Self inductance - Physical significance of self inductance – Self inductance of a Solenoid – <u>Two parallel wires – Toroidal coil of circular cross section</u> – Energy stored in magnetic field - Measurement of self inductance

by Rayleigh's method – Mutual inductance – Mutual inductance of concentric solenoids - Relation between mutual inductance and self inductance - Inductances in series and in parallel Measurement of mutual inductance – **Problems of direct applications.**

Module IV   (11hrs)

Electromagnetic oscillations : Growth and decay of current in a circuit containing L and R (Helmolholtz Equation) –<u>RC Circuit Charge and discharge of a condenser</u> — Determination of high resistance by leakage method – Series LCR circuit - charge and discharge. **Problems of direct applications.**.

A.C circuit: A Parallel (or Anti) resonant circuit - Parallel resonant circuit when inductance L have some resistance – Condition for unity power factor – Current magnification - Selectivity of a parallel resonance circuit –<u>Comparative study of a series resonant and parallel resonant circuit</u> – Power in AC circuit - Choke coil – **Problems of direct applications.**

Module V   (10hrs)

Circuit Analysis: Superposition theorem- Thevenin's theorem – Norton's theorem- Maximum power transfer theorem – **Problems of direct applications.**

Electromagnetic theory: Basic equations - Maxwell's equations in free space – Electromagnetic waves in free space – Electromagnetic waves in isotropic non - conducting media – Index of refraction -   Energy density of Electromagnetic wave and Poynting theorem.

Book for study:

  Electricity and Magnetism   : K.K. Tewari, S Chand & Company Ltd
                                                 Reprint 2007 , New Delhi.

Books for reference:

 1. Electricity and Magnetism   : R. Murugeshan, S.Chand &Co. Ltd., New
                                               Delhi, 1995 Edition.
 2. Electricity and Magnetism   : A.S.Mahajan, A.A. Rangawala
                                                 Tata McGraw Hill Publishing Co.Ltd, New
                                                 Delhi 1998 edition.

B.Sc. Physics - Semester V

Part III Core IX   Subject Code:512P09

Electronic devices and circuits (52 hours)

Preamble:

The field of electronics has occupied the major areas of applications in the field of science and technology. A basic knowledge about the electronic devices and circuits would help the students appreciate their practical applications.

Module I Special diodes   (10hrs)

Introduction – PN-Junction diode – V-I Characteristics – Diode-current equation – Effect of Temperature on diode Characteristics - Static and Dynamic resistance of a diode – Zener diode – V-I Characteristics – Tunnel diode – V-I Characteristics - Diode Parameters and

applications – Varactor diode – Specifications – Application in tuning circuits – <u>LED – LED voltage drop and current – Multicolour LED.</u>

Module II Rectifiers, Filters and Regulated Power Supply   (11hrs)

Half wave rectifier – Average values of output voltage and load current – PIV of HWR – Full wave rectifier – Centre-tapped full wave rectifier – Average values of output voltage and load current – Bridge rectifiers – PIV of Bridge rectifiers – Advantages and Disadvantages – Ripple factor and efficiency of HWR and FWR – TUF – Comparison – – **Problems of direct Application***.

Filters – Inductor filter – Capacitor filter – LC filters - π-Filters – – **Problems of direct Application***.

Voltage regulator – Zener diode shunt regulator – Working – Transistor series regulator – Shirt-circuit protection against overload – Monolithic IC voltage regulator – Adjustable voltage regulator – Complete DC power supply circuit – **Problems of direct Application***.

Module III Transistor Amplifiers   (11hrs)

Transistor action – CE configuration and characteristics –DC operating point and Load line – Q point and maximum undistorted output – Factors affecting stability of Q-point – Stability factor – Transistor biasing – Voltage divider bias – Stability of voltage divider bias – Classification of amplifiers – Common Emitter transistor amplifier – Amplifier parameters – RC couple amplifier – Frequency response – Advantages , disadvantages and applications (qualitative only) – Power amplifiers – Difference between voltage and power amplifiers – Performance parameters – Class B amplifiers – Class B push-pull amplifiers – Crossover distortion – Efficiency – Feedback amplifiers – Principle – Advantages and disadvantages – Types of feedback – Emitter follower – – **Problems of direct Application***.

Module IV Field Effect Transistors and Switching devices   (10hrs)

Junction Field Effect Transistor – Operations – Characteristics – JFET parameters – Comparison between FET and BJT – MOSFET – Depletion type – Enhancement type – Characteristics – Advantages of N-channel over P-channel – Handling precautions.

Thyristors – SCR operation – Triggering ON and OFF – VI characteristics – SCR applications (qualitative only) – UJT – Equivalent circuit – Operation –Characteristics – UJT relaxation oscillator (circuit diagram with applications).

Module V Oscillators and wave shaping circuits   (10hrs)

Classification of oscillators – The Barkhausen criterion – Hartely oscillator – Collpitt's oscillator – RC oscillators - Basic principles of RC oscillator – Phase-shift oscillator – Multivibrators – Astable, monostable and bistable multivibrator - Schmitt trigger.

<u>Types of wave-shaping circuits – Linear wave shaping circuits – Differentiating circuits – Applications – Generation of narrow pulse from square wave – Integrating circuits – Generation of triangular wave forms from square wave – Non-linear wave shaping circuits – Clippers – Positive and negative clippers – Biased clippers – Clamping circuits – Practical clamper – Voltage doubler</u> .

Books for study:
  1. A Text book of Applied Electronics: R.S.Sedha, Chand & Co. Ltd., 1st edition,
                                         reprint 1998, NewDelhi
  2. Basic Electronics Solid state   :B.L. Theraja, Chand & Co.Ltd., 1st edition 1998
                                         reprint 2002, NewDelhi

Books for Reference:
  1. Foundations of electronics   : D.Chattopadhayay & Others, Wiley
                                        Eastern Ltd., Edition 1993.
  2. Principles of Electronics   : Albert Malvino, Tata McGraw Hill Publishing.

B.Sc. Physics - Semester V

Part III   Elective I   **Subject Code:512PE1**

Programming in C (75 hours)
(Theory & Practical)(52 +23 hours)

Preamble:
        C has emerged as the language of choice for most of the scientific applications due to speed, portability and compactness of code. This paper enables the student to understand the high level language and to specialize in C programming.

Module I   **(11hrs)**
        Constants, Variables and Data types - Character set – C tokens – Key words and identifiers – Constants, Variables – Data types – Declaration of variables – Assigning values to variables – Defining symbolic constants – Basic structure of a C program.
        Operators and expressions - Arithmetic operators – Relational operators – Logical operators – Assignment operators – Increment and Decrement operators – Conditional operators – Bit wise operators – Special operators – Arithmetic expressions – Evaluation of expressions – Precedence of operators – Mathematical functions.

Module II   **(11hrs)**
        Managing input and output operations - Reading a character – Writing a character – Formatted input – Formatted output.
        Decision Making and Branching - Decision making with if statement – Simple if statement – The ..if. else statement – Nesting of if…else statement – The else… if ladder – The switch statement – The ? Operator – The go to statement.

Module III   **(10hrs)**
        Decision Making and Looping - The While statement – The do statement – The for statement – Jumps in loops.
        Arrays - One dimensional arrays – Declaration of one dimensional arrays – Initialization of one dimensional arrays – Two dimensional arrays - Initializing two dimensional arrays – Multi dimensional arrays.
        .

Module IV **(10hrs)**
Handling of character arrays and strings - Declaring and initializing string variables – Reading strings from terminal – Writing string to screen – Arithmetic operation on functions
User defined functions: Elements of user defined function – Definition of function - Return values and their types – Function calls – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values – Arguments with return values – No arguments but returns a value – Nesting of functions – Recursion.

Module V **(10hrs)**
Structure - Defining a structure – Declaring structure variable – Accessing a structure member – Structures within structures.
File management in C - Defining and opening a file – Closing a file – Input/Output operations on files – Error handling in files.
Books for study:
Programming in ANSI C : E.Balagurusamy, Tata McGraw Hill Publishing Co. Ltd., 3rd edition, 2004, New Delhi.

Books for reference:
 1. Physics through C Programming : S.Palaniswamy, Pragati Prakashan Publishers, 1st edition, 2004, U.P.

 2. Let us C : Yashavant Kanetkar, BPB Publications, 3rdedition, 1999, New Delhi.

LIST OF PROGRAMS
1. Temperature conversion.
2. Roots of a quadratic equation.
3. Matrix multiplication.
4. Ascending and Descending order of an array.
5. Computation of AC current in a circuit that contains resistance, inductance and capacitance in series.
6. Program using Simpson's rule and Trapezoidal rule.
7. Projectile problem.
8. Program for fourth order Runge - Kutta method.
9. Product of factorials of n numbers using recursion.
10. Program using string handling functions.
11. Arranging Strings in alphabetical order
12. Mark list using files.

B.Sc. Physics - Semester V
Part IV Skill Based Course Instrumentation III **Subject Code:512PS3**
Electrical and Electronic Instrumentation (38 hrs)

Module I **Electro mechanical operating instruments** **(8hrs)**
        Torque and deflection of the galvanometer – Steady state deflection – Dynamic behavior – Damping mechanism – Permanent Magnet Moving Coil Mechanism (PMMC) – D'Arsonval Movement

Power, energy and Power factor Measurements – Electrodynamometer – Wattmeter – Power factor meter.

Module II Ammeters, Voltmeters and Ohmmeters   (7hrs)

DC Ammeters **–** shunt resistor – Ayrton shunt - DC Voltmeters – Multiplier Resistor – Multirange Voltmeter – Voltmeter Sensitivity – Series Type Ohmmeter – Shunt type Ohmmeter - Multimeter or VOM – Calibration of DC instruments.

Module III Oscilloscopes   (8hrs)

Oscilloscope block diagram – CRT – Electrostatic – Deflection – Screens – Graticules – CRT circuits – Vertical deflection system - Horizontal deflection system – Oscilloscope techniques – Determination of frequency – Digital storage oscilloscope – Block diagram explanation only.

Module IV Data converters, Analog and Digital data acquisition systems.   (8hrs)

Digital to analog converters – Basic inputs and outputs - Weighted resistor network technique – Analog to Digital converters – Basic inputs and outputs - Successive approximation technique.

A/D data acquisition systems – Block diagram – Interfacing transducers to electronic control and measuring systems – Instrumentation amplifier – Voltage to current converter (current loop) – Digital to Analog multiplexing – Analog to Digital Multiplexing.

Module V Computer controlled – Test systems   (7hrs)

Testing a Radio receiver – Instruments used in computer controlled instrumentation – Frequency counter for operation with IEEE 488 bus – Signal generator interfaced with IEEE 488 bus – IEEE 488 electrical interface.

Books for study:

Modules I, II, III, IV & V	**:** Modern Electronic Instrumentation and Measurement technique - Albert D Helfrick and William D.Hooper – Prentice Hall of India – India reprint 2008,New Delhi.
Module IV (partly)	**:** PC based instrumentation concepts and practice – N.Mathivanan – Prentice Hall & India – 2007 print – New Delhi.

Book for Reference :

A course in Electrical and Electronic Measurements and Instrumentation	: A.K.Sawhney, Dhanapat Rai & Sons publications, 18th revised and enlarged edition 2007, Reprint 2008.

B.Sc. Physics - Semester VI

Part III Core X Nanotechnology II   **Subject Code:610P10**

Nanomaterials : Applications(75 hours)

Module I Nanoelectronics   **(15hrs)**

Quantum Electronic Devices – Upcoming Electronic Devices: Electrons in Mesoscopic Structure – Short Channel MOS Transistor – Split Gate Transistor – Electron Wave Transistor – Electron Spin Transistor – Quantum Cellular Automata – Quantum Dot Array - Tunnel Effect and Tunneling Elements, Tunnel Diode, Resonant Tunneling Diode - Principle of SET – SET Circuits. **(Basic structure & Principle only)**

Module II Nanosensors   **(15hrs)**

Existing Nano Sensors - Electronic tongue and nose – Selected R&D for individual nanosensors – Electrochemical sensors –. Nanosensors in space - Nanopressure sensor- Physical sensors - Chemical sensors –Biosensors- Nanosensor production methods - Easy-to-make nanosensors.

Module III Nanomedicine   **(15hrs)**

Approach to developing nanomedicines – Various kinds of nanosystems: Nano shells, Nanopores, Tectodendrimers – Products for Nanodrug administration: Nanoparticle-drug system for oral administration, Nasal administration and Ocular administration – Nanotechnology in diagnostic applications – Materials for use in Diagnostic and Therapeutic applications: Gold Nanoparticles, Quantum dots, Magnetic Nanoparticles.

Module IV Nanotechnology in Optics, Photonics & Solar Energy   **(15hrs)**

Properties of Light & Nanotechnology – Interaction of Light & Nanotechnology : photon trapping and Plasmons, dielectric constant, refractive index – Imaging – New Low Cost Energy Efficient Windows & Solar Absorbers based on Nano particles.
Nanotechnology for energy: Thermo electricity – Nanotechnology for energy : Solar - Nanotechnology for energy: Hydrogen.

Module V Nanotechnology in Environment, Textiles & Cosmetics   **(15hrs)**

Water cleaning and Purification – Air cleaning and purification – Air pollution reduction – Soil Remediation
Characteristics of nano finishing in garments – Functional, intelligent and smart textiles - Waterproof Textiles – Breathable Textiles - UV Protection Textiles - Odor Control Textiles – Anti-Static Textiles - Anti-Bacterial Textiles - Dust Free Textiles – Stain Resistant Textiles.
Sun Screen Lotion – Anti ageing Creams – Hair coloring – Tattoos.

Books for Study:
1. Nano Electronics & Nano Systems   : K. Goser, P. Glosekotter, V. Dienstuhl,
                                     Springer, 2004.
2. Nanotechnology   : Technology Revolution of 21st Century:
                                     Er. Rakesh Rathi, S.Chand &Company Ltd,

New Delhi,   First edition 2009

3. Nano: The Essentials Understanding : T. Pradeep , Tata McGraw-Hill Publishing
   Nanoscience and Nanotechnology   Company, Second reprint 2008.

4. Nanotecnology – Basic Science   : Mick Wilson, Michelle Simmons and
   & Emerging Technologies   Burkhard Raguse, (1 / e) Overseas Press
                                             India Pvt. Ltd., 2005.

5.Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
 And Design   Daniel L. Schodel, First Printed in India
                                             2011, Elsevier India Pvt. Ltd.

B.Sc Physics – Semester VI

Part III Core XI   **Subject Code:612P11**

Quantum Mechanics & Relativity (52 hours)

Preamble:

In the modern age, Quantum Mechanics is an indispensable part of the physicist education. It has handled problem ranging from structure of stellar system to that of atomic nuclei, elementary particles and semiconductor physics. This paper deals with the principles of quantum Mechanics and the application to various problems. This paper also imparts basic knowledge about theory of relativity.

Module I Foundation of Wave Mechanics   **(10hrs)**

Dual nature of light and matter – Experimental evidences for matter waves – *Davisson and Germer experiment – *G.P. Thomson's experiment – Velocity of DeBroglie waves: Quantum picture of a material particle - Relation between group velocity and phase velocity for a non-relativistic free particle –– Equation of motion of matter waves – Time dependent and time–independent Schroedinger's equation - Physical interpretation of the wave function – **Problems of direct applications.**

Module II   Applications of Schrödinger equation   **(10hrs)**

Normalized and Orthogonal wave function – Conditions satisfied by a wave function - Solution of the Schrödinger equation – Expectation values of dynamical quantities – Probability current density: Particle flux – Ehrenfest's theorem.

The free particle – Particle in a box (one dimensional case) – Rectangular potential Barrier – Application of Barrier penetration (α-Decay) – One dimensional Linear Harmonic Oscillator.

Module III The Uncertainty principle & Operators   **(11hrs)**

The uncertainty principle – Examples of position-momentum uncertainty - Proof of uncertainty principle for one dimension wave packet – Application of uncertainty principle – The Non-existence of the electron in the Nucleus – Light quanta

Operators and Linear operators – Eigen values and Eigen functions – The operator formalism in Quantum mechanics – Momentum operator – Hamiltonian operator – Hermitian operators – Properties of Hermitian operators – Commutation relation between (i) Position and momentum (ii) Hamiltonian and momentum (iii) The Commutation rules for the components of

orbital angular momentum (i.e.) L^2 with Lx, Ly and Lz (iv) Ladder operators – **Problems of direct applications.**

Module IV Reference frames and Galilean invariance (10hrs)

Reference frame – Newton's laws and its limitations – Inertial frames of reference – Galilean transformation – Transformation of position, length, velocity and acceleration.

Classical relativity – Newton's laws of motion – The law of conservation of momentum and energy – Transformation equation for a frame of reference inclined to an inertial frame – Transformation equation for a rotating frame of reference – Non – inertial force: Fictitious forces - Effect of centrifugal and corliolis forces due to earth rotation.

Module V Special theory of relativity (11hrs)

Michelson and Morley experiment – Einstein concept of special theory of relativity – Lorentz transformation co-ordinate equations – Results following from Lorentz transformation equations – Length contraction – Time dilation – Verification of time dilation – Simultaneity – Transformation of velocity – the relativity of mass – Relation between relativistic momentum and energy – **Problems of direct applications**.

Books for study:
1. Module I, II & III : Quantum Mechanics – Satya Prakash & Swathi Saluja,
Kedar Nath Ramnath & Co., Meerut, edition 2007.

2. Module IV & V : Mechanics – D.S. Mathur, S.Chand & Co.Ltd.,
Ramnagar, New Delhi, 2nd edition 1981, reprint 1984.
Books for reference:
1. Quantum Mechanics : S.P.Singh & M.K. Bagde – S.Chand & Co. Ltd.

2. Basic concepts of : Ajoy Ghatak , McMillan Co., Edition 2002.
   Quantum mechanics

B.Sc Physics – Semester VI

Part III Elective II   Subject Code:612PE2

Digital Electronics and Microprocessors (52 hours)
Preamble:

The digital electronics and digital devices with the integrated circuit technology are playing a significant role in the day-to-day life. The designing and fabrication technology of these devices paves a vivid understanding at the UG level. Also the binary logic with which these digital devices operate would facilitate the students to learn and appreciate the applications of these digital devices.

Module I IC Technology and its applications (11hrs)

Introduction – Advantages of ICs-Classification by structure and function – IC terminology – Fabrication of components like transistors, diodes, resistors and capacitors – Operational amplifiers – Ideal OPAMP – Virtual ground and summing point – Applications –

Inverting amplifier – Non-inverting amplifier – Adder, Subtractor, Integrator and Differentiator – Input offset voltage – Peaking amplifier –**Problems of direct applications.**

Module II Arithmetic Circuits (11hrs)

Binary addition – Binary subtraction – Logic gates – NAND and NOR as Universal gates – Postulates of Boolean Algebra – Theorems of Boolean Algebra – Simplification of Boolean expressions using Karnaugh maps and gates – Half adder – Full adder –Half subtractor – Full subtractor – Binary adder / Subtractor – Multiplexers – Demultiplexers – Decoder – Seven-segment decoders – **Problems of direct applications.**

Module III Sequential circuits (10hrs)

Flip flops – RS flip flop – Clocked RS flip flop – Edge triggered RS flip flop – D flip flop – Edge triggered JK flip flop – JK master/slave flip flop – Asynchronous counter – Synchronous counter – MOD 5 counter and wave forms – Decade counter and wave forms – Ring counter – application to digital clock.

Module IV Registers and Memory devices (9hrs)

Shift registers – Serial IN Serial OUT – Serial IN parallel OUT – Parallel IN serial OUT – Parallel IN Parallel OUT.
Semiconductor memories – ROM, PROM , and EPROM – RAM – Dynamic RAM – Magnetic bubble memories – ROM application to seven-segmented visible display.

Module V INTEL 8085 Microprocessor (11hrs)

Organization of a microprocessor based system – Operating system – Single board microprocessors – Microprocessor INTEL 8085 – Architecture details – Instruction Format/Instruction set of 8085 – Machine cycle of 8085 – Op code fetch and memory load machine cycle (for Instruction code 4FH-MOV C,A & 3EH-MVI A,32H only) – Microprocessor addressing modes (with examples) – Programs to add two 8 bit numbers, to subtract two 8 bit numbers, to sort 8 bit numbers in ascending and descending order.

Books for study:
1. Module I   : Basic electronics solid state – B.L.Theraja, S.Chand & Co.
                                    Ltd., Reprint 2002, New Delhi.
2. Module II,III & IV   : Digital Principles and applications – A.P.Malvino and
                                    D.P.Leach, McGraw Hill Publishing fourth edition.
3. Module V   : Microprocessor, Architecture, Programing and Application
                                    with 8085 – Ramesh S.Gaonkar, Penram International
                                    Publishing, Third edition.
4. Module V   : Digital Electronics and Microcomputers – R.K.Gaur,
                                    Dhanpat Rai Publications , Third Revised and Enlarged
                                    Edition.

Books for Reference:
1. Introduction to Microprocessors   : Aditya Mathur.
2. Digital Principles and applications   : A.P. Malvino and D.P.Leach, McGraw Hill
                                    Publishing 3rd and 6th edition, New Delhi.

B.Sc. Physics – Semester VI

Part III Elective III   **Subject Code:612PE3**

MATLAB (65 hours)
Theory and Practicals (35+30 hours)

Preamble:

MATLAB is an integrated technical computing environment that combines numerical computation, advanced graphics and visualization and a high level programming language. This paper helps the student to solve scientific and numerical problems in an easy and quicker way.

Module I   **(7hrs)**

MATLAB windows – Working in the Command Window – Arithmetic operations with scalars – order of Precedence – Display formats – Elementary Math built-in functions – Assignment operator – Rules about variable names

Creating a one dimensional array -   Creating a two dimensional array – zeros, ones and eye commands – Transpose operator - Array addressing - adding elements to a matrix – deleting elements – Built – in – functions in handling arrays.

Module II   **(7hrs)**

Mathematical operations with arrays : array addition and subtraction – Array Multiplication – array division – element – by – element operations – Relational operations – Logical operations

 Trigonometric and exponential functions – character strings - Command line functions, Inline functions – Anonymous functions - Programs.

Module III   **(7hrs)**

Script files : Creating and saving a script file – Running a script file – input to a script file – output commands – disp command – fprintf command

Creating a Function File – function definition line – input and output arguments – Local and Global variables – saving a function file

for loops – while loops – if – elseif – else statements – Switch – case – otherwise – break statement – Programs.

Module IV   **(7hrs)**

Conditional statements : if … end structure – if .. else … end structure – if .. elseif .. else … end structure – switch – case statement –

Loops : for …end loops – while .. end loops - Nested loops and nested conditional statements – break and continue commands.

Module V   **(7hrs)**

Two dimensional plots : Plot command line specifiers – Property name and Property value – fplot command

Plotting multiple graphs in the same plot – Formatting a plot : x label , y label, title, legends, text – subscript and superscript - axis command – grid command – formatting a plot using the plot editor

Book for study:

MATLAB An introduction with Applications   : Amos Gilat

Wiley India Pvt Ltd, New Delhi

Books for reference:

1. MATLAB 7   : Rudra Pratap, 1st edition, 2006, Oxford University Press, 2002 edition
2. MATLAB and its Applications in Engineering : Raj Kumar Bansal, Ashok Kumar Goel and Manoj Kumar Sharma, Published by Dorling Kindersley (India) Pvt Ltd..
3. A guide to MATLAB   :Brian R. Hunt, Ronald L. Lipsman and Jonathan M.Rosenberg, Cambridge University Press, 1st edition, reprinted 2003.

MATLAB Practicals

1. Temperature Conversion
2. Projectile Motion
3. Resistances in series and in parallel and Electrical resistive network analysis.
4. Lissajou's Figures.
5. Low Pass and High Pass Filters
6. Series Resonant Circuit
7. Parallel Resonant Circuit
8. AC to DC Converter.
9. Numerical integration – Simpson's rule and Trapezoidal rule.
10. Model creations using relational and logical operators.
11. Mean, variance and standard deviation.
12. Voltage divider.
13. Particle in a box – one dimension

Curriculum Framework for the students admitted in the academic year 2017-2018

Department of Physics

Curriculum Design

Sri G.V.G. Visalakshi College for Women (Autonomous)

Affiliated to Bharathiar University

M.Sc. Physics

Scheme of Examination – CBCS Pattern

(For the students admitted from the academic year 2017 - 2018)

Semester	Course Code	Course Title	Ins. Hrs / week	Examination				Credits
				Dur.Hrs	CIA Marks	ESE Marks	Total Marks	
I	17MP01	Core I - Classical Mechanics	5	3	25	75	100	4
	17MP02	Core II - Mathematical Physics I	5	3	25	75	100	4
	17MP03	Core III - Modern optics	4	3	25	75	100	4
	17MP04	Core IV - Semiconductor Circuits and Applications	5	3	25	75	100	4
	17MPP1	Practical I	6	4	40	60	100	4
	17MPE1 /	Elective I: Nano science and Nanotechnology/	5	3	25	75	100	4
	17MPE2	Thin film Technology	5	3	25	75	100	
II	17MP05	Core V - Mathematical Physics II	5	3	25	75	100	4
	17MP06	Core VI -Quantum Mechanics I	5	3	25	75	100	4
	17MP07	Core VII - Condensed Matter Physics	4	3	25	75	100	4
	17MP08	Core VIII– Statistical Mechanics	4	3	25	75	100	4
	17MPP2	Practical II	6	4	40	60	100	4
	17MPE3 /	Elective II - Digital Electronics and Microprocessors /	4	3	25	75	100	4
	17MPE4	Energy Physics	4	3	25	75	100	
	17MGCS	Cyber Security	2	2	50	-	Grade	Grade

Sem	Code	Title						
	17MPA1	Advanced Learners Course I - Astrophysics		3	-		100	4*
III	17MP09	Core IX - Quantum Mechanics II	5	3	25	75	100	4
	17MP10	Core X - Electromagnetic Theory	5	3	25	75	100	4
	17MP11	Core XI - Molecular Spectroscopy	5	3	25	75	100	4
	17MP12	Core XII - Nuclear and Particle Physics	4	3	25	75	100	4
	17MPP3	Practical III	6	6	40	60	100	4
	17MPE5 /	Elective III - Analog and Digital Communications	5	3	25	75	100	4
	17MPE6	Computational Physics (Theory & Practical)	5	3	40	60	100	
	17MPIS	Internship/ Summer Fellowship			150	-	150	6
IV	17MPPV	Project and Viva-voce			150	150	300	12
	17MPA2	Advanced Learner's Course II - Plasma Physics		3			100	4*

Total   **2250**   **90**

* Starred credits are treated as additional credits (Optional).

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M.Sc. Physics
Semester I
Core II - Mathematical Physics I   17MP02

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Credits: 4   **Hours: 75(C-60, S-5, Tu-5, A-5)**

Unit I Tensors   **(12 hrs)**

       Kronocker delta symbol– Scalars, Contra variant Vectors and Covariant Vectors –Tensors of Higher ranks – Algebraic operations of Tensors – Symmetric and Anti symmetric tensors – Invariant tensors $g_{\mu\nu}$, $g^{\mu\nu}g^{\mu}_{\nu}$– Conjugate or Reciprocal Tensors – Christoffel's 3-index symbols – Transformation laws of Christoffel's symbols.

Unit II Group Theory   **(12hrs)**

Concept of a group – Abelian group – Generators of a finite group – cyclic group –Group multiplication table- subgroups – co-sets – Conjugate elements and classes- Conjugate sub-groups – Isomorphism and Homomorphism – Permutation groups – Cayley's theorem – The group of symmetry of an equilateral triangle – group of symmetry of a square – Reducible and Irreducible Representations .

Unit III Laplace Transforms   **(12 hrs)**

Definition of Laplace Transform – Properties of Laplace Transforms: Linearity Property – Change of scale property – First Translation property and second translation property – Derivative of Laplace Transform – Laplace Transform of the Derivative of a function.

Laplace Transform of Periodic Functions: Saw tooth wave – Square wave- Half wave rectifier – Inverse Laplace Transform – Properties of inverse Laplace transform: Linearity Property – Change of scale property – First translation property – Second translation property.

Application of Laplace Transforms to Differential equations: ordinary differential equation with constant coefficients – Ordinary differential equation with variable coefficients.

* Unit IV Fourier series and Fourier Transform   **(12hrs)**

Fourier series – Evaluation of the coefficients of Fourier series –Drichlet's conditions – Problems – Complex form of Fourier series – Fourier series in the interval (0,T)

Fourier Transform – Fourier Sine and Cosine Transforms – Properties of Fourier transform – Fourier transform of a derivative.

Unit V Partial Differential Equations in Physics   **(12 hrs)**

Introduction – Solution of Partial differential equations by the method of separation of variables – Solution of Laplace's equation in Cartesian coordinates- Two dimensional Steady flow heat – Diffusion equation or Fourier equation of heat flow-Two dimensional flow heat – The equation of motion for the vibrating string – D' Alembert's Solution.

* Self study unit

C-Contact hours   S-Seminar   Tu-Tutorial   A-Assignment

Book for Study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I - V	Mathematical Physics	Sathyaprakash	Sultan Chand & sons	5thRevised Edition, 2011
I - V	Mathematical Physics	P.K.Chattopadhyaya	New age index publishers	2nd Edition, 2013

Books for Reference:

S.No.	Name of the Book	Authors	Publishers	Year & Edition
1	Mathematical Physics	B.D.Gupta	Vikas Publishing House	4th Edition, 2010
2	Applied Mathematics for Engineers and Physicists	B.S. Rajput	PragatiPrakashan	25th Edition, 2014
3	Mathematical Physics	H.K.Dass and Dr. Ramaverma	S.Chand Publication	1st Edition, 2012
4	Mathematical Physics	Sadri Hassini	Springer International Publication	2nd Edition, 2013

M.Sc. Physics
Semester I
Core IV-Semiconductor Circuits and Applications   17MP04

Credits: 4   **Hours: 75 (C-65, S-4, Tu-3, A-3)**

Unit I Diodes and Thyristors   **(13 hrs)**
Introduction – Tunnel diode – Diode parameters – Applications – Photo diodes – Characteristics – Applications – Photoconductive cells – Characteristics – Applications – Liquid crystal display – Solar cells – Thyristors – Applications – Silicon Controlled Rectifiers (SCR) – SCR characteristics and rating – Applications : Temperature controller – Light activated SCR – Diac – Diac in proximity detector – Triac – Triac in Phase (power) control – UJT-Characteristics.

Unit II Field Effect Transistors   **(13 hrs)**
JFET-Construction and operations – Characteristics of JFET: Drain characteristics – Effect of gate to source voltage on drain Characteristics – Transfer Characteristics – Specification sheet of JFET – JFET-Parameters – Comparison between FET and BJT – MOSFETs – Depletion type MOSFET-Construction and operation – Characteristics of Depletion type MOSFET – Enhancement type MOSFET – Construction, operation and characteristics of Enhancement MOSFET – Advantages of N-channel over P-channel MOSFETs – MOSFET handling –CMOS VMOS.

Unit III FET Amplifiers   **(13 hrs)**

Biasing the FET – Gate bias- self bias- setting a Q-point – Setting a Q-point using load line – Voltage divider bias – Current source bias – FET Amplifier – Common Source Amplifier – Analysis of Common Source Amplifier – Effect of AC load on Amplifier Parameters – Effect and external source resistance on voltage gain – FET Amplifier**:** Low frequency response – High frequency response – Enhancement MOSFET amplifier – Motion detecting system using JFET.

*Unit IV Oscillators   **(13 hrs)**

Comparison between an amplifier and an oscillator – Barkhausen criterion – FET Hartley oscillator – FET Colpitt's oscillator – Principle of RC oscillator – FET Phase shift oscillator – Wien bridge oscillator – Non sinusoidal oscillator – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger – Blocking oscillator – UJT Relaxation oscillator-Problems

Unit V Operational Amplifiers (OP AMPs)   **(13 hrs)**

The Ideal OP-AMP – Inverting, Non-Inverting & Differential Amplifiers – Input offset voltage – Input offset current – CMRR – OP-AMP Characteristics – Open Loop Input Output Characteristics – Frequency Response and Slew rate – OP-AMP Applications **:** Adder, Subtractor, Integrator, Differentiator – Comparator – Voltage to Current Converter – Current to Voltage Converter – Electronic Analog Computation (Solving simultaneous equations) **-** Problems

* Self study unit

C-Contact hours   S-Seminar   Tu-Tutorial   A-Assignment

Books for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I	A Text book of Applied Electronics	R.S.Sedha	S.Chand and Company	Reprint 2010
II & III	Electronic Devices and Circuit theory	Robert L.Boylestad and Louis Nashelsky	Prentice Hall of India Private Ltd	9th Edition, 2008
IV	OP-AMPs & Linear Integrated Circuits	RamakantA.Gayakwad	Prentice Hall of India Private Ltd	9th Edition, 2008
V	Linear Integrated circuits	D.RoyChoudhury and Shail Jain	New Age International (P) Ltd	10th Reprint, 1997

Books for Reference:

S.No.	Name of the Book	Authors	Publishers	Year & Edition
1	Basic electronics – Solid state	B.L.Theraja	S.Chand& Co. Ltd, New Delhi	Reprint 2010
2	Integrated Electronics: Analog and Digital Circuits and Systems	Jacob Millman, Christos C.Halkias	McGraw Hill International Book Company	2nd Edition, 2012

M.Sc. Physics
Semester I
Elective I - Nano science and Nanotechnology   17MPE1

Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Unit I Basics for Nanoscience   **(13 hrs)**

Definition of Nanoscience and Nanotechnology – Band structure and density of states: Energy bands – Size effects in smaller systems (Pre quantum) – Quantum behavior of nanometric world: Bohr model of hydrogen atom – Infinite potential well: Confined particle in1D – Potential step: Reflection and tunneling (quantum leak) – Potential box: Trapped particle in 3D(Nanodot) – Electron trapped 2D plane (Nano sheet) – Electrons moving in 1D:Nanowire – Quantum confinement in nano materials.

Unit II Synthesis of nanomaterials   **(13 hrs)**

Chemical methods: Surface to volume ratio-2D, 1D and 0D materials– Top Down and Bottom up Techniques for synthesis of Nanomaterials –Growth of nanoparticles(LaMer diagram) –Sol-Gel Method – Hydrothermal synthesis – Sonochemical synthesis – Microwave synthesis.

Physical methods: High Energy Ball Milling method – Methods based evaporation: Physical vapour deposition – Chemical vapour deposition - Sputtering techniques - Lithography using photons (UV-Vis, Lasers or X-rays)

Unit III Analysis techniques   **(13 hrs)**

Microscopes: Optical Microscopes – Confocal optical Microscope –Electron microscopy: Introduction – Resolution vs. magnification – Scanning Electron Microscope: SEM techniques – Electron gun – Specimen interaction – Applications – Transmission Electron Microscope – High resolution TEM.

Diffraction techniques: X-ray diffraction – Atomic Scattering factor –Bragg's law diffraction – Diffraction from different types of samples – Crystal structure factor – Diffraction from nanoparticles – X-ray diffractometer.

Unit IV Nano electronics   **(13 hrs)**

Quantum Electronic Devices: Upcoming Electronic Devices – Electrons in Mesoscopic structures – Examples of Quantum Electronic Devices: Short Channel MOS transistor – Split Gate transistor – Quantum Cellular Automata – Tunneling Element: Tunneling Diode – Resonant Tunneling Diode – Principle of the Single Electron Transistor: The coulomb Blockade – Performance of the Single Electron Transistor.

*Unit V Applications of Nanomaterials   **(13 hrs)**

Nano sensors: Types of Nano sensors – Carbon Nano Tube based Sensors – Nanowire sensors Nano sensors in space – Nano pressure sensor – Chemical Sensor- Quantum Dots for Cancer Diagnosis and Therapy – Magnetic Nanoparticles for Imaging and Therapy.

Characteristics of nano finishing in garments –Waterproof Textiles –UV Protection Textiles – Odor Control Textiles –Anti-Bacterial Textiles – Dust Free Textiles – Stain Resistant Textiles.

* Self study unit

C-Contact hours   S-Seminar   A-Assignment

Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I	Nanotechnology Principles and Practices	Sulabha K Kulkarni	Capital publishing Company	2nd Edition, 2011
II & III	Introduction to NanoScience and Nanotechnolgy	K.K.Chattopadhyay &N.Banerjee	PHI Learning Private Ltd	1st Edition, 2009
IV	Nanomaterials , Nanotechnologies and Design	MicheaelF.Ashby, Pauloj. Ferreira, Daniel L. Schodek	Elsevier India Pvt. Ltd.	Reprint 2013
V	Nano Enabled Sensors	Kourosh Kalantar-zadeh, Benjamin Fry	Springer Publications	Imprint 2008

Books for Reference

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1	Nanotechnology Basic Science & Emerging Technologies	Mick Wilson, Kaali Kannangara, GeoffSmith	Overseas Press India Pvt.Ltd	Reprint 2008
2	Introduction to Nanotechnology	Charles P.PooleJr., Frank J. Owens	John Wiley sons Inc Publication	2003 Edition
3	Text book of Nanoscience andNanotechnology	B.S.Murthy, P.Shankar, Baldevraj, B.B.Rath and James Murday	University Press Reprint (springer)	1st Edition, 2013
4	Nanotechnology in Biology and Medicine	Tuan Vo-Dinh	CRC press	2007 Imprint

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M.Sc. Physics
Semester II
Core V - Mathematical Physics II   17MP05
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Credits: 4   Hours: 75(C-60, S-5, Tu-5, A-5)

Unit I Differential Equations   (12 hrs)

Legendre Differential Equation and Legendre function – Generating function of Legendre Polynomials – Rodrigue's formula for Legendre polynomials – Recurrence formulae for $P_n(x)$ – Laguerre's Differential Equation and Laguerre Polynomials – Generating function of Laguerre Polynomials – Recurrence relations for Laguerre polynomials

Unit II Differential Equations   (12 hrs)

Bessel's Differential Equation and Bessel's function of first kind – Recurrence formulae for $J_n(x)$– Generating function for $J_n(x)$ –Hermite Differential Equation and Hermite Polynomials – Generating function of Hermite Polynomials – Recurrence formulae for Hermite Polynomials.

Unit III Complex Variables   (12 hrs)

Review of Algebraic operation on Complex Numbers – Complex Conjugates – Modulus and argument of a complex number – Graphical representation on argand diagram and trigonometric form – Functions of a complex variable – Limit, Continuity and differentiability – Definitions : Analytic function – The necessary and sufficient conditions for f(z) to be analytic : Cauchy-Riemann Differential Equations – Laplace's equations : Harmonic functions – Line integral of a complex function – Cauchy's Integral theorem – Cauchy's Integral Formula – Taylor's series – Cauchy Residue theorem**.**

*Unit IV Probability (12 hrs)

Probability: Priori Probability – Empirical Probability – Theorem of total Probability – Binomial theorem of Probability – Measures of central tendency, averages – Measures of dispersion – Karl Pearson's Coefficient of Correlation – Standard deviation as the sum of distribution – Theoretical Distributions: Binomial distribution – Normal distribution – Theory of errors – Line of Regression.

Unit V Numerical Methods (12hrs)

Numerical solutions of ordinary differential equations: Taylor series method Modified Euler's method – Fourth order Runge-Kutta method –Numerical Solutions of partial differential equations: Difference quotients and difference equations Solution of elliptic equations – Solution of Laplace's equations

Numerical integration: Quadrature formula for equidistant ordinates – Trapezoidal rule – Simpson's rule – Approximate solution of algebraic and transcendental equations : Newton- Raphson method – Gauss elimination method for solving a system of linear equations.

* Self study unit

C-Contact hours   S-Seminar Tu-Tutorial   A-Assignment

Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year &Edition
I-IV	Mathematical Physics	Sathya prakash	Sultan Chand & sons	5th Revised Edition, 2011.
V	Numerical Methods	A. Singaravelu	Meenakshi Publlication	New Revised Edition, January2014

Books for Reference:

S.No.	Name of the Book	Authors	Publishers	Year & Edition
1	Mathematical Physics	B.D.Gupta	Vikas Publishing House	4th Edition, 2010
2	Mathematical Physics	H.K.Dass and Dr. Ramaverma	S.Chand Publication	7th Edition, 2014
3	Mathematical Physics	P.K.Chattopadhyay	New Age Index Publishers	2nd Edition, 2013

M.Sc. Physics
Semester II
Core VI- Quantum Mechanics I   **17MP06**
     Credits: 4   **Hours: 75(C-65, S-5, A-5)**

The main objectives of this course are
➢ To make them to understand the basic postulates of quantum mechanics and the general formalism.
➢ To solve the Schrödinger equation for simple one-dimensional systems.
➢ To inculcate the concepts of spin and angular momentum, as well as their quantization.
➢ To impart Knowledge in the time dependent and time-independent perturbation theory, Stark effect and its application in quantum mechanics.

Unit I General formalism of wave mechanics   **(13 hrs)**
      Schrodinger equation for 'n' particle systems – Fundamental postulates of wave mechanics–The adjoint of an operator and self-adjointness – The Eigen value problem: Degeneracy – Eigen values and Eigen functions of self-adjoint operators – Dirac delta function – properties of delta function – Representation and normalization of Eigen functions – closure – Physical interpretation of Eigen values, Eigen functions and expansion coefficients – Momentum Eigen functions, wave functions in momentum space.

Unit II Exactly soluble Eigen value problems   **(13 hrs)**
      The simple harmonic oscillator: The Schrodinger equation and energy Eigen values – Energy Eigen functions – Angular momenta and Parity: The Angular momentum operators – Eigen value equation for L^2, separation of variables – Admissibility conditions on solutions, Eigen values – Physical interpretation – Parity – Angular momentum with spherical symmetry systems

*Unit III Matrix formalism of Quantum mechanics   **(13 hrs)**
      Important theorems on Eigen values and Eigen vectors – Hilbert space – Operators as matrices – Matrix form of wave function – Unitary transformation – Schrodinger, Heisenberg and interaction matrix representations – Dirac's 'Bra' and 'Ket' vectors: Dual space – Projection operator – Matrix theory of Harmonic oscillator**.**

Unit IV Angular Momenta   **(13 hrs)**
      Eigen value spectrum – Matrix representation of J in the |jm> basis – Spin angular momentum – Addition of angular momenta – Clebsh-Gordan coefficients – Spin wave functions for a system of two spin ½ particles

Unit V Time Independent theory   **(13 hrs)**
      Stationary perturbation theory (Non-degenerate case):First order perturbation – Evaluation of first order energy and correction to wave function – Second order perturbation – Evaluation of second order energy correction – Evaluation of second order correction to wave function – Physical applications of non-degenerate perturbation theory: normal Helium atom (without spin) – Stationary perturbation theory: Degenerate case – Application: First order Stark effect: Ground state and excited state (n=2) of Hydrogen atom**.**

* Self study unit

C-Contact hours   S-Seminar   A-Assignment

Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year &Edition
I, II & IV	A Text book of Quantum Mechanics	P.M. Mathews and K. Venkatesan	Tata McGraw Hill	6th Reprint, 2013
III & V	Quantum Mechanics	Sathya Prakash and Swati Saluja	Kedar Nath Ram Nath & Co	Edition, 2010

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year &Edition
1	Quantum Mechanics	L.I. Schiff	Tata Mc Graw Hill publishing	4th Edition,1968
2	Introduction to Quantum Mechanics	David J.Griffths	Pearson Publications	2nd Edition, 2014
3	Quantum Mechanics	A.K.Ghatak and S. Loganathan	Mc-Millan India	5th Edition, 2004
4	Quantum Mechanics	S.Devanarayanan,	SCI Tech Publications(India) Pvt. Ltd, Chennai	2005 Edition

M.Sc. Physics
Semester II
Elective II - Digital Electronics and Microprocessors   17MPE3

Credits: 4   **Hours: 60(C-52, S-4, A-4)**

Unit I Data Processing Circuits (Or) Digital Data Circuit   (10 hrs)
        Logic Gates – Boolean Algebra and De-Morgan's Theorem – Sum of Products Method – Karnaugh's Map and Simplifications – Half Adder , Full Adder – Half Subtractor, Full Subtractor – Binary Adder/Subtractor – Multiplexer – (16-1)

Multiplexer – Demultiplexer – (1-16)-   De multiplexer– Parity
generators/ checkers.

Unit II Flip Flops and Registers   (10 hrs)

RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – Edge Triggered D-Flip
Flop - JK Flip Flop – JK Master Slaved Flip Flop – 555 Timer Astable – 555 Timer
Mono stable – Types of Registers – Serial-in Serial-out – Serial-in Parallel-out –
Parallel-in Parallel-out – Parallel-in Serial-out.

*Unit III Counters and Memories   (10 hrs)

Types of Counters – Asynchronous and Synchronous Counter – MOD-5 and
Decade Counters – Ring Counters – Digital to Analog Converter: Binary Ladder
Method – 4 bit Digital to Analog converter –Analog to Digital converter: Successive
Approximation Method – Memory: ROMs, PROMs, EPROMs and EEPROMs –
RAMs : SRAM and DRAM.

Unit IV Microprocessor   (10 hrs)

Intel 8085 Microprocessor – Architecture – Pin Configuration – Instruction
format – Instruction Set of 8085 Microprocessor – Instruction Cycle – Timing
Diagram – Op code Fetch Cycle – Memory Read Cycle for MOVE C, A & ADD M
– Addressing Modes – Assembly Language Programming – Program to add and
subtract two 8-bit numbers – Sort numbers by ascending and descending order.

Unit V Micro controllers   (12 hrs)

Microprocessor Vs Microcontroller– Applications of Microcontrollers
(qualitative only) – INTEL 8051 Microcontroller – Features of 8051Microcontroller
– Pin out of 8051Microcontroller - Architecture of INTEL 8051 Microcontroller –
Addressing modes – 8051 Instruction execution – 8051 Instruction set – Data
transfer Instructions – Arithmetic Instructions – Logic Instructions – Control
transfer/Program control – 8051Microcontroller program to add two 16 bit numbers
– 8051 Microcontroller program to find the maximum number from a given ten 8-bit
numbers.

* Self study unit

C-Contact hours   S-Seminar   A-Assignment

Books for Study:

Unit No	Name of the Book	Authors	Publishers	Year & Edition
I	Digital Principles and Applications	A.P Malvino & D.P.Leach	Tata Mc Grw Hill	7th Edition, 2011

II & III	Introduction to Microprocessors	AdityaP.Mathur	TataMcGrw Hill	3rd Edition, 32nd Reprint 2010
V	Advanced Microprocessor and Microcontroller	Prof.S.K.Venkata-ram	University Science Press	1st Edition, 2002 (Reprint 2008)

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1	Electronic Principles and Applications,	A.B.Bhattacharya	New Central Book Agency (P) Ltd	Reprint 2006
2	Microprocessor Architecture, Programming and applications with the 8085	Ramesh Gaonkar	Penram International Publishing (India) Pvt., Ltd	5th Edition, 2010.

M.Sc. Physics
Semester II
Advanced Learner's Course I - Astrophysics   17MPA1

Credits: 4

The main objectives of this course are

➤ To arouse a curiosity to learn about cosmos
➤ To develop an understanding about the dark matter of Universe and cosmic particles

Unit I The expanding Universe**

The Hubble expansion – Olber'sParadox – The Friedmann equation – The source of energy density – Observed energy densities and the age of the universe – The declaration parameter: the effects of cosmological constant – Cosmic microwave

radiation – Radiation in the early universe – Radiation and matter eras – Baryogenesis and the matter – Antimatter asymmetry of the universe.

Unit II Dark matter and Dark energy in the universe**

Dark matter in galaxies and clusters – Gravitational lensing – amplification by gravitational lenses: Microlensing and MACHOs – The lensing probability: Optical depth – Baryonic dark matter – Neutrinos – Axions – WIMPs – Expected WIMP cross-sections and event rates – Dark energy: The Hubble plot at large redshifts – Vacuum energy: The Casimir effect – Problems with the cosmological constant and dark energy.

Unit III Development of structure in the early Universe**

Horizon and Flatness problems – Inflation – Chaotic inflation – Quantum fluctuations and inflation – The spectrum of primordial fluctuations – Large scale structure: Gravitational collapse and the Jeans mass – The growth of structure in an expanding universe – Evolution of fluctuations during the radiation era.

Unit IV Cosmic Particles**

The spectrum and composition of cosmic rays – Geomagnetic and solar effects – Acceleration of cosmic rays – Secondary cosmic radiation: Hard and Soft components – Electromagnetic cascades and air showers – Ultra high energy cosmic ray shower – Radio galaxies and Quasars – Point sources of gamma rays: Gamma ray bursts – Atmospheric Neutrinos: Neutrino oscillations – Solar Neutrinos – Point Neutrino sources – The binary Pulsar.

Unit V Particle Physics in stars**

Stellar evolution – The early stages – Hydrogen burning: the pp cycle in the sun – Helium burning and the production of Carbon and oxygen – Production of heavy elements – White dwarf stars – Stellar Collapse: Type II Supernovae – Neutrinos from SN1987A – Neutron stars and pulsars – Black holes – Hawking radiation from black holes.

** Problems associated with the topics Excluded

Book for study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I -V	Particle Astrophysics	Donald Perkins	Oxford University Press	Reprint 2008

Books for Reference:

S No.	Name of the Book	Authors	Publishers	Year & Edition
1	Astrophysics-Stars and Galaxies	K.D.Abhyankar	University Press (India) Private limited	Reprint 2009
2	Astrophysics of the solar system	K.D.Abhyankar	University Press (India) Private limited	Reprint 2009
3	Astrophysics for physicist	Arnab Rai Choudhuri	Cambridge University Press	Imprint 2010

M.Sc. Physics
Semester III
Core IX - Quantum Mechanics II   17MP09

Credits: 4   Hours: 75(C-65, A-5, S-5)

Unit I Time Dependent Perturbation Theory   (13 hrs)
        Time Dependent Perturbation Theory: Time development of states –
Transition Probability: Fermi –Golden Rule – Harmonic Perturbation –Adiabatic
Approximation –   Application of Time Dependent Perturbation Theory to semi
classical theory of Radiation – Selection Rules.

Unit II Approximation Methods   (13 hrs)
        The Variation Method : Upper bound on ground state energy – Application to
excited states – The Hydrogen Molecule – The WKB Approximation: The one
dimensional Schrödinger equation: The Asymptotic solution – Solution near a
turning point – Asymptotic connection formulae – The Bohr –Sommerfield
quantum condition(energy levels of a potential well) – Tunneling through a
Potential Barrier(eg. α -decay).

Unit III Scattering Theory   (13 hrs)
        Kinematics of the scattering process: differential and total cross sections –
Wave mechanical picture of scattering :The Scattering Amplitude – Green's
functions ;formal expression for scattering Amplitude – The Born Approximation –
Partial wave analysis – Asymptotic behavior of partial waves: Phase shifts: The
Scattering amplitude interms of Phase shifts – Exactly soluble problems: Scattering
by a square well potential.

Unit IV Relativistic quantum Mechanics   (13 hrs)

Generalization of the Schrödinger equation – The klein Gordon equation: Plane wave solutions ,Charge and current densities – Interaction with electromagnetic fields :Hydrogen like atom – Non relativistic limit – Dirac's equation: Dirac's relativistic Hamiltonian – Position probability density: Expectation values – Dirac matrices – The spin of the dirac particle – Significance of negative energy states: Dirac particle in electromagnetic fields – Electron in a magnetic field – Spin magnetic moment.

*Unit V Quantum field Theory   **(13 hrs)**

Quantization of fields – Quantization procedure for particles – Lagrangian formulation – Hamiltonian formulation – Quantum field equations – Quantization of Schrodinger equation (Non-Relativistic case) – Creation, Annihilation and number operators – Anti commutation Relation (Qualitative only) – Quantization of electromagnetic field energy and momentum.

* Self study unit
C-Contact hours   S-Seminar A-Assignment

Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I	Quantum Mechanics	Sathya Prakash and Swati Saluja	Kedar Nath, Ram Nath& Co	6th Reprint,2013
II, III & IV	A Text book of Quantum Mechanics	P.M. Mathews and K. Venkatesan	Tata McGraw Hill	4th Reprint 2012
V	Quantum Mechanics	Gupta, Kumar, Sharma	Jai PrakashNath Publication	33rdEdition, 2015

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1	Quantum Mechanics	L.I. Schiff	TataMcGraw Hill	4th Edition,1968
2	Introduction to Quantum Mechanics	David J.Griffths,	Pearson Publications.	2ndEdition, 2014
3	Quantum Mechanics	A.K. Ghatak and S. Loganathan	Mc-Millan India	5thEdition, 2004

Credits: 4   **Hours: 60 (C-52, A-4, S-4)**

Unit I General Properties of Nuclei   **(11hrs)**
        Nuclear mass and Binding Energy– Nuclear Size – Measurement of nuclear radius: Electron Scattering Method– Nuclear spin, Parity, Moments – Magnetic dipole moment of nuclei – Electric Quadrupole moment – Isotopic spin**.**

*Unit II Nuclear Models   **(10hrs)**
        Liquid Drop Model : Bethe-Weizsacker Semi -Empirical mass Formula – Merits and limitations of liquid drop model – The Fermi gas model – Super fluid model– Shell Model: Evidence for the existence of magic numbers — Predictions of the shell model – Collective Model: Vibrational Spectra and Rotational Spectra states – Single particle shell model

Unit III Radioactivity   **(11hrs)**
        Alpha Decay – Range of α-particles – Stopping Power – α-disintegration Energy – Range – Energy Relationship for α-particles – Geiger-Nuttal law – The α-spectrum and fine structure – Gamow's theory of α-decay and Transmission coefficient.
        Beta Decay – Continuous β-ray spectrum and Pauli's Neutrino hypothesis – Fermi's theory of β-decay – Selection Rules.
        Gamma Decay – Passage of γ-rays through matter – Determination of γ-ray energy: Scintillation Spectrometer Method – Internal Conversion.

Unit IV Nuclear Reactions   **(10 hrs)**
        Types of Nuclear Reactions – Conservation laws in Nuclear Reactions – Energetics of Nuclear Reactions – Cross Section of Nuclear Reaction – Compound Nucleus hypothesis – Discrete levels of the compound nucleus: Breit-Weigner one level formula.

Unit V Elementary Particles and Quarks   **(10 hrs)**
        Classification of Elementary Particles –Fundamental interaction in nature – Conservation laws – Symmetry classification of elementary particles: SU_2 and SU_3 symmetry – Quark Hypothesis – Quark Model – Quark Structure of Mesons and Baryons –Experimental supports for the Quark Model – Quantum Chromo dynamics (QCD) – Charmed Quark – Beauty and Truth – Grand Unified Theory.

* Self study unit

C-Contact hours   S-Seminar   A-Assignment

Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I,II,III & V	Nuclear and Particle Physics	S.L.Kakani and Shubhra Kakani	Viva Books Private Limited, New Delhi	1st Edition, 2008
IV	Atomic and Nuclear Physics	S.N.Ghoshal	S.Chand & Company Ltd, New Delhi.	1st Edition, 1994

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1	Nuclear Physics,	R.C.Sharma	K.Nath & Co. Educational Publishers, Meerut	5th Edition, 2004
2	Nuclear Physics	S.B.Patel	Wiley Eastern Limited, New Delhi	Reprint 2015
3	Nuclear Physics	D.C.Tayal	Himalaya Publishing House Bombay	Reprint 2016

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M.Sc. Physics
Semester III
Elective III -Analog and Digital Communications 17MPE5

</div>

Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Unit I Antennas and Wave Propagation   **(13 hrs)**

Antennas: Basic considerations – Wire radiator in Space – Terms and Definitions – Effects of Ground on Antennas – Non resonant Antennas: The Rhombic – UHF and Microwave Antennas: Antennas with Parabolic reflectors – Wideband and Special – purpose Antennas: Discone Antenna – Propagation of Waves: Ground waves, Sky waves, Space Waves.

Unit II Modulation Techniques   **(15 hrs)**

Theory of Amplitude Modulation Techniques: Amplitude Modulation Technique, DSBSC, SSB, VSB – Generation of Amplitude Modulated Signals: Generation of AM Signal – Theory of Angle Modulation Techniques: Frequency Modulation, Phase Modulation – Radio Transmitter: AM Transmitters, FM Transmitters (block diagram only) – Receiver Types: Super heterodyne Receiver – FM Receivers (block diagram only).

Unit III Digital Data Communications   **(14 hrs)**

Introduction – Basic Digital communication system: ASK – Coherent ASK detector – Non-Coherent ASK detector – FSK – Demodulation of binary FSK wave – Detection of FSK using PLL – PSK – Detection of binary PSK waves – Differential PSK(DPSK) – M-ary PSK – M-ary PSK Transmitter – M-ary PSK Receiver – Elements of Digital Communication System – Advantages of digital communication.

*Unit IV Broad-Band Communications   **(12 hrs)**

Time Division multiplexing – Frequency division multiplexing – Computer communication systems – Microwave communication links – Line of Sight – Integrated Service Digital Network (ISDN) – Local Area Network (LAN) – LAN Topologies. Satellite Communications: Introduction– Satellite Communication System – Satellite Orbits – Basic Components of Satellite Communication – Constructural Features – Commonly used frequencies – Satellite Communication in India.

Unit V Mobile and Wireless Communications   **(11 hrs)**

Telecommunication systems: GSM: Mobile services – System Architecture – Radio Interface – Protocols – Handover – Security – New data services (GPRS qualitative only) – Mobile TCP – Wireless Application Protocol(WAP): Architecture – Wireless application environment.

* Self study unit
C-Contact hours   S-Seminar   A-Assignment
Books for Study:

Unit No.	Name of the Book	Authors	Publishers	Year & Edition
I& II	Electronic Communication Systems	George Kennedy, Bernard Davis S.R.M.Prasanna	Tata McGraw Hill Education Pvt Ltd	18th Reprint 2014
III & IV	Principle of Communication Engineering	Anokh Singh &A.K.Chhabra	S.Chand & Company	Reprint 2013
V	Mobile Communications	Jochen H. Schiller	Pearson Publications Pvt.ltd	11th Reprint 2013

Books for Reference:

S. No.	Name of the Book	Authors	Publishers	Year & Edition
1	Analog and Digital communication	J.S.Katre	Mac Milan Publishers	1st Edition 2011
2	Wireless Digital Communications	Sachin S. Sharma	Laxmi publication Pvt Ltd	1st Edition 2011
3	Communication Systems	Simon Haykin	Wiley Publication	Reprint 2009

Curriculum Framework for the students admitted in the academic year 2016-2017

Department of Physics

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
Affiliated to Bharathiar University
Department of Physics

M.Sc. Physics

Scheme of Examination – CBCS Pattern

Semester	Course Code	Course Title	Ins. hours	Examination				Credits
				Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
I	15MP01	Core I - Classical Mechanics	5	3	25	75	100	4
	15MP02	Core II - Mathematical Physics I	5	3	25	75	100	4
	15MP03	Core III - Modern optics	4	3	25	75	100	4
	15MP04	Core IV - Semiconductor Circuits and Applications	5	3	25	75	100	4
	15MPP1	Practical I	6	4	40	60	100	4
	15MPE1	Elective I: Nano science and Nanotechnology I	5	4	25	75	100	4
II	15MP05	Core V - Mathematical Physics II	5	3	25	75	100	4
	15MP06	Core VI - Quantum Mechanics I	5	3	25	75	100	4
	15MP07	Core VII - Condensed Matter Physics	4	3	25	75	100	4
	15MP08	Core VIII - Digital Electronics and Microprocessors	4	3	25	75	100	4
	15MPP2	Practical II	6	4	40	60	100	4
	15MPE2	Elective II - Nano science and Nanotechnology II	4	3	25	75	100	4
	15MGCS	Cyber Security	2	2	50	-	Grade	Grade

	15MPA1	Advanced Learner's Course I - Astrophysics		3	-		100	4*
III	15MP09	Core IX - Quantum Mechanics II	5	3	25	75	100	4
	15MP10	Core X - Electromagnetic Theory	5	3	25	75	100	4
	15MP11	Core XI - Molecular Spectroscopy	5	3	25	75	100	4
	15MP12	Core XII - Nuclear and Particle Physics	4	3	25	75	100	4
	15MPP3	Practical III	6	4	40	60	100	4
	15MPE3	Elective III - Analog and Digital Communications	5	3	25	75	100	4
	15MPIS	Internship/ Summer Fellowship			75	75	150	6
IV	15MPPV	Project and Viva-voce			150	150	300	12
	15MPA2	Advanced Learner's Course II - Plasma Physics		3			100	4*
		Total					**2250**	**90**

M.Sc Physics
Semester I
Core II - Mathematical Physics I **15MP02**

Credits: 4   **Hours: 75 (C-60, S-5, Tu-5, A-5)**

Preamble for Mathematical Physics I & II:
 For proper understanding of the concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, thorough knowledge in Differential equations, Tensors, Complex Variables is required. Therefore Mathematical Physics I &II are introduced as Core Papers in I & II Semesters.

Objectives:
- To gain knowledge in the field of tensors, group theory, complex variables and Probability etc.
- To impart knowledge in numerical analysis to solve problems of differential equations, simultaneous equations etc.

- To expose the students about the differential equations and special functions.

Learning outcome:
- Able to solve the physical problems using partial differential equations
- Able to apply Laplace and Fourier transforms to periodical wave functions

Unit I Tensors (12 hrs)

n dimensional space – Superscripts and subscripts – Coordinate transformation – Kronocker delta symbol– Scalars , Contra variant Vectors and Covariant Vectors –Tensors of Higher ranks - Algebraic operations of Tensors - Symmetric and Anti symmetric tensors – Invariant tensors $g_{\mu\nu}$, $g^{\mu\nu}$, $g^{\mu}{}_{\nu}$ – Conjugate or Reciprocal Tensors – Relative and Absolute Tensors – Line element:Metric tensors – Fundamental Tensors – Christoffel's 3 index symbols – Transformation laws of Christoffel's symbols.

Unit II : Group Theory (12 hrs)

Concept of a group – Abelian group – Generators of a finite group – cyclic group – subgroups – co-sets – Conjugate elements and classes – Conjugates sub-groups, Normal sub-groups and factor groups: Conjugate sub-groups - Isomorphism and Homomorphism – Permutation groups – Cayley's thorem – The group of symmetry of an equilateral triangle – group of symmetry of a square – Reducible and Irreducible Representations – Some important theorems on representations - The Orthogonality theorem – Symmetry group of Schrodinger equation – The unitary group.

Unit III Laplace Transforms (12 hrs)

Definition of Laplace Transform – Properties of Laplace Transforms: Linearity Property – Change of scale property - First Translation property and second translation property – Derivative of Laplace Transform – Laplace Transform of the Derivative of a function –Laplace Transform of integral

Laplace Transform of Periodic Functions: Saw tooth wave – Square wave- Half wave rectifier- Inverse Laplace Transform – Properties of inverse Laplace transform: Linearity Property – change of scale property - First translation property – second translation property – Convolution theorem.

Application of Laplace Transforms to Differential equations: ordinary differential equation with constant coefficients – ordinary differential equation with variable coefficients.

* Unit IV : Fourier series and Fourier Transform (12 hrs)

Fourier series – Evaluation of the coefficients of Fourier series – Drichlet's conditions – Problems - Complex form of Fourier series – Fourier series in the interval (0,T) Fourier Transform – Fourier Sine and Cosine Transforms – Properties of Fourier transform – Fourier transform of a derivative.

Unit V : Partial Differential Equations in Physics (12 hrs)

Introduction – Solution of Partial differential equations by the method of separation of variables - Solution of Laplace's equation in Cartesian coordinates - Diffusion equation or Fourier equation of heat flow – The equation of motion for the vibrating string – D' Alembert's Solution – Fourier series solution – Oscillations of hanging chain – Vibrations of a rectangular membrane

* Self study unit

Book for Study:
  1. Mathematical Physics   : Sathyaprakash Sultan Chand & sons,
                                               5th Revised Edition, 2011.

Books for Reference:
  1. Mathematical Physics   : B.D.Gupta, Vikas Publishing House , 4th
                                               Edition, 2010.

  2. Applied Mathematics for   : Pipes Louis A and Harvill Lawerence,
      Engineers and Physicists   McGraw Hill Publishers

M.Sc Physics
Semester I
Core IV- Semiconductor Circuits and Applications   15MP04

Credits: 4   **Hours: 75 (C-65, S-4, Tu-3, A-3)**

Preamble:
        The field of electronics has become the most important branch of science and engineering in our society. It is this field in which rapid developments are taking place every day. The electronic devices and gadgets are being used in almost all industries for quality control and automation. Because of growing applications of electronics, in almost all fields, the students of science disciplines have to be taught electronics both at the UG level and PG level.

Objectives:
  • To educate about the various electronic devices and their characteristics
  • To allow an understanding of their practical applications in our day-today life.

Learning outcome:
  • Students will be able to understand the role of semiconductors in the construction of electronic devices which is so vital in our day-today life.
  • Students will be able to gain knowledge about the type of electronic devices and the circuits by which they are connected.
  • Students will be able to appreciate the applications of the devices.

Unit I Diodes and Thyristors   **(13 hrs)**

        Introduction – Tunnel diode – Diode parameters – Applications – Photo diodes – Characteristics – Applications – Photoconductive cells – Characteristics – Applications – Liquid crystal display – Solar cells – Thermistors – Applications – Silicon Controlled Rectifiers (SCR) – SCR characteristics and rating – Applications – Temperature controller – Light activated SCR – Diac – Diac in proximity detector – Triac – Triac in Phase (power) control – UJT - Characteristics.

Unit II Field Effect Transistors (13 hrs)

JFET- Construction and operations –characteristics of JFET: Drain characteristics – effect of Gate to source voltage on Drain Characteristics-Transfer Characteristics-Specification sheet of JFET– JFET - parameters – Comparison between FET and BJT –MOSFETs–Depletion type MOSFET-Construction and operation –Characteristics of Depletion type MOSFET – Enhancement type MOSFET – Construction, operation and characteristics of Enhancement MOSFET-Advantages of N-channel over P-channel MOSFETs –MOSFET handling – CMOS VMOS.

Unit III FET Amplifiers (13 hrs)

Biasing the FET – Gate bias- self bias- setting a Q-point- setting a Q-point using load line – Voltage divider bias – Current source bias – FET Amplifier – Common Source Amplifier – Analysis of Common Source Amplifier – Effect of AC load on Amplifier Parameters – Effect and external source resistance on voltage gain – FET Amplifier**:**Low frequency response – High frequency response– Enhancement MOSFET amplifier – Motion detecting system using JFET.

Unit IV   Oscillators (13 hrs)

Comparison between an amplifier and an oscillator – Barkhausen criterion – FET Hartley oscillator – FET Colpitt's oscillator – Principle of RC oscillator – FET Phase shift oscillator – Wien bridge oscillator – Non sinusoidal oscillator – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger – Blocking oscillator – UJT Relaxation oscillator.

Unit V Operational Amplifiers (OP AMPs) (13 hrs)

The Ideal OP-AMP – Inverting, Non–Inverting & Differential Amplifiers –Input offset voltage – Input offset current – CMRR - OP-AMP Characteristics - Open Loop Input Output Characteristics – Frequency Response and Slew rate – OP-AMP Applications **:** Adder, Subtractor, Integrator, Differentiator – Comparator – Voltage to Current Converter – Current to Voltage Converter – Electronic Analog Computation**.**

* Self study unit
Books for study:
1. A Text book of Applied Electronics   : R.S.Sedha, S.Chand and Company,
New Delhi, Revised Edition 2006,
Reprint 2010.

2. Electronic Devices and Circuit theory   : Robert L.Boylestad and Louis Nashelsky,
Pearson education Inc., Prentice hall,
9th Edition, 2008.

3. OP-AMPs & Linear Integrated Circuits   : Ramakant A.Gayakwad, Prentice Hall of
   (Unit V)   India Private Ltd., New Delhi, 4th Edition,
2002.

4. Linear Integrated circuits   : D.Roy Choudhury and Shail Jain, New
Age International (P) Ltd., Publishers, New
Delhi, 10th Reprint,1997.

Books for Reference:

1. Basic electronics – Solid state   : B.L.Theraja, S.Chand & Co. Ltd, New Delhi, Reprint 2010.

2. Integrated Electronics: Analog and   : Jacob Millman, Christos C. Halkias, Digital Circuits and Systems   McGraw Hill International Book Company, 24th Printing, 1982.

M.Sc Physics
Semester I
Elective I - Nano science and Nanotechnology I   15MPE1

Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Preamble:

       Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

       Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule.

       The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs).

Objectives:
- To understand the inner concepts of Nanoscience towards material behavior
- To learn the technology involved in the fabrication of Nanomaterials

Learning Outcome:
- Able to understand different synthesis routes of nano materials
- Able to appreciate new nano materials

Unit I Basics for Nanoscience   **(13 hrs)**

       Definition of Nanoscience and Nanotechnology-Band structure and density of states: Energy bands-Density states of low dimensional structures-size effects in smaller systems (Pre quantum) - Quantum behavior of nanometric world: Bohr model of hydrogen atom-Infinite potential well: Confined particle in1D- Potential step: Reflection and tunneling (quantum leak)-Potential box: Trapped particle in 3D(Nanodot)-Electron trapped 2D plane (Nano sheet)-Electrons moving in 1D:Nanowire-Quantum confinement in nano materials.

Unit II Synthesis of Nanomaterials – Chemical methods   **(13 hrs)**

       2D, 1D and 0D materials**-**Top Down and Bottom up Techniques for synthesis of Nanomaterials– Colloids and Colloids in Solutions- Synthesis of colloids- Growth of

nanoparticles(LaMer diagram) - Langmuir-Blodgett Method- Sol-Gel Method – Hydrothermal synthesis - Sonochemical synthesis - Microwave synthesis.

Unit III Synthesis of Nanomaterials –Physical methods **(13 hrs)**

Mechanical methods: High Energy Ball Milling method-Methods based on evaporation: Physical vapour deposition- pulsed laser deposition-sputter deposition: DC,RF,Magnetron sputtering- Chemical vapour deposition, Molecular Beam Epitaxy.

Unit IV Lithographic techniques and Properties of Nanomaterials **(13 hrs)**

Lithiography using photons(UV-Vis, Lasers or X-rays)-Electron beam lithography- Dip pen lithiography, Optical scanning probe lithiography.
Surface to volume ratio at Nanoscale – Mechanical properties -Thermal Properties –Electrical properties-Magnetic properties – Optical properties-

* Unit V Special Nanomaterials **(13 hrs)**

Carboneous Nanomaterials: Fullerene – Carbon Nano Tubes: SWNT, MWNT – Types of Carbon Nano Tube: armchair, zigzag, helical CNT's– Synthesis of CNT – Growth mechanism-Properties of CNT- Graphene- Porous Silicon- How to make a porous silicon- Mechanism of pores formation-Factors affecting the porous structure of porous silicon- Properties of Porous Silicon – Aerogels - Zeolites –Quantum dots.

* Self study unit
Books for Study:

1. Nanotechnology   : Sulabha K Kulkarni, Capital publishing
   Principles and Practices   Company, New Delhi, 2nd edition, 2011.

2. Introduction to NanoScience and   : K.K.Chattopadhyay and A.N Banerjee,
   Nanotechnolgy   PHI Learning Private Ltd., New Delhi,
                                                              First Edition, 2009.
3. Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
    And Design   Daniel L. Schodel, First Printed in India
                                                              2011, Elsevier India Pvt. Ltd.

Books for Reference:
1. Nanotechnology   : Mick Wilson, Kamali Kannangara, Geoff
   Basic Science & Emerging Technologies Smith,Michelle Simmons and Burkhard
                                                              Raguse Overseas Press India Pvt.Ltd,
                                                              Reprint 2008.
2. Introduction to   : Charles P. Poole Jr. and Frank J. Owens, A
   Nanotechnology   John, Wiley Sons, INC., Publication, 2003.

3. Nanotechnology: An introduction   : Michael Kohler and Wolfgang Fritzsche,
   to Nanostructuring Techniques   Wiley-VCH Verlag GmbH& Co. KCaA,
                                                              2004.
4. Text book of Nanoscience and   : B.S.Murthy, P.Shankar, Baldevraj,
   Nanotechnology   B.B.Rath and James Murday, University
                                                              Press Reprint 2013.

M.Sc Physics
Semester II
Core VIII - Digital Electronics and Microprocessors   15MP08

Credits: 4   **Hours: 75 (C-60, Tu-5,S-5, A-5)**

Preamble:

      In the modern world of electronics the term digital is often associated with computers. It is certainly difficult to think of an area of life today that is not influenced in one way or other by digital computers. The availability of the computational power is directly converted into the development of the digital fundamental circuits. The digital ICs which are smaller, faster, more economical and more powerful offer a great number of applications. Today digital circuits and systems can be found almost in every field.

      An introduction to the field of digital electronics and microprocessors with a number of applications are intended to provide a strong background in the digital data manipulations.

Objectives:

- To impart the basic concepts of digital principles and digital circuits
- To facilitate an understanding of the applications of digital data manipulating systems such as Microprocessors and Microcontrollers.

Learning Outcome:

- Students will learn about digital data processing circuits and sequential circuits.
- Students will learn to write programs for microprocessors and microcontrollers and also their supportive peripheral interfaces (hardware).

Unit I Data Processing Circuits (Or) Digital Data Circuits   **(10 hrs)**

      Logic Gates – Boolean Algebra and De-Morgan's Theorem – Sum of Products Method – Karnaugh's Map and Simplifications – Half Adder , Full Adder – Half Subtractor, Full Subtractor – Binary Adder/Subtractor – Multiplexer – (16-1) Multiplexer – Demultiplexer – (1-16) Demultiplexer – Parity generators/ checkers.

Unit II Flip Flops and Registers   **(12 hrs)**

      RS Flip Flop- Clocked RS Flip Flop – D Flip Flop – Edge Triggered D-Flip Flop - JK Flip Flop – JK Master Slaved Flip Flop – 555 Timer Astable - 555 Timer Monostable - Types of Registers – Serial-in Serial-out – Serial-in Parallel-out – Parallel-in Parallel-out – Parallel-in Serial-out.

Unit III Counters and Memories   **(12 hrs)**

      Types of Counters – Asynchronous and Synchronous Counter –   MOD-5 and Decade Counters – Ring Counters – Digital to Analog Converter: Binary Ladder Method – 4 bit Digital to Analog converter –Analog to Digital converter: Successive Approximation Method – Memory: ROMs, PROMs, EPROMs and EEPROMs – RAMs : SRAM and DRAM.

Unit IV Microprocessors   **(12 hrs)**

Intel 8085 Microprocessor – Architecture – Pin Configuration – Instruction format - Instruction Set of 8085 Microprocessor – Instruction Cycle – Timing Diagram – Op code Fetch Cycle – Memory Read Cycle for MOVE C, A & ADD M – Addressing Modes – Assembly Language Programming – Program to add and subtract two 8-bit numbers – Sort numbers by ascending and descending order.

Unit V Micro controllers   **(14 hrs)**

Microprocessor Vs Microcontroller – Applications of Microcontrollers (qualitative only) – INTEL 8051 Microcontroller – Features of 8051 Microcontroller - Pin out of 8051Microcontroller - Architecture of INTEL 8051 Microcontroller - Addressing modes – 8051 Instruction execution – 8051 Instruction set – Data transfer Instructions – Arithmetic Instructions – Logic Instructions – Control transfer/Program control – 8051Microcontroller program to add two 16 bit numbers – 8051 Microcontroller program to find the maximum number from a given ten 8-bit numbers.

* Self study unit
Books for Study:

1. Digital Principles and Applications   : A.P Malvino & D.P.Leach, TataMcGraw Hill Edn., Pvt., Ltd, New Delhi 7th Edition, 2011.

2. Introduction to Microprocessors   : Aditya .P.Mathur, TataMcGraw Hill edn., Pvt.Ltd, New Delhi, 3rd Edition, 32nd Reprint 2010.

3. Advanced Microprocessor and   : Prof.S.K.Venkataram, University
   Microcontroller   Science Press, Chennai, 1st Edition, 2002, Reprint 2008.

Books for Reference:

1. Electronic Principles and Applications   : A.B.Bhattacharya, New Central Book Agency (P) Ltd, 2006.

2. Microprocessor Architecture, Programming : Ramesh Gaonkar, Penram
   And applications with the 8085   International Publishing (India) Pvt.,Ltd, 5th Edition, 2010.

M.Sc Physics
Semester II
Elective II - Nano science and Nanotechnology II   15MPE2

Credits: 4   **Hours: 60(C-50, A-5, S-5)**

Preamble:

Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes (CNTs).

Objectives:
- To gain knowledge about different analysis techniques
- understand the inner concepts of Nanoscience towards material behavior
- To learn and appreciate the technology involved in the applications of Nanomaterials

Learning outcome:
- Able to develop interpretation skills in the characterization of Nanomaterials
- Appreciate the technology involved in the applications of Nanomaterials in the field of nano electronics, Nano medicine
- Gain knowledge about different kinds of sensors and sensing materials
- Applications nanoparticles in the field of textiles and in water and air purification

Unit I Analysis techniques-I   **(10 hrs)**

Microscopes: Optical Microscopes- Confocal optical Microscope-Scanning Probe Microscopy (SPM): Introduction-Basic principle of SPM techniques-Scanning Tunneling Microscope: tunneling current-Local density of states – Applications-General concept and defining characteristics of AFM: Scanned proximity probe microscopes-Laser beam deflection-AFM cantilevers-Piezoceramics-Feedback loop-Alternative imaging modes.

Unit II Analysis techniques-II   **(10 hrs)**

Electron microscopy: Introduction-Resolution vs magnification-Scanning Electron Microscope-SEM techniques-Electron gun-Specimen interaction- Applications-Transmission Electron Microscope-High resolution TEM.

Diffraction techniques: X-ray diffraction – Atomic Scattering factor –Bragg's law diffraction- Diffraction from different types of samples – Crystal structure factor-Diffraction from nanoparticles-X-ray diffractometer.

Unit III Nanoelectronics **(10 hrs)**

Quantum Electronic Devices: Upcoming Electronic Devices - Electrons in Mesoscopic structures - Examples of Quantum Electronic Devices: Short Channel MOS transistor - Split Gate transistor - Quantum Cellular Automata - Tunneling Element: Tunneling Diode - Resonant Tunneling Diode- Principle of the Single Electron Transistor: The coulomb Blockade- Performance of the Single Electron Transistor - SET Circuit Design: Wiring and Drivers.

Unit IV Nanosensors and Nanomedicine **(10 hrs)**

Nanosensors: Types of Nano sensors- Carbon Nano Tube based Sensors - Nanowire sensors- Polymeric Nano fibers, Nano composites- Nanoparticles- Nano sensors in space- Nano pressure sensor- Physical sensor – Bio sensors - Gas sensing Mechanism of semiconductors.

Metal Nanoparticles in optical detection and imaging - Quantum Dots: Semiconductors of Light- Photo physics of QDs and its Relevance in Diagnosis- Quantum Dots for Cancer Diagnosis and Therapy- Magnetic Nanoparticles for Imaging and Therapy - Toxicity of nanoparticles - Gold nanoparticles.

*Unit V Nanotechnology in Textiles and Water purification **(10 hrs)**

Characteristics of nano finishing in garments – Functional, intelligent and smart textiles - Waterproof Textiles – Breathable Textiles - UV Protection Textiles - Odor Control Textiles – Anti-Static Textiles - Anti-Bacterial Textiles - Dust Free Textiles – Stain Resistant Textiles.
Water cleaning and purification- Air cleaning and purification- soil Remediation.

* Self study unit

Books for study:

1. Introduction to NanoScience and Nanotechnolgy : K.K.Chattopadhyay and A.N Banerjee, PHI Learning Private Ltd., New Delhi, First Edition, 2009.

2. Nano The essentials : T.Pradeep, Tata McGraw-Hill Education Private Ltd, 4 th reprint, 2010

3. Nano Electronics and Nano systems : K.Goser, P.Glosekotter, J,Dienstuhl, Springer International Edition, 3rd Edition, 2009.

4. Nanotechnology: Technology Revolution of 21st Century : Er. Rakesh Rathi, S.Chand &Company Ltd, First Edition, 2009.

5. Bio-Nanotechnology : Madurai Sharon, Maheswar Sharon, Sunil Pandey, Goldie Oza. Ane Books Pvt Ltd, New Delhi, 2012.

6. Nanomaterials:Nanotechnologies : Michael F Ashby, PauloJ.Ferreira,David L

and Design   Schaaek, BH Publishers,2011.

Books for Reference:
1. Nano computing   : Vishal Sahani, Debabrata Goswami
                                                   Tata McGraw Hill Publications, 2008.

2. Nano Enables Sensors   : Kourosh Kalantar-zadeh, Benjamin Fry
                                                   Springer Publications, 2008.

3. Chemical Sensors An Introduction for Scientists : Peter Gründler, Springer Publications,
   and Engineers   2007

4. Nanotechnology in Biology   : Tuan Vo-Dinh, CRC press,2007.
   and Medicine
5. Environment Applications of   : Glen E Fryxell, Guozhong Cao, Imperial
   nano materials   College press, 2012.

M.Sc. Physics
Semester III
Core IX - Quantum Mechanics II   **15MP09**

Credits: 4   **Hours: 75(C-65, A-5, S-5)**

Preamble

For a light wave the electro magnetic field strength oscillates in space. The energy of a light beam cannot be subdivided indefinitely. The observed light energy seems to occur in lumps called light quanta. How could it be that the energy of a wave cannot assume an arbitrary value but must be a multiple of definite quantum? The quantum concepts have the answer: The energy of a light wave is indeed quantized; this property was shown beyond any doubt.

Objective:

- To impart knowledge about the perturbation concepts of time dependency.
- To educate an understanding about the application of the approximation methods to quantum theory associated with the scattering and quantization of fields.

Learning Outcome:

- Students will learn to relate the classical and quantum field theories to energy and momentum
- Students will be able to apply quantum mechanical approximation methods to various physical problems such as scattering by a square well potential etc.

Unit I   Time Dependent Perturbation Theory   **(13 hrs)**

Time Dependent Perturbation Theory: Time development of states-Transition Probability: Fermi –Golden Rule-Harmonic Perturbation - Adiabatic Approximation-

Application of Time Dependent Perturbation Theory to semi classical theory of Radiation-Selection Rules.

Unit II   Approximation Methods   (13 hrs)

The Variation Method : Upper bound on ground state energy-Application to excited states-The Hydrogen Molecule -The WKB Approximation: The one dimensional Schrödinger equation: The Asymptotic solution-Solution near a turning point-Asymptotic connection formulae - The Bohr –Sommerfield quantum condition(energy levels of a potential well) - Tunneling through a Potential Barrier(eg. α -decay).

Unit III Scattering Theory   (13 hrs)

Kinematics of the scattering process: differential and total cross sections-Wave mechanical picture of scattering :The Scattering Amplitude-Green's functions ;formal expression for scattering Amplitude-The Born Approximation-Validity of the Born Approximation-The Born series-Partial wave analysis-Asymptotic behaviour of partial waves: Phase shifts: The Scattering amplitude in terms of Phase shifts- Exactly soluble problems: Scattering by a square well potential.

Unit IV Relativistic quantum Mechanics   (13 hrs)

Generalization of the Schrödinger equation-The klein Gordon equation: Plane wave solutions ,Charge and current densities-interaction with electromagnetic fields :Hydrogen like atom-Non relativistic limit-Dirac's equation: Dirac's relativistic Hamiltonian – Position probability density: Expectation values-Dirac matrices-The spin of the dirac particle-Significance of negative energy states: Dirac particle in electromagnetic fields-Electron in a magnetic field – Spin magnetic moment.

*Unit V Quantum field Theory   (13 hrs)

Quantization of fields-Quantization procedure for particles-Lagrangian formulation-Hamiltonian formulation-Quantum field equations-Quantization of Schrodinger equation (Non – Relativistic case)-Creation, Annihilation and number operators- Anti commutation Relation (Qualitative only) - Quantization of electromagnetic field energy and momentum.

* Self study unit

Books for Study:
1. A Text book of   : P.M. Mathews and K. Venkatesan, Tata
    Quantum Mechanics   McGraw Hill, Second edition, 6th reprint, 2013.
    (Unit II, III and IV)
2. Quantum Mechanics   : Sathya Prakash and Swati Saluja, Kedar Nath Ram
    (Unit I)   Nath & Co, 2010 edition.

3. Quantum Mechanics   : Gupta, Kumar, Sharma, Jai Prakash Nath & Co,
    (Unit V)   Meerut, 2010 edition.

Books for Reference:

1. Quantum Mechanics : L.I. Schiff, TataMcGraw Hill, 4th Edition,1968.

2. Introduction to
   Quantum Mechanics : David J.Griffths, Pearson, 2nd edition 2014.

3. Quantum Mechanics : A.K. Ghatak and S. Loganathan,
   Mc-Millan India, 5th Edition.

M.Sc Physics
Semester III
Core XII - Nuclear and Particle Physics   15MP12

Credits: 4   **Hours: 60 (C-50, A-5, S-5)**

Preamble:
         The objective of this paper is to give a brief introduction to structure and general properties of nuclei, to impart the knowledge about the nuclear models and theoretical predictions of radioactive particles. A deep discussion on nuclear reactions and elementary Particle Physics has been included in view of current development in this area.

Objectives:
- To impart the in-depth knowledge in concepts and theories of nuclear structure and reactions.
- To gain knowledge about the elementary particles and Quark model.

Learning outcome:
- Exposure to the High Energy Particle Physics which is the current area of research in Physics.
- Expected to generate an interest in the research area.

Unit I Nuclear Structure and General Properties of Nuclei   (10 hrs)
         Nuclear mass and Binding Energy – Systematic of nuclear binding energy – Nuclear Size – Measurement of charge radius: Electron Scattering Method – Mirror nucleus method – Nuclear spin – Parity of nuclei – Magnetic dipole moment of nuclei – Electric Quadrupole moment - Isospin**.**

*Unit II Nuclear Models   (10 hrs)
         Liquid Drop Model – Bethe-Weizsacker Formula – Shell Model: Evidence for the existence of magic numbers – Single particle model – Predictions of the shell model – Individual

Particle Model - Collective Model: Vibrational Spectra and Rotational Spectra- Electric quadrupole moments for strongly deformed nucleus – Nilsson's Unified Model.

Unit III Radioactivity (10 hrs)

Alpha Decay – Range of α-particles – Stopping Power - α-disintegration Energy – Range-Energy Relationship for α-particles – Geiger-Nuttal law – The α-spectrum and fine structure – Gamow's theory of α-decay and Transmission coefficient.

Beta Decay – Continuous β-ray spectrum and Pauli's Neutrino hypothesis – Violation of parity conservation in β-decay – Fermi's theory of β-decay – Selection Rules.

Gamma Decay – Passage of γ-rays through matter – Determination of γ-ray energy: Scintillation Spectrometer Method – Internal Conversion.

Unit IV Nuclear Reactions (10 hrs)

Types of Nuclear Reactions – Conservation laws in Nuclear Reactions – Energetics of Nuclear Reactions – Cross Section of Nuclear Reaction – Compound Nucleus hypoythesis- Discrete levels of the compound nucleus: Breit-Weigner one level formula.

Unit V Elementary Particles (10 hrs)

Classification of Elementary Particles – Conservation laws – Symmetry classification of elementary particles: SU_2 and SU_3 symmetry – Quark Hypothesis – Quark Model – Quark Structure of Mesons and Baryons –Experimental supports for the Quark Model - Quantum Chromo dynamics (QCD) – Charmed Quark – Beauty and Truth - Grand Unified Theory- String theory (Qualitative idea only).

* Self study unit

Books for Study:

1. Nuclear and Particle Physics : S.L.Kakani and Shubhra Kakani, Vinod Vasishtha for Viva Books Private Limited, New Delhi, First Edition 2008.

2. Atomic and Nuclear Physics : S.N.Ghoshal, S.Chand & Company Ltd, New Delhi, First Edition 1994.

3. Nuclear Physics : D.C.Tayal, Himalaya Publishing House, Bombay

Books for Reference:

1. Nuclear Physics : R.C.Sharma, K.Nath & Co. Educational Publishers, Meerut, Fifth Revised Edition 2004.

2. Nuclear Physics : S.B.Patel, Wiley Eastern Limited, New Delhi.

3. Introduction to Nuclear and 3.Particle Physics : V.K.Mittal, R.C.Verma and S.C.Gupta, PHI Learning Private Limited, New Delhi

4. Nuclear Physics : Irving Kaplan, Narosa Publishing House, New Delhi, Fifth Reprint 1992.

2009.

M.Sc Physics
Semester III
Elective III - Analog and Digital Communications   15MPE3

Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Preamble:

The branch of Communication Electronics and Systems has become the most important area in Science and Technological developments. The signals communicated in the digitalized form require a very narrow band for operation. The development in the Broadband communication, Satellite Communication and Mobile Communication are the visible areas where we are able to visualize a significant success. The Softwares that are used for coding the digital signals has become more important during handling in terms of safety and security in the communication systems. This paper will be able to provide a broad view in analog and digital communications in the above areas.

Objectives:

- To educate about the various communication techniques and their features including Broadband and Mobile communication systems.
- To allow an understanding of their practical applications in our day-today life

Learning Outcome:

- Students will acquire a knowledge of Analog and Digital Communication techniques, the advantages of Digital over Analog systems, their flexibility etc.
- A familiarity in Wireless applications using mobile network and Broadband and Satellite communication can be achieved.

Unit I Antennas and Wave Propagation   **(13 Hrs)**

Antennas: Basic considerations- Wire radiator in Space-Terms and Definitions-Effects of Ground on Antennas-Directional high frequency Antennas: Dipole Arrays - Non resonant Antennas-The Rhombic-UHF and Microwave Antennas: Antennas with Parabolic reflectors-Wideband and Special-purpose Antennas: Discone Antenna -Propagation of Waves: Ground waves, Sky waves, Space Waves.

Unit II Modulation Techniques   **(15 hrs)**

Theory of Amplitude Modulation Techniques: Amplitude Modulation Technique, DSBSC, SSB, VSB – Generation of Amplitude Modulated Signals: Generation of AM Signal, Generation of DSBSC Signal: Balanced Modulator – Theory of Angle Modulation Techniques: Frequency Modulation, Phase Modulation- Radio Transmitter: AM Transmitters, FM

Transmitters (block diagram only) – Receiver Types: Super heterodyne Receiver - FM Receivers (block diagram only).

Unit III Digital Data Communications (14 hrs)

Introduction-Basic Digital communication system: ASK-Coherent ASK detector- Non-Coherent ASK detector- FSK- Demodulation of binary FSK wave-Detection of FSK using PLL-PSK-Detection of binary PSK waves-Differential PSK(DPSK) - M-ary PSK -M-ary PSK Transmitter-M-ary PSK Receiver-Elements of Digital Communication System- Advantages of digital communication.

Unit IV Broad-Band Communications (12 hrs)

Time Division multiplexing- Frequency division multiplexing- Computer communication systems- Microwave communication links - Line of Sight - Integrated Service Digital Network (ISDN)-Local Area Network (LAN) -LAN Topologies. Satellite Communications: Introduction-Satellite Communication System - Satellite Orbits - Basic Components of Satellite Communication-Constructural Features-Commonly used frequencies-Multiple access: FDMA, TDMA - Satellite Communication in India.

Unit V Mobile and Wireless Communications (11 hrs)

Telecommunication systems: GSM: Mobile services-System Architecture-Radio Interface-Protocols- Handover- Security-New data services (GPRS qualitative only)-Mobile IP: Goals, assumptions and Requirements- Entities and Terminology-IP Packet Delivery- Mobile TCP - Wireless Application Protocol(WAP): Architecture-Wireless application environment.

Books for Study:

1. Electronic Communication Systems   : George Kennedy, Bernard Davis,
   (Unit I and II)   S.R.M. Prasanna, Tata Mcgraw Hill
                                            Education Pvt Ltd, 2012.
2. Principle of Communication Engineering   : Anokh Singh, A.K.Chhabra,
   (Unit III and IV)   S.Chand& Company, 2013.

3. Mobile Communications   : Jochen H.Schiller, Pearson
   (Unit V)   Publications Pvt.ltd, Second edition, 2003.

Books for Reference:

1. Analog and Digital communication   : J.S.Katre, Macmillan Publishers, 2011

2. Wireless Digital Communications
    Modulation and Spread spectrum
    Applications   : Dr. Kamilo feher, Prentice- Hall publishers.

3. Communication Systems   :Simon Haykin, Wiley Publications, 2013

Curriculum Framework for the students admitted in the academic year 2015-2016

Department of Physics

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
Affiliated to Bharathiar University
Department of Physics
M.Sc Physics
Scheme of Examination – CBCS Pattern

Semester	Course Code	Course Title	Ins. hours	Examination				Credits
				Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
I	15MP01	Core I - Classical Mechanics	5	3	25	75	100	4
	15MP02	Core II - Mathematical Physics I	5	3	25	75	100	4
	15MP03	Core III - Modern optics	4	3	25	75	100	4
	15MP04	Core IV - Semiconductor Circuits and Applications	5	3	25	75	100	4
	15MPP1	Practical I	6	4	40	60	100	4
	15MPE1	Elective I: Nano science and Nanotechnology I	5	4	25	75	100	4
II	15MP05	Core V - Mathematical Physics II	5	3	25	75	100	4
	15MP06	Core VI - Quantum Mechanics I	5	3	25	75	100	4
	15MP07	Core VII - Condensed Matter Physics	4	3	25	75	100	4
	15MP08	Core VIII - Digital Electronics and Microprocessors	4	3	25	75	100	4
	15MPP2	Practical II	6	4	40	60	100	4
	15MPE2	Elective II - Nano science and Nanotechnology II	4	3	25	75	100	4
	15MGCS	Cyber Security	2	2	50	-	Grade	Grade

	15MPA1	Advanced Learner's Course I - Astrophysics		3	-		100	4*
III	15MP09	Core IX - Quantum Mechanics II	5	3	25	75	100	4
	15MP10	Core X - Electromagnetic Theory	5	3	25	75	100	4
	15MP11	Core XI - Molecular Spectroscopy	5	3	25	75	100	4
	15MP12	Core XII - Nuclear and Particle Physics	4	3	25	75	100	4
	15MPP3	Practical III	6	4	40	60	100	4
	15MPE3	Elective III - Analog and Digital Communications	5	3	25	75	100	4
	15MPIS	Internship/ Summer Fellowship			75	75	150	6
IV	15MPPV	Project and Viva-voce			150	150	300	12
	15MPA2	Advanced Learner's Course II - Plasma Physics		3			100	4*
		Total					**2250**	**90**

M.Sc Physics
Semester I
Core II - Mathematical Physics I   **15MP02**

Credits: 4   **Hours: 75 (C-60, S-5, Tu-5, A-5)**

Preamble for Mathematical Physics I & II:
For proper understanding of the concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, thorough knowledge in Differential equations, Tensors, Complex Variables is required. Therefore Mathematical Physics I &II are introduced as Core Papers in I & II Semesters.

Objectives:
- To gain knowledge in the field of tensors, group theory, complex variables and Probability etc.

- To impart knowledge in numerical analysis to solve problems of differential equations, simultaneous equations etc.
- To expose the students about the differential equations and special functions.

Learning outcome:
- Able to solve the physical problems using partial differential equations
- Able to apply Laplace and Fourier transforms to periodical wave functions

Unit I Tensors (12 hrs)

n dimensional space – Superscripts and subscripts – Coordinate transformation – Kronocker delta symbol– Scalars , Contra variant Vectors and Covariant Vectors –Tensors of Higher ranks - Algebraic operations of Tensors - Symmetric and Anti symmetric tensors – Invariant tensors $g_{\mu\nu}$, $g^{\mu\nu,}$ g^{μ}_{ν} – Conjugate or Reciprocal Tensors – Relative and Absolute Tensors – Line element:Metric tensors – Fundamental Tensors – Christoffel's 3 index symbols – Transformation laws of Christoffel's symbols.

Unit II : Group Theory (12 hrs)

Concept of a group – Abelian group – Generators of a finite group – cyclic group – subgroups – co-sets – Conjugate elements and classes – Conjugates sub-groups, Normal sub-groups and factor groups: Conjugate sub-groups - Isomorphism and Homomorphism – Permutation groups – Cayley's thorem – The group of symmetry of an equilateral triangle – group of symmetry of a square – Reducible and Irreducible Representations – Some important theorems on representations - The Orthogonality theorem – Symmetry group of Schrodinger equation – The unitary group.

Unit III Laplace Transforms (12 hrs)

Definition of Laplace Transform – Properties of Laplace Transforms: Linearity Property – Change of scale property - First Translation property and second translation property – Derivative of Laplace Transform – Laplace Transform of the Derivative of a function –Laplace Transform of integral

Laplace Transform of Periodic Functions: Saw tooth wave – Square wave- Half wave rectifier- Inverse Laplace Transform – Properties of inverse Laplace transform: Linearity Property – change of scale property - First translation property – second translation property – Convolution theorem.

Application of Laplace Transforms to Differential equations: ordinary differential equation with constant coefficients – ordinary differential equation with variable coefficients.

* Unit IV : Fourier series and Fourier Transform (12 hrs)

Fourier series – Evaluation of the coefficients of Fourier series – Drichlet's conditions – Problems - Complex form of Fourier series – Fourier series in the interval (0,T) Fourier Transform – Fourier Sine and Cosine Transforms – Properties of Fourier transform – Fourier transform of a derivative.

Unit V : Partial Differential Equations in Physics (12 hrs)

Introduction – Solution of Partial differential equations by the method of separation of variables - Solution of Laplace's equation in Cartesian coordinates - Diffusion equation or

Fourier equation of heat flow – The equation of motion for the vibrating string – D' Alembert's Solution – Fourier series solution – Oscillations of hanging chain – Vibrations of a rectangular membrane

* Self study unit

Book for Study:
   1. Mathematical Physics   : Sathyaprakash Sultan Chand & sons,
                                                  5th Revised Edition, 2011.

Books for Reference:
   1. Mathematical Physics   : B.D.Gupta, Vikas Publishing House , 4th
                                           Edition, 2010.

   2. Applied Mathematics for   : Pipes Louis A and Harvill Lawerence,
       Engineers and Physicists   McGraw Hill Publishers

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M.Sc Physics
Semester I
Core IV- Semiconductor Circuits and Applications   **15MP04**

</div>

Credits: 4   **Hours: 75 (C-65, S-4, Tu-3, A-3)**

Preamble:
        The field of electronics has become the most important branch of science and engineering in our society. It is this field in which rapid developments are taking place every day. The electronic devices and gadgets are being used in almost all industries for quality control and automation. Because of growing applications of electronics, in almost all fields, the students of science disciplines have to be taught electronics both at the UG level and PG level.

Objectives:
- To educate about the various electronic devices and their characteristics
- To allow an understanding of their practical applications in our day-today life.

Learning outcome:
- Students will be able to understand the role of semiconductors in the construction of electronic devices which is so vital in our day-today life.
- Students will be able to gain knowledge about the type of electronic devices and the circuits by which they are connected.
- Students will be able to appreciate the applications of the devices.

Unit I Diodes and Thyristors   **(13 hrs)**

        Introduction – Tunnel diode – Diode parameters – Applications – Photo diodes – Characteristics – Applications – Photoconductive cells – Characteristics – Applications – Liquid crystal display – Solar cells – Thermistors – Applications – Silicon Controlled Rectifiers (SCR) –

SCR characteristics and rating – Applications – Temperature controller – Light activated SCR – Diac – Diac in proximity detector – Triac – Triac in Phase (power) control – UJT - Characteristics.

Unit II Field Effect Transistors   (13 hrs)

JFET- Construction and operations –characteristics of JFET: Drain characteristics – effect of Gate to source voltage on Drain Characteristics-Transfer Characteristics-Specification sheet of JFET– JFET - parameters – Comparison between FET and BJT –MOSFETs–Depletion type MOSFET-Construction and operation –Characteristics of Depletion type MOSFET – Enhancement type MOSFET – Construction, operation and characteristics of Enhancement MOSFET-Advantages of N-channel over P-channel MOSFETs –MOSFET handling – CMOS VMOS.

Unit III FET Amplifiers   (13 hrs)

Biasing the FET – Gate bias- self bias- setting a Q-point- setting a Q-point using load line – Voltage divider bias – Current source bias – FET Amplifier – Common Source Amplifier – Analysis of Common Source Amplifier – Effect of AC load on Amplifier Parameters – Effect and external source resistance on voltage gain – FET Amplifier**:**Low frequency response – High frequency response– Enhancement MOSFET amplifier – Motion detecting system using JFET.

Unit IV   Oscillators   (13 hrs)

Comparison between an amplifier and an oscillator – Barkhausen criterion – FET Hartley oscillator – FET Colpitt's oscillator – Principle of RC oscillator – FET Phase shift oscillator – Wien bridge oscillator – Non sinusoidal oscillator – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger – Blocking oscillator – UJT Relaxation oscillator.

Unit V Operational Amplifiers (OP AMPs)   (13 hrs)

The Ideal OP-AMP – Inverting, Non–Inverting & Differential Amplifiers –Input offset voltage – Input offset current – CMRR - OP-AMP Characteristics - Open Loop Input Output Characteristics – Frequency Response and Slew rate – OP-AMP Applications **:** Adder, Subtractor, Integrator, Differentiator – Comparator – Voltage to Current Converter – Current to Voltage Converter – Electronic Analog Computation**.**

* Self study unit

Books for study:
1. A Text book of Applied Electronics   : R.S.Sedha, S.Chand and Company,
                                              New Delhi, Revised Edition 2006,
                                              Reprint 2010.

2. Electronic Devices and Circuit theory   : Robert L.Boylestad and Louis Nashelsky,
                                              Pearson education Inc., Prentice hall,
                                              9th Edition, 2008.

3. OP-AMPs & Linear Integrated Circuits   : Ramakant A.Gayakwad, Prentice Hall of
   (Unit V)   India Private Ltd., New Delhi, 4th Edition,
                                            2002.
4. Linear Integrated circuits   : D.Roy Choudhury and Shail Jain, New
                                            Age International (P) Ltd., Publishers, New
                                            Delhi, 10th Reprint,1997.

Books for Reference:
1. Basic electronics – Solid state   : B.L.Theraja, S.Chand & Co. Ltd, New
                                            Delhi, Reprint 2010.

2. Integrated Electronics: Analog and   : Jacob Millman, Christos C. Halkias,
   Digital Circuits and Systems   McGraw Hill International Book Company,
                                            24th Printing, 1982.

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M.Sc Physics
Semester I
Elective I - Nano science and Nanotechnology I   15MPE1

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Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Preamble:
        Nanotechnology – The new technological revolution with polarizing views, inspiring
world vision of transformation and stimulation to develop new tools that can touch all aspects of
human society. Nanotechnology has the potential to provide the solution to global challenges that
we face such as human health care, energy crisis, climate change and environmental pollution
etc.
        Nanotechnology mainly consists of the processing of separation, consolidation and
deformation of materials by one atom or molecule.
        The major development in the Nanotechnology and Nanoscience started from the birth of
cluster science and invention of Scanning Tunneling Microscope (STM) which led to the
development of Carbon NanoTubes(CNTs).

Objectives:
  - To understand the inner concepts of Nanoscience towards material behavior
  - To learn the technology involved in the fabrication of Nanomaterials

Learning Outcome:
  - Able to understand different synthesis routes of nano materials
  - Able to appreciate new nano materials

Unit I Basics for Nanoscience   (13 hrs)

        Definition of Nanoscience and Nanotechnology-Band structure and density of states:
Energy bands-Density states of low dimensional structures-size effects in smaller systems (Pre
quantum) - Quantum behavior of nanometric world: Bohr model of hydrogen atom-Infinite
potential well: Confined particle in1D- Potential step: Reflection and tunneling (quantum leak)-

Potential box: Trapped particle in 3D(Nanodot)-Electron trapped 2D plane (Nano sheet)-Electrons moving in 1D:Nanowire-Quantum confinement in nano materials.

Unit II Synthesis of Nanomaterials – Chemical methods   (13 hrs)

2D, 1D and 0D materials-Top Down and Bottom up Techniques for synthesis of Nanomaterials– Colloids and Colloids in Solutions- Synthesis of colloids- Growth of nanoparticles(LaMer diagram) - Langmuir-Blodgett Method- Sol-Gel Method – Hydrothermal synthesis - Sonochemical synthesis - Microwave synthesis.

Unit III Synthesis of Nanomaterials –Physical methods   (13 hrs)

Mechanical methods: High Energy Ball Milling method-Methods based on evaporation: Physical vapour deposition- pulsed laser deposition-sputter deposition: DC,RF,Magnetron sputtering- Chemical vapour deposition, Molecular Beam Epitaxy.

Unit IV Lithographic techniques and Properties of Nanomaterials   (13 hrs)

Lithiography using photons(UV-Vis, Lasers or X-rays)-Electron beam lithography- Dip pen lithiography, Optical scanning probe lithiography.
Surface to volume ratio at Nanoscale – Mechanical properties -Thermal Properties –Electrical properties-Magnetic properties – Optical properties-

* Unit V Special Nanomaterials   (13 hrs)

Carboneous Nanomaterials: Fullerene – Carbon Nano Tubes: SWNT, MWNT – Types of Carbon Nano Tube: armchair, zigzag, helical CNT's– Synthesis of CNT – Growth mechanism-Properties of CNT- Graphene- Porous Silicon- How to make a porous silicon- Mechanism of pores formation-Factors affecting the porous structure of porous silicon- Properties of Porous Silicon – Aerogels - Zeolites –Quantum dots.

* Self study unit

Books for Study:
1. Nanotechnology   : Sulabha K Kulkarni, Capital publishing
   Principles and Practices   Company, New Delhi, 2nd edition, 2011.

2. Introduction to NanoScience and   : K.K.Chattopadhyay and A.N Banerjee,
   Nanotechnolgy   PHI Learning Private Ltd., New Delhi,
                                              First Edition, 2009.
3. Nanomaterials , Nanotechnologies   : Micheael F.Ashby, Pauloj. Ferreira,
     And Design   Daniel L. Schodel, First Printed in India
                                              2011, Elsevier India Pvt. Ltd.

Books for Reference:

1. Nanotechnology   : Mick Wilson, Kamali Kannangara, Geoff
   Basic Science & Emerging Technologies Smith,Michelle Simmons and Burkhard
                                              Raguse Overseas Press India Pvt.Ltd,

Reprint 2008.

2. Introduction to   : Charles P. Poole Jr. and Frank J. Owens, A
   Nanotechnology   John, Wiley Sons, INC., Publication, 2003.

3. Nanotechnology: An introduction   : Michael Kohler and Wolfgang Fritzsche,
   to Nanostructuring Techniques   Wiley-VCH Verlag GmbH& Co. KCaA,
                                              2004.
4. Text book of Nanoscience and   : B.S.Murthy, P.Shankar, Baldevraj,
   Nanotechnology   B.B.Rath and James Murday, University
                                              Press Reprint 2013.

M.Sc Physics
Semester II
Core VIII - Digital Electronics and Microprocessors   15MP08

Credits: 4   **Hours: 75 (C-60, Tu-5,S-5, A-5)**

Preamble:

        In the modern world of electronics the term digital is often associated with computers. It
is certainly difficult to think of an area of life today that is not influenced in one way or other by
digital computers. The availability of the computational power is directly converted into the
development of the digital fundamental circuits. The digital ICs which are smaller, faster, more
economical and more powerful offer a great number of applications. Today digital circuits and
systems can be found almost in every field.

        An introduction to the field of digital electronics and microprocessors with a number of
applications are intended to provide a strong background in the digital data manipulations.

Objectives:

- To impart the basic concepts of digital principles and digital circuits
- To facilitate an understanding of the applications of digital data manipulating
  systems such as Microprocessors and Microcontrollers.

Learning Outcome:

- Students will learn about digital data processing circuits and sequential circuits.
- Students will learn to write programs for microprocessors and microcontrollers
  and also their supportive peripheral interfaces (hardware).

Unit I Data Processing Circuits (Or) Digital Data Circuits   **(10 hrs)**

        Logic Gates – Boolean Algebra and De-Morgan's Theorem – Sum of Products Method –
Karnaugh's Map and Simplifications – Half Adder , Full Adder – Half Subtractor, Full
Subtractor – Binary Adder/Subtractor – Multiplexer – (16-1) Multiplexer – Demultiplexer –
(1-16) Demultiplexer – Parity generators/ checkers.

Unit II Flip Flops and Registers   **(12 hrs)**

        RS Flip Flop- Clocked RS Flip Flop – D Flip Flop – Edge Triggered D-Flip Flop - JK
Flip Flop – JK Master Slaved Flip Flop – 555 Timer Astable - 555 Timer Monostable - Types of

Registers – Serial-in Serial-out – Serial-in Parallel-out – Parallel-in Parallel-out – Parallel-in Serial-out.

Unit III Counters and Memories   (12 hrs)

Types of Counters – Asynchronous and Synchronous Counter –   MOD-5 and Decade Counters – Ring Counters – Digital to Analog Converter: Binary Ladder Method – 4 bit Digital to Analog converter –Analog to Digital converter: Successive Approximation Method – Memory: ROMs, PROMs, EPROMs and EEPROMs – RAMs : SRAM and DRAM.

Unit IV Microprocessors   (12 hrs)

Intel 8085 Microprocessor – Architecture – Pin Configuration – Instruction format - Instruction Set of 8085 Microprocessor – Instruction Cycle – Timing Diagram – Op code Fetch Cycle – Memory Read Cycle for MOVE C, A & ADD M – Addressing Modes – Assembly Language Programming – Program to add and subtract two 8-bit numbers – Sort numbers by ascending and descending order.

Unit V Micro controllers   (14 hrs)

Microprocessor Vs Microcontroller – Applications of Microcontrollers (qualitative only) – INTEL 8051 Microcontroller – Features of 8051 Microcontroller - Pin out of 8051Microcontroller - Architecture of INTEL 8051 Microcontroller - Addressing modes – 8051 Instruction execution – 8051 Instruction set – Data transfer Instructions – Arithmetic Instructions – Logic Instructions – Control transfer/Program control – 8051Microcontroller program to add two 16 bit numbers – 8051 Microcontroller program to find the maximum number from a given ten 8-bit numbers.

* Self study unit
Books for Study:

1. Digital Principles and Applications   : A.P Malvino & D.P.Leach,
    TataMcGraw Hill Edn., Pvt., Ltd,
    New Delhi 7th Edition, 2011.

2. Introduction to Microprocessors   : Aditya .P.Mathur, TataMcGraw
    Hill edn., Pvt.Ltd, New Delhi, 3rd
    Edition, 32nd Reprint 2010.

3. Advanced Microprocessor and   : Prof.S.K.Venkataram, University
    Microcontroller   Science Press, Chennai, 1st Edition,
    2002, Reprint 2008.

Books for Reference:

1. Electronic Principles and Applications   : A.B.Bhattacharya, New Central
    Book Agency (P) Ltd, 2006.
2. Microprocessor Architecture, Programming : Ramesh Gaonkar, Penram
    And applications with the 8085   International Publishing (India)
    Pvt.,Ltd, 5th Edition, 2010.

M.Sc Physics
Semester II
Elective II - Nano science and Nanotechnology II   15MPE2

Credits: 4   **Hours: 60(C-50, A-5, S-5)**

Preamble:

Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes (CNTs).

Objectives:
- To gain knowledge about different analysis techniques
- understand the inner concepts of Nanoscience towards material behavior
- To learn and appreciate the technology involved in the applications of Nanomaterials

Learning outcome:
- Able to develop interpretation skills in the characterization of Nanomaterials
- Appreciate the technology involved in the applications of Nanomaterials in the field of nano electronics, Nano medicine
- Gain knowledge about different kinds of sensors and sensing materials
- Applications nanoparticles in the field of textiles and in water and air purification

Unit I Analysis techniques-I   (10 hrs)

Microscopes: Optical Microscopes- Confocal optical Microscope-Scanning Probe Microscopy (SPM): Introduction-Basic principle of SPM techniques-Scanning Tunneling Microscope: tunneling current-Local density of states – Applications-General concept and defining characteristics of AFM: Scanned proximity probe microscopes-Laser beam deflection-AFM cantilevers-Piezoceramics-Feedback loop-Alternative imaging modes.

Unit II Analysis techniques-II   (10 hrs)

Electron microscopy: Introduction-Resolution vs magnification-Scanning Electron Microscope-SEM techniques-Electron gun-Specimen interaction- Applications-Transmission Electron Microscope-High resolution TEM.

Diffraction techniques: X-ray diffraction – Atomic Scattering factor –Bragg's law diffraction- Diffraction from different types of samples – Crystal structure factor-Diffraction from nanoparticles-X-ray diffractometer.

Unit III Nanoelectronics   **(10 hrs)**

Quantum Electronic Devices: Upcoming Electronic Devices - Electrons in Mesoscopic structures - Examples of Quantum Electronic Devices: Short Channel MOS transistor - Split Gate transistor - Quantum Cellular Automata - Tunneling Element: Tunneling Diode - Resonant Tunneling Diode- Principle of the Single Electron Transistor: The coulomb Blockade- Performance of the Single Electron Transistor - SET Circuit Design: Wiring and Drivers.

Unit IV Nanosensors and Nanomedicine   **(10 hrs)**

Nanosensors: Types of Nano sensors- Carbon Nano Tube based Sensors - Nanowire sensors- Polymeric Nano fibers, Nano composites- Nanoparticles- Nano sensors in space- Nano pressure sensor- Physical sensor – Bio sensors - Gas sensing Mechanism of semiconductors.

Metal Nanoparticles in optical detection and imaging - Quantum Dots: Semiconductors of Light- Photo physics of QDs and its Relevance in Diagnosis- Quantum Dots for Cancer Diagnosis and Therapy- Magnetic Nanoparticles for Imaging and Therapy - Toxicity of nanoparticles - Gold nanoparticles.

*Unit V Nanotechnology in Textiles and Water purification   **(10 hrs)**

Characteristics of nano finishing in garments – Functional, intelligent and smart textiles - Waterproof Textiles – Breathable Textiles - UV Protection Textiles - Odor Control Textiles – Anti-Static Textiles - Anti-Bacterial Textiles - Dust Free Textiles – Stain Resistant Textiles.
Water cleaning and purification- Air cleaning and purification- soil Remediation.

* Self study unit

Books for study:

1. Introduction to NanoScience and   : K.K.Chattopadhyay and A.N Banerjee,
   Nanotechnolgy   PHI Learning Private Ltd., New Delhi,
                                                   First Edition, 2009.

2. Nano The essentials   : T.Pradeep, Tata McGraw-Hill Education
                                                   Private Ltd, 4 th reprint, 2010

3. Nano Electronics and Nano systems   : K.Goser, P.Glosekotter, J,Dienstuhl,
                                                   Springer International Edition, 3rd
                                                   Edition, 2009.

4. Nanotechnology: Technology   : Er. Rakesh Rathi, S.Chand &Company
   Revolution of 21st Century   Ltd, First Edition, 2009.

5. Bio-Nanotechnology   : Madurai Sharon, Maheswar Sharon, Sunil
                                                   Pandey, Goldie Oza. Ane Books Pvt Ltd,
                                                   New Delhi, 2012.

6. Nanomaterials:Nanotechnologies : Michael F Ashby, PauloJ.Ferreira,David L
   and Design Schaaek, BH Publishers,2011.

Books for Reference:
1. Nano computing : Vishal Sahani, Debabrata Goswami
   Tata McGraw Hill Publications, 2008.

2. Nano Enables Sensors : Kourosh Kalantar-zadeh, Benjamin Fry
   Springer Publications, 2008.

3. Chemical Sensors An Introduction for Scientists : Peter Gründler, Springer Publications,
   and Engineers 2007

4. Nanotechnology in Biology : Tuan Vo-Dinh, CRC press,2007.
   and Medicine
5. Environment Applications of : Glen E Fryxell, Guozhong Cao, Imperial
   nano materials College press, 2012.

<div align="center">

M.Sc. Physics
Semester III
Core IX - Quantum Mechanics II **15MP09**

</div>

Credits: 4 **Hours: 75(C-65, A-5, S-5)**

Preamble

For a light wave the electro magnetic field strength oscillates in space. The energy of a light beam cannot be subdivided indefinitely. The observed light energy seems to occur in lumps called light quanta. How could it be that the energy of a wave cannot assume an arbitrary value but must be a multiple of definite quantum? The quantum concepts have the answer: The energy of a light wave is indeed quantized; this property was shown beyond any doubt.

Objective:

- To impart knowledge about the perturbation concepts of time dependency.
- To educate an understanding about the application of the approximation methods to quantum theory associated with the scattering and quantization of fields.

Learning Outcome:

- Students will learn to relate the classical and quantum field theories to energy and momentum
- Students will be able to apply quantum mechanical approximation methods to various physical problems such as scattering by a square well potential etc.

Unit I   Time Dependent Perturbation Theory **(13 hrs)**

Time Dependent Perturbation Theory: Time development of states-Transition Probability: Fermi –Golden Rule-Harmonic Perturbation - Adiabatic Approximation-Application of Time Dependent Perturbation Theory to semi classical theory of Radiation-Selection Rules.

Unit II   Approximation Methods   **(13 hrs)**

The Variation Method : Upper bound on ground state energy-Application to excited states-The Hydrogen Molecule -The WKB Approximation: The one dimensional Schrödinger equation: The Asymptotic solution-Solution near a turning point-Asymptotic connection formulae - The Bohr –Sommerfield quantum condition(energy levels of a potential well) - Tunneling through a Potential Barrier(eg. α -decay).

Unit III Scattering Theory   **(13 hrs)**

Kinematics of the scattering process: differential and total cross sections-Wave mechanical picture of scattering :The Scattering Amplitude-Green's functions ;formal expression for scattering Amplitude-The Born Approximation-Validity of the Born Approximation-The Born series-Partial wave analysis-Asymptotic behaviour of partial waves: Phase shifts: The Scattering amplitude in terms of Phase shifts- Exactly soluble problems: Scattering by a square well potential.

Unit IV Relativistic quantum Mechanics   **(13 hrs)**

Generalization of the Schrödinger equation-The klein Gordon equation: Plane wave solutions ,Charge and current densities-interaction with electromagnetic fields :Hydrogen like atom-Non relativistic limit-Dirac's equation: Dirac's relativistic Hamiltonian – Position probability density: Expectation values-Dirac matrices-The spin of the dirac particle-Significance of negative energy states: Dirac particle in electromagnetic fields-Electron in a magnetic field – Spin magnetic moment.

*Unit V Quantum field Theory   **(13 hrs)**

Quantization of fields-Quantization procedure for particles-Lagrangian formulation-Hamiltonian formulation-Quantum field equations-Quantization of Schrodinger equation (Non – Relativistic case)-Creation, Annihilation and number operators- Anti commutation Relation (Qualitative only) - Quantization of electromagnetic field energy and momentum.

* Self study unit

Books for Study:
1. A Text book of   : P.M. Mathews and K. Venkatesan, Tata
    Quantum Mechanics   McGraw Hill, Second edition, 6th reprint, 2013.
    (Unit II, III and IV)
2. Quantum Mechanics   : Sathya Prakash and Swati Saluja, Kedar Nath Ram
    (Unit I)   Nath & Co, 2010 edition.

3. Quantum Mechanics   : Gupta, Kumar, Sharma, Jai Prakash Nath & Co,
    (Unit V)   Meerut, 2010 edition.

Books for Reference:

1. Quantum Mechanics   : L.I. Schiff, TataMcGraw Hill, 4th Edition,1968.

2. Introduction to
   Quantum Mechanics   : David J.Griffths, Pearson, 2nd edition 2014.

3. Quantum Mechanics   : A.K. Ghatak and S. Loganathan,
   Mc-Millan India, 5th Edition.

M.Sc Physics
Semester III
Core XII - Nuclear and Particle Physics   **15MP12**

Credits: 4   **Hours: 60 (C-50, A-5, S-5)**

Preamble:
       The objective of this paper is to give a brief introduction to structure and general properties of nuclei, to impart the knowledge about the nuclear models and theoretical predictions of radioactive particles. A deep discussion on nuclear reactions and elementary Particle Physics has been included in view of current development in this area.

Objectives:
- To impart the in-depth knowledge in concepts and theories of nuclear structure and reactions.
- To gain knowledge about the elementary particles and Quark model.

Learning outcome:
- Exposure to the High Energy Particle Physics which is the current area of research in Physics.
- Expected to generate an interest in the research area.

Unit I Nuclear Structure and General Properties of Nuclei   **(10 hrs)**

       Nuclear mass and Binding Energy – Systematic of nuclear binding energy – Nuclear Size – Measurement of charge radius: Electron Scattering Method – Mirror nucleus method – Nuclear spin – Parity of nuclei – Magnetic dipole moment of nuclei – Electric Quadrupole moment - Isospin**.**

*Unit II Nuclear Models   **(10 hrs)**

       Liquid Drop Model – Bethe-Weizsacker Formula – Shell Model: Evidence for the existence of magic numbers – Single particle model – Predictions of the shell model – Individual Particle Model - Collective Model: Vibrational Spectra and Rotational Spectra- Electric quadrupole moments for strongly deformed nucleus – Nilsson's Unified Model.

Unit III Radioactivity   (10 hrs)

Alpha Decay – Range of α-particles – Stopping Power - α-disintegration Energy – Range-Energy Relationship for α-particles – Geiger-Nuttal law – The α-spectrum and fine structure – Gamow's theory of α-decay and Transmission coefficient.

Beta Decay – Continuous β-ray spectrum and Pauli's Neutrino hypothesis – Violation of parity conservation in β-decay – Fermi's theory of β-decay – Selection Rules.

Gamma Decay – Passage of γ-rays through matter – Determination of γ-ray energy: Scintillation Spectrometer Method – Internal Conversion.

Unit IV Nuclear Reactions   (10 hrs)

Types of Nuclear Reactions – Conservation laws in Nuclear Reactions – Energetics of Nuclear Reactions – Cross Section of Nuclear Reaction – Compound Nucleus hypoythesis-Discrete levels of the compound nucleus: Breit-Weigner one level formula.

Unit V Elementary Particles   (10 hrs)

Classification of Elementary Particles – Conservation laws – Symmetry classification of elementary particles: SU_2 and SU_3 symmetry – Quark Hypothesis – Quark Model – Quark Structure of Mesons and Baryons –Experimental supports for the Quark Model - Quantum Chromo dynamics (QCD) – Charmed Quark – Beauty and Truth - Grand Unified Theory- String theory (Qualitative idea only).

* Self study unit

Books for Study:

1. Nuclear and Particle Physics   : S.L.Kakani and Shubhra Kakani, Vinod
                                                 Vasishtha for Viva Books Private Limited,
                                                 New Delhi, First Edition 2008.
2. Atomic and Nuclear Physics   : S.N.Ghoshal, S.Chand & Company Ltd,
                                                 New Delhi, First Edition 1994.
3. Nuclear Physics   : D.C.Tayal, Himalaya Publishing House,
                                                 Bombay

Books for Reference:

1. Nuclear Physics   : R.C.Sharma, K.Nath & Co. Educational
                                                 Publishers, Meerut, Fifth Revised Edition
                                                 2004.
2. Nuclear Physics   : S.B.Patel, Wiley Eastern Limited,
                                                 New Delhi.
3. Introduction to Nuclear and 3.Particle Physics : V.K.Mittal, R.C.Verma and S.C.Gupta,
                                                 PHI Learning Private Limited, New Delhi
                                                 2009.

4. Nuclear Physics : Irving Kaplan, Narosa Publishing House, New Delhi, Fifth Reprint 1992.

M.Sc Physics
Semester III
Elective III - Analog and Digital Communications   15MPE3

Credits: 4   **Hours: 75 (C-65, S-5, A-5)**

Preamble:

         The branch of Communication Electronics and Systems has become the most important area in Science and Technological developments. The signals communicated in the digitalized form require a very narrow band for operation. The development in the Broadband communication, Satellite Communication and Mobile Communication are the visible areas where we are able to visualize a significant success. The Softwares that are used for coding the digital signals has become more important during handling in terms of safety and security in the communication systems. This paper will be able to provide a broad view in analog and digital communications in the above areas.

Objectives:

- To educate about the various communication techniques and their features including Broadband and Mobile communication systems.
- To allow an understanding of their practical applications in our day-today life

Learning Outcome:

- Students will acquire a knowledge of Analog and Digital Communication techniques, the advantages of Digital over Analog systems, their flexibility etc.
- A familiarity in Wireless applications using mobile network and Broadband and Satellite communication can be achieved.

Unit I Antennas and Wave Propagation   **(13 Hrs)**

         Antennas: Basic considerations- Wire radiator in Space-Terms and Definitions-Effects of Ground on Antennas-Directional high frequency Antennas: Dipole Arrays - Non resonant Antennas-The Rhombic-UHF and Microwave Antennas: Antennas with Parabolic reflectors-Wideband and Special-purpose Antennas: Discone Antenna -Propagation of Waves: Ground waves, Sky waves, Space Waves.

Unit II Modulation Techniques   **(15 hrs)**

         Theory of Amplitude Modulation Techniques: Amplitude Modulation Technique, DSBSC, SSB, VSB – Generation of Amplitude Modulated Signals: Generation of AM Signal, Generation of DSBSC Signal: Balanced Modulator – Theory of Angle Modulation Techniques: Frequency Modulation, Phase Modulation- Radio Transmitter: AM Transmitters, FM

Transmitters (block diagram only) – Receiver Types: Super heterodyne Receiver - FM Receivers (block diagram only).

Unit III Digital Data Communications (14 hrs)

Introduction-Basic Digital communication system: ASK-Coherent ASK detector- Non-Coherent ASK detector- FSK- Demodulation of binary FSK wave-Detection of FSK using PLL-PSK-Detection of binary PSK waves-Differential PSK(DPSK) - M-ary PSK -M-ary PSK Transmitter-M-ary PSK Receiver-Elements of Digital Communication System- Advantages of digital communication.

Unit IV Broad-Band Communications (12 hrs)

Time Division multiplexing- Frequency division multiplexing- Computer communication systems- Microwave communication links - Line of Sight - Integrated Service Digital Network (ISDN)-Local Area Network (LAN) -LAN Topologies. Satellite Communications: Introduction-Satellite Communication System - Satellite Orbits - Basic Components of Satellite Communication-Constructural Features-Commonly used frequencies-Multiple access: FDMA, TDMA - Satellite Communication in India.

Unit V Mobile and Wireless Communications (11 hrs)

Telecommunication systems: GSM: Mobile services-System Architecture-Radio Interface-Protocols- Handover- Security-New data services (GPRS qualitative only)-Mobile IP: Goals, assumptions and Requirements- Entities and Terminology-IP Packet Delivery- Mobile TCP - Wireless Application Protocol(WAP): Architecture-Wireless application environment.

Books for Study:

1. Electronic Communication Systems   : George Kennedy, Bernard Davis,
   (Unit I and II)   S.R.M. Prasanna, Tata Mcgraw Hill
                                            Education Pvt Ltd, 2012.
2. Principle of Communication Engineering   : Anokh Singh, A.K.Chhabra,
   (Unit III and IV)   S.Chand& Company, 2013.

3. Mobile Communications   : Jochen H.Schiller, Pearson
   (Unit V)   Publications Pvt.ltd, Second edition, 2003.

Books for Reference:

1. Analog and Digital communication   : J.S.Katre, Macmillan Publishers, 2011

2. Wireless Digital Communications
   Modulation and Spread spectrum
   Applications   : Dr. Kamilo feher, Prentice- Hall publishers.

3. Communication Systems   :Simon Haykin, Wiley Publications, 2013

Curriculum Framework for the students admitted in the academic year 2014-2015

Department of Physics

M.Sc. Physics
Semester wise distribution with Scheme of Examination
(For the students admitted during the academic year 2014 – 2015)

Semester	Title of the Course	Credits	Instruction hours per week	Duration of Exam (ESE)	Marks		Total
					CIA	ESE	
I	Core I Classical Mechanics	4	6	3	25	75	100
	Core II Mathematical Physics	4	6	3	25	75	100
	Core III Condensed Matter Physics	4	6	3	25	75	100
	Practical I	4	6	4	40	60	100
	Elective I Electronic Devices, Circuits and Applications	3	6	3	25	75	100
II	Core IV Quantum Mechanics	4	6	3	25	75	100
	Core V Electromagnetic Theory	4	6	3	25	75	100
	Core VI Nano science and Nanotechnology I – Fundamentals	4	6	3	25	75	100
	Practical II	4	6	4	40	60	100
	Elective II Digital Electronics and Microprocessors	3	6	3	25	75	100
	Advanced Learner's Course I Astrophysics	4*	-	3	-	100	100

Semester	Title of the Course	Credits	Instruction hours per week	Duration of Exam (ESE)	Marks		Total
					CIA	ESE	
III	Core VII Nuclear and Particle Physics	5	5	3	25	75	100
	Core VIII Nano science and Nanotechnology II - Applications	5	5	3	25	75	100
	Core IX Molecular Spectroscopy	5	5	3	25	75	100
	Practical III	5	6	6	40	60	100
	Elective III : MATLAB (T & P)	3	4	4	25	75	100
	Internship / Summer Fellowship	5	5	-	-	-	100
IV	Core X Modern Optics	5	6	3	25	75	100
	Core XI Analog and Digital Communications	5	6	3	25	75	100
	Elective IV : Object Oriented Programming with C++	3	5	3	25	75	100
	Practical IV : Object Oriented Programming with C++	3	4	4	40	60	100
	Project & Viva voce	8	9	-	100	100	200
	Advanced Learner's Course II Plasma physics	4*	-	3	-	100	100

Total Credits : 90

M.Sc Physics – Semester I

Core II Mathematical Physics
Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   **QPC: 13MP02**

Preamble:
       For proper understanding of the concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, thorough knowledge in Differential equations, Tensors, Complex Variables is required. Therefore Mathematical Physics is introduced as Core Paper in the I Semester.

Objectives:
- To learn the computational techniques associated with the subject
- To perform the problem solving activity of the physical aspects effectively

Unit I Differential Equations and Special Functions   **(16 hrs)**
       Legendre Differential Equation and Legendre function – Generating function of Legendre Polynomials – Orthogonal properties of Legendre Polynomials – Bessel's Differential Equation and Bessel's function of first kind – Bessel's Half orders – Recurrence formulae for $J_n(x)$ – Hermite Differential Equation and Hermite Polynomials - Generating function of Hermite Polynomials – Recurrence formulae for Hermite Polynomials.

Unit II Laplace Transforms   **(16 hrs)**
       Definition of the Laplace Transform – Properties of Laplace Transforms: Linearity Property – First Translation property and second translation property – Change of scalar property – Laplace Transform of Derivatives – Derivatives of Laplace Transform – Laplace Transform of integrals – Initial and final value theorems.
       Methods for finding Laplace Transforms: Direct method – series expansion method – Method of Differential equations.
       Inverse Laplace Transform: Linearity Property – First translation property – second translation property – Convolution property.
       Application of Laplace Transforms to Differential equations – Applications of Laplace Transform to boundary value problems.

Unit III Fourier series, Integrals and Transforms   **(14 hrs)**
       Definition and Expansion of a function of x – Drichlet's conditions – Assumptions for the validity of Fourier's series expansion and its theorems – Complex representation of Fourier series – Problems.
       Convergence of Fourier series – Applications of Fourier series: Fourier series involving Phase Angles – Transverse Vibrations of a string – Fourier Transforms: Fourier Sine Transforms – Fourier Cosine Transforms - **Problems of direct applications.**

Unit IV Tensors   **(15 hrs)**
       Definition of Contra variant, Covariant and Mixed tensors – Algebraic operation of Tensors: Addition and Subtraction of Tensors – Equality of tensors – Outer product – Contraction of tensors – Inner product of tensors – Quotient law – Symmetric and Anti

symmetric tensors – Invariant tensors: Kronecker delta symbol, Levi-Civita symbol – Metric tensors – Christoffel's 3 index symbols – Relation between Christoffel's symbols of first and second kind.

Unit V Complex Variables and Group Theory   (14 hrs)

Complex Variables: Algebraic operation of Complex Numbers – Cauchy-Riemann Differential Equation – Cauchy's Integral theorem - Cauchy's Integral Formula – Laurent's series – Singularities of an Analytic function – Cauchy Residue theorem – **Problems.**

Group Theory: Concept of a group – Abelian group – Generators of finite group – cyclic group – subgroup – Isomorphism and Homomorphism – Reducible and Irreducible Representations – The Orthogonality theorem.

Book for Study:
1. Mathematical Physics   : B.D.Gupta, Vikas Publishing House , 4th Edition, 2010.

Books for Reference:
1. Mathematical Physics   : Sathya Prakash, Sultan Chand & sons, 5th Revised Edition, 2011.
2. Applied Mathematics for   : Pipes Louis A and Harvill Lawerence, Engineers and Physicists   McGraw Hill Publishers, 1946.

M.Sc Physics - Semester I

Elective I Electronic Devices, Circuits and Applications

Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   **QPC: 13MPE1**

Preamble:

The field of electronics has become the most important branch of science and engineering in our society. It is this field in which rapid developments are taking place every day. The electronic devices and gadgets are being used in almost all industries for quality control and automation. Because of growing applications of electronics, in almost all fields, the students of science disciplines have to be taught electronics both at the UG level and PG level.

Objectives:
- To educate about the various electronic devices and their characteristics
- To allow an understanding of their practical applications in our day-today life.

Unit I Diodes and Thyristors   (15 Hrs)

Introduction - Schottky diode – Characteristics – Tunnel diode – Diode parameters – Applications – Photo diodes – Characteristics – Applications – Photoconductive cells - Characteristics – Applications – IR emitters – Liquid crystal display – Solar cells – Thermistors – Applications – Silicon Controlled Rectifiers (SCR) – SCR characteristics and rating – Applications – Battery charging regulator – Temperature controller – Light activated SCR – Diac – Diac in proximity detector – Triac – Triac in Phase (power) control – UJT - Characteristics.

Unit II Transistors   **(18 Hrs)**

BJTs – Load line and operating point – Q- Point and maximum undistorted output – Voltage divider bias – Stability of voltage divider bias – Single stage BJT amplifier – Analysis and parameters of common emitter amplifier – Effect of A.C load on CE amplifier – Constant Current Source using BJT - Hybrid parameter – Determination and meaning – Amplifier expressions – Hybrid formulas for CE amplifier – Two stage RC coupled amplifier – Frequency response – Power amplifiers – performance parameters – A.C load line – Class B Amplifier – Push-Pull amplifier – Advantages – cross over distortion – efficiency – Feed back amplifier – Principle – Gain stability – Increased bandwidth – Decreased noise and distortion. – IC voltage regulators - **Problems of direct applications.**

Unit III Field Effect Transistors   **(15 Hrs)**

JFET operations and characteristics – JFET parameters – Setting Q-Point using D.C load line – Voltage divider bias in FET – FET common source amplifier – Low frequency and high frequency response - <u>Cascade configuration of JFET amplifier</u> - Depletion type MOSFET - operations and characteristics – Enhancement type MOSFET - operations and characteristics - MOSFET handling precautions – VMOS – CMOS – MESFETs – <u>Three channel audio mixer using JFET</u> – <u>Motion detection system using JFET</u> - **Problems of direct applications.**

Unit IV   Oscillators   **(12 Hrs)**

Comparison between an amplifier and an oscillator – Barkhausen criterion – FET Hartley oscillator – FET Colpitt's oscillator – Principle of RC oscillator – FET Phase shift oscillator – <u>Wien bridge oscillator</u> – Non sinusoidal oscillator – Astable multivibrator – <u>Monostable multivibrator</u> – Bistable multivibrator – Schmitt trigger – <u>Blocking oscillator</u> – UJT Relaxation oscillator - **Problems of direct applications**.

Unit V Operational Amplifiers (OP AMPs)   **(15 Hrs)**

Integrated Circuits – Structure and function - fabrication process of ICs (Transistors, diodes, resistors, capacitances) - The Ideal OP-AMP – Inverting, Non–Inverting & Differential Amplifiers –Input offset voltage – Input offset current – CMRR - OP-AMP Characteristics - Open Loop Input Output Characteristics – Frequency Response and Slew rate – OP-AMP Applications – Adder, Subtractor, Integrator, Differentiator – <u>Comparator – Voltage to Current Converter – Current to Voltage Converter</u> – <u>Electronic Analog Computation</u>- **Problems of direct applications.**

Books for study:
1. A Text book of Applied Electronics   : R.S.Sedha, S.Chand and Company,
                                               New Delhi, Revised Edition 2006,
                                               Reprint 2010.
2. Electronic Devices and Circuit theory   : Robert L.Boylestad and Louis Nashelsky,
                                               Pearson education Inc., Prentice hall,
                                               9th Edition,2008.
3. OP-AMPs & Linear Integrated Circuits   : Ramakant A.Gayakwad, Prentice Hall of
                                               India Private Ltd., New Delhi, 4th Edition,
                                               2002.
4. Linear Integrated circuits   : D.Roy Choudhury and Shail Jain, New

Age International (P) Ltd., Publishers, New Delhi, 10th Reprint,1997.

Books for Reference:

1. Basic electronics – Solid state   : B.L.Theraja, S.Chand & Co. Ltd, New Delhi, Reprint 2010.

2. Integrated Electronics: Analog and Digital Circuits and Systems   : Jacob Millman, Christos C. Halkias, McGraw Hill International Book Company, 24th Printing, 1982.

M.Sc Physics – Semester II

Core IV Quantum Mechanics

Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   **QPC: 13MP04**

Preamble:
     In this technological era, Quantum Mechanics plays a vital role in the Physicist's Education. Branches of Physics like Solid State Physics, Nuclear Physics, and Elementary Particle Physics use Quantum Mechanics as a mathematical tool. It helps to understand the different behavior of matter and energy at the sub atomic scale.

Objectives:
- To understand the quantum concepts of atomic dimension as particle and its behavior.
- To impart basic knowledge about the nature of particles from macro to micro states

Unit I General Formalism   **(17 hrs)**
     Linear vector space – Postulates of Quantum mechanics – Simultaneous measurability of observables – General uncertainty relation – Dirac's Notation – Equation of Motion: Schrodinger's representation – Heisenberg representation – Interaction (Dirac) representation – Momentum representation.
     Particle moving in a spherically symmetric potential – System of two interacting particles – Rigid rotator – **Problems of direct applications.**

Unit II Angular Momentum   **(13 hrs)**
     <u>The angular momentum operators</u> – Angular momentum commutation relations – <u>Eigen values and Eigen Functions of L^2 and L_Z</u> – Eigen values of J^2 with J_z – Angular momentum matrices – Spin angular momentum – Spin vectors for Spin (1/2) system – Addition of angular momenta – Clebsh - Gordon coefficients – **Problems of direct applications.**

Unit III Approximation methods for Stationary   **(15 hrs)**
     Time independent perturbation theory – Basic concepts – Non degenerate energy levels – The ground state of Helium – Degenerate energy levels – Effect of electric field on the n=2 state of H_2 atom – Variation method: The variation principle – <u>The ground state of Helium</u> – WKB approximation: The WKB method – **Problems of direct applications.**

Unit IV Time dependent perturbation theory **(14 hrs)**

First order perturbation – Harmonic perturbation – Transition to continuum of states (Fermi – Golden rule) – The dipole approximation: Selection rules.
Scattering theory: Kinematics of the scattering process: Differential and total cross – section – The scattering amplitude – Green's functions – Born approximation and its validity – Partial wave analysis: Phase shift – **Problems of direct applications.**

Unit V Relativistic wave equation **(16 hrs)**

Klein – Gordon equation: Plane wave solutions – Charge and current densities – Interaction with electromagnetic fields – Hydrogen like atoms – Dirac equation is electromagnetic fields – Significance of negative energy states.
Quantum field theory: Classical theory of electromagnetic field – Quantization of electromagnetic field.

M.Sc Physics – Semester II

Core VI   Nanoscience and Nanotechnology I - Fundamentals

Credits: 5 Hours: 90 (C-75, T-4, S-8, A-3) **QPC: 13MP06**

Preamble:

Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs).

Objectives:
- To understand the inner concepts of Nanoscience towards material behavior
- To learn the technology involved in the fabrication and application of Nanomaterials

Unit I Synthesis of Nanomaterials – I **(15 hrs)**

Low Dimensional 2D,1D,0D Nanomaterials – Top Down and Bottom up Techniques for synthesis of Nanomaterials – Chemical methods of synthesis: Colloids and Colloids in Solutions – Langmuir-Blodgett Method – Micro Emulsions - Sol-Gel Method – Hydrothermal synthesis – Sonochemical synthesis – Microwave synthesis.
Unit II Synthesis of Nanomaterials – II **(13 hrs)**

Physical Methods of synthesis: Plasma Arc Discharge – Sputter Deposition – DC, RF, Magnetron Sputtering – Methods based on Evaporation: Thermal Evaporation, Electron Beam

Evaporation, Laser Evaporation – Chemical Vapour Deposition – Molecular Beam Epitaxy –
High Energy Ball Milling.

Unit III Characterization Methods   **(14 hrs)**
        Optical Microscope: Confocal Microscope – Electron Microscopes: Scanning Electron
Microscope, TEM – SPM: STM, AFM, SNOM – Diffraction Method: XRD – Atomic Scattering
factor – Diffraction from different types of samples – Debye-Scherer formula.
Spectroscopes: UV-VIS-NIR Spectrometer – Raman Spectrometer.
Magnetic Measurements: VSM

Unit IV Lithographic Methods   **(17 hrs)**
        Properties of Nanomaterials: Surface to volume ratio at Nanoscale – Thermal Properties –
Mechanical properties - Magnetic properties – Optical properties
Lithographic Methods
        Photolithography: Lithography using UV light, Laser Beams and X-rays – Lithography
using Particle Beams: Electron Beam Lithography, Ion Beam Lithography and Neutral Beam
Lithography – Scanning Probe Lithography: Dip Pen Lithography, Optical Scanning Probe
Lithography – Soft Lithography: Microcontact Printing, Replica Molding, Micro transfer
Moldings and Micro Molding in Capillaries.

Unit V Special Nanomaterials   **(16 hrs)**
        Carboneous Nanomaterials – Fullerene – Carbon Nano Tubes – Types of Carbon Nano
Tube – Synthesis and Purification of CNT – Filling of CNT – properties of CNT - Graphene –
Porous Silicon: Mechanism of formation of Porous Silicon – Properties of Porous Silicon.
Self assembled Mono layers: Mono layers on Gold – Growth Process Applications
Quantum dots: Quantum confinement in semiconductor nano structures – Electronic density
states – Synthesis of Quantum dots – Characterization of semiconductor nano structures –
Applications

Books for Study:
1. Nanotechnology   : Sulabha K Kulkarni, Capital publishing
   Principles and Practices   Company, New Delhi, 2nd edition, 2011.
2. Introduction to NanoScience and   : K.K.Chattopadhyaya and A.N Banerjee,
   Nanotechnolgy   PHI Learning Private Ltd., New Delhi,
                                                   First Edition, 2009.
3. NANO: The Essentials   : T.Pradeep, Tata McGraw-Hill Publishing
   Understanding Nanoscience and   Company Ltd,New Delhi, 3rd Reprint,2009.
   Nanotechnology
4. Nanotechnology: : Er. Rakesh Rathi, S.Chand &Company
   Technology Revolution of 21st Century   Ltd, New Delhi, First Edition, 2009.

5. Nanomaterials, Nanotechnologies   :Michael F.Ashby, Paulo J.Ferreira,Daniel L
   And Design   Schodel, Elsevier India Pvt. Ltd, First
                                                   Printed in India, 2011.
Books for Reference:
1. Nanotechnology   : Mick Wilson, Kamali Kannangara, Geoff

Basic Science & Emerging Technologies   Smith,Michelle Simmons and Burkhard
                                         Raguse Overseas Press India Pvt.Ltd,
                                         Reprint 2008.
2. Introduction to   : Charles P. Poole Jr. and Frank J. Owens, A
   Nanotechnology   John, Wiley Sons, INC., Publication, 2003.
3. Characterization of   : Zhong Lin Wang, Wiley-VCH Verlag
   Nanophase materials   GmbH,2000.
4. Nanotechnology: An introduction   : Michael Kohler and Wolfgang Fritzsche,
   to Nanostructuring Techniques   Wiley-VCH Verlag GmbH& Co. KCaA,
                                          2004.
5. Nano Electronics &   : K. Goser, P. Glosekotter, V. Dienstuhl,
   Nano Systems   Springer, 3rd Reprint 2009.

M.Sc Physics – Semester II

Elective II Digital Electronics and Microprocessors

Credits:5 Hours :90 (C-75, T-4, S-8, A-3)   **QPC:13MPE2**

Preamble:
        In the modern world of electronics the term digital is often associated with computers. It is certainly difficult to think of an area of life today that is not influenced in one way or other by digital computers. The availability of the computational power is directly converted into the development of the digital fundamental circuits. The digital ICs which are smaller, faster, more economical and more powerful offer a great number of applications. Today digital circuits and systems can be found almost in every field.
        An introduction to the field of digital electronics and microprocessors with a number of applications are intended to provide a strong background in the digital data manipulations.

Objectives:
- To impart the basic concepts of digital principles and digital circuits
- To cherish the applications of digital data manipulating systems

Unit I Data Processing Circuits (Or) Digital Data Circuits   **(15 hrs)**
        Logic Gates – Boolean Algebra and De-Morgan's Theorem – Sum of Products Method – Karnaugh's Map and Simplifications – Half Adder , Full Adder – Half Subtractor, Full Subtractor – Binary Adder/Subtractor – Multiplexer – (16-1) Multiplexer – Demultiplexer – (1-16) Demultiplexer – BCD to Decimal Decoder – (1-of-10) Decoder – Seven Segment Decoder – Decimal to BCD Encoder – Parity generators/ checkers.

Unit II Flip Flops and Registers   **(12 hrs)**
        RS Flip Flop- Clocked RS Flip Flop – D Flip Flop – Edge Triggered D-Flip Flop - JK Flip Flop – JK Master Slaved Flip Flop – 555 Timer Astable - 555 Timer Monostable - Types of Registers – Serial-in Serial-out – Serial-in Parallel-out – Parallel-in Parallel-out – Parallel-in Serial-out – Universal Shift Register.

Unit III Counters (15 hrs)

Types of Counters – Asynchronous and Synchronous Counter – MOD-3, MOD-5 and Decade Counters – Ring Counters – Shift Counters – Digital to Analog Converter – Binary Ladder Method – 4 bit Digital to Analog converter –Analog to Digital converter –Simultaneous Method – Memory – ROMs, PROMs, EPROMs and EEPROMs – RAMs – SRAM and DRAM.

Unit IV Microprocessors (15 hrs)

Intel 8085 Microprocessor – Architecture – Pin Configuration – Instruction Set of 8085 Microprocessor – Instruction Cycle – Timing Diagram – Op code Fetch Cycle – Memory Read Cycle for MOVE A,C & ADD M – Addressing Modes – Assembly Language Programming – Program to add and subtract two 8-bit numbers – Sort numbers by ascending and descending order – 8257 DMA Microcontroller – Pin Configuration – Block diagram of 8257.

Unit V Micro controllers (18 Hrs)

Microprocessor Vs Microcontroller – Applications of Microcontrollers (qualitative only) – commercial Microcontrollers – INTEL 8051 Microcontroller – Features of 8051 Microcontroller - Pin out of 8051Microcontroller - Architecture of INTEL 8051 Microcontroller - Memory organization – Addressing modes – Boolean Processor – Interrupts – 8051 Instruction execution – 8051 Instruction set – Data transfer Instructions – Arithmetic Instructions – Logic Instructions – Control transfer/Program control – 8051Microcontroller program to add two 16 bit numbers – 8051 Microcontroller program to find the maximum number from a given ten 8-bit numbers.

Books for Study:
1. Digital Principles and Applications   : A.P Malvino & D.P.Leach, TataMcGraw Hill Edn., Pvt., Ltd, New Delhi 7th Edition, 2011.
2. Introduction to Microprocessors   : Aditya .P.Mathur, TataMcGraw Hill edn., Pvt.Ltd, New Delhi, 3rd Edition, 32nd Reprint 2010.
3. Advanced Microprocessor and   : Prof.S.K.Venkataram, University
    Microcontroller   Science Press, Chennai, 1st Edition, 2002, Reprint 2008.

Books for Reference:
1. Electronic Principles and Applications   : A.B.Bhattacharya, New Central Book Agency (P) Ltd, 2006.
2. Microprocessor Architecture, Programming : Ramesh Gaonkar, Penram
    And applications with the 8085   International Publishing (India) Pvt.,Ltd, 5th Edition, 2010.

M.Sc Physics – Semester II
Advanced Learner's Course I Astrophysics

Credits: 4   **QPC: 13MPA1**

Preamble:

Everyone is familiar with the fact that the universe is populated by stars and that these occur in huge assemblies. These huge assemblies called as galaxies contain stars of the order of 10^{11}, together with clouds of gas and dust. Also in the universe is present the non-luminous large fraction of matter called dark matter. The dark energy is estimated to about 70% of the bulk of the energy density in the universe. The striking success of the big bang theory with the observation of the red shift of galaxies, abundant presence of light elements, the existence of the all pervading cosmic microwave background radiation would intrigue any Astrophysicist to explore the nuances of universe. This paper gives a well defined explanation for the enthusiastic physics off springs to enjoy not only about space, but also about the cosmic rays and cosmic particles.

Unit I The expanding Universe**

The Hubble expansion – Olber's Paradox - The Friedmann equation - The source of energy density – Observed energy densities and the age of the universe – The declaration parameter: the effects of cosmological constant – Cosmic microwave radiation – Radiation in the early universe – Radiation and matter eras – Baryogenesis and the matter – Antimatter asymmetry of the universe.

Unit II Dark matter and Dark energy in the universe**

Dark matter in galaxies and clusters – Gravitational lensing – amplification by gravitational lenses: Microlensing and MACHOs – The lensing probability: Optical depth – Baryonic dark matter – Neutrinos – Axions – WIMPs – Expected WIMP cross-sections and event rates – Dark energy: The Hubble plot at large redshifts – Vacuum energy: The Casimir effect – Problems with the cosmological constant and dark energy.

Unit III Development of structure in the early Universe**

Horizon and Flatness problems – Inflation - Chaotic inflation – Quantum fluctuations and inflation – The spectrum of primordial fluctuations – Large scale structure: Gravitational collapse and the Jeans mass – The growth of structure in an expanding universe – Evolution of fluctuations during the radiation era.

Unit IV Cosmic Particles**

The spectrum and composition of cosmic rays – Geomagnetic and solar effects – Acceleration of cosmic rays – Secondary cosmic radiation: Hard and Soft components – Electromagnetic cascades and air showers – Ultra high energy cosmic ray shower – Radio galaxies and Quasars – Point sources of gamma rays: Gamma ray bursts – Atmospheric Neutrinos: Neutrino oscillations – Solar Neutrinos – Point Neutrino sources – The binary Pulsar.

Unit V Particle Physics in stars**

Stellar evolution – The early stages – Hydrogen burning: the pp cycle in the sun – Helium burning and the production of Carbon and oxygen – Production of heavy elements – White dwarf

stars – Stellar Collapse: Type II Supernovae – Neutrinos from SN1987A – Neutron stars and pulsars – Black holes – Hawking radiation from black holes.

** Problems associated with the topics Excluded
Book for study:
Particle Astrophysics   : Donald Perkins-Oxford Master series in
                                                       Particle Physics, Astrophysics and
                                                       Cosmology, Oxford University Press,
                                                       Reprint 2004, 2005, 2008.

Book for Reference:
  1. Astrophysics-Stars and Galaxies   : K.D.Abhyankar, University Press (India)
                                           Private limited 2001, Reprint 2009.
  2. Astrophysics of the solar system   : K.D.Abhyankar, University Press (India)
                                           Private limited 1999, Reprint 2009.

M.Sc Physics – Semester III

Core VII Nuclear and Particle Physics

Credits : 5   Hours: 75 (C-65, Tu-2, A-2, S-6)   **QPC:14MP07**

Preamble:
        The objective of this paper is to give a brief introduction to structure and general properties of nuclei, to impart the knowledge about the nuclear models and theoretical predictions of radioactive particles. A deep discussion on nuclear reactions and elementary Particle Physics has been included in view of current development in this area.

Objectives:
  * To impart the in-depth knowledge in concepts and theories of nuclear structure and reactions.
  * To expose the students to the High Energy Particle Physics which is the current area of research in Physics.

Unit I Nuclear Structure and General Properties of Nuclei   **(13 Hrs)**
        Nuclear mass and Binding Energy – Systematics of nuclear binding energy – Nuclear Size – Measurement of charge radius: Electron Scattering Method – Mirror nucleus method – Nuclear spin – Parity of nuclei – Magnetic dipole moment of nuclei – Electric Quadrupole moment - Isospin – **Problems of direct applications.**

Unit II Nuclear Models   **(15 Hrs)**
        Liquid Drop Model – Bethe-Weizsacker Formula – Shell Model: Evidence for the existence of magic numbers – Single particle model – Predictions of the shell model – Individual Particle Model - Collective Model: Vibrational Spectra and Rotational Spectra- Electric

quadrupole moments for strongly deformed nucleus – <u>Nilsson's Unified Model</u> - **Problems of direct applications.**

Unit III Radioactivity   (17 Hrs)

Alpha Decay – <u>Range of α-particles – Stopping Power - α-disintegration Energy – Range-Energy Relationship for α-particles – Geiger-Nuttal law</u> – The α-spectrum and fine structure – Gamow's theory of α-decay and Transmission coefficient.

Beta Decay – Continuous β-ray spectrum and Pauli's Neutrino hypothesis – Violation of parity conservation in β-decay – Fermi's theory of β-decay – <u>Selection Rules.</u>

Gamma Decay – Passage of γ-rays through matter – Determination of γ-ray energy: Scintillation Spectrometer Method – <u>Internal Conversion.</u>

Unit IV Nuclear Reactions   (17 Hrs)

<u>Types of Nuclear Reactions – Conservation laws in Nuclear Reactions</u> – Energetics of Nuclear Reactions – Cross Section of Nuclear Reaction – Discrete levels of the compound nucleus: Breit-Weigner one level formula – Decay rates of the compound Nucleus: Evaporation Model – Statistical theory of Nuclear level Densities – Angular Distribution of emitted particles (Stripping and Pick up reactions).

Unit V Elementary Particles   (13 Hrs)

<u>Classification of Elementary Particles – Conservation laws</u> – Symmetry classification of elementary particles: SU_2 and SU_3 symmetry – Quark Hypothesis – Quark Model – Quark Structure of Mesons and Baryons –Experimental supports for the Quark Model - Quantum Chromodynamics (QCD) – Charmed Quark – Beauty and Truth - <u>Grand Unified Theory- String theory (Qualitative idea only).</u>

Books for Study:

1. Nuclear and Particle Physics	: S.L.Kakani and Shubhra Kakani, Vinod Vasishtha for Viva Books Private Limited, New Delhi, First Edition 2008.
2. Atomic and Nuclear Physics	: S.N.Ghoshal, S.Chand & Company Ltd, New Delhi, First Edition 1994.

Books for Reference:

1. Nuclear Physics	: V.Devanathan, Narosa Publishing House Pvt. Ltd, New Delhi, Second Edition 2011.
2. Nuclear Physics	: D.C.Tayal, Himalaya Publishing House, Bombay, 1988.
3. Nuclear Physics	: R.C.Sharma, K.Nath & Co. Educational Publishers, Meerut, Fifth Revised Edition 2004.
4. Nuclear Physics	: S.B.Patel, Wiley Eastern Limited, New Delhi.

5. Introduction to Nuclear and Particle Physics : V.K.Mittal, R.C.Verma and S.C.Gupta, PHI Learning Private Limited, New Delhi 2009.

6. Nuclear Physics : Irving Kaplan, Narosa Publishing House, New Delhi, Fifth Reprint 1992.

M.Sc. Physics – Semester III

Core VIII Nano science and Nanotechnology II - Applications

Credits : 5   Hours: 75 (C-65, T-2, A-2, S-6)   **QPC: 14MP08**

Preamble:
    Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

    The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes (CNTs).

Objectives:
- To understand the inner concepts of Nanoscience towards material behavior
- To learn and appreciate the technology involved in the applications of Nanomaterials

Module I Nanoelectronics   **(13 Hrs)**
    Quantum Electronic Devices: Upcoming Electronic Devices - Electrons in Mesoscopic structures - Examples of Quantum Electronic Devices: Short Channel MOS transistor - Split Gate transistor - Quantum Cellular Automata - Molecular Electronics: Switches based on Fullerenes and Nanotubes - Tunneling Element: Tunneling Diode - Resonant Tunneling Diode- Principle of the Single Electron Transistor: The coulomb Blockade- Performance of the Single Electron Transistor - SET Circuit Design: Wiring and Drivers.

Module II Nanosensors   **(12 Hrs)**
    Nanosensors : Types of Nano sensors- Carbon Nano Tube based Sensors - Nanowire sensors- Polymeric Nano fibers, Nano composites- Nanoparticles- Plasmonic based Nano probe- Optical Nano sensors- SQUID based magnetic Nano sensors- Micro cantilever based sensors- Nano sensors in space- Nano pressure sensor- Physical sensor – Bio sensors - Gas sensing Mechanism of semiconductors: Nano structured ZnO for sensors.

Module III Nano Medicine   **(16 Hrs)**
    Metal Nanoparticles in optical detection and imaging - Quantum Dots: Semiconductors of Light- Photo physics of QDs and its Relevance in Diagnosis- Application of Quantum Dots in Medical Diagnosis - Quantum Dots for Cancer Diagnosis and Therapy.

    Magnetic nanoparticles as contrast Agents for Medical Diagnosis: Preparation Methods for Iron Oxide Nanoparticles and In vitro characterization: Preparation of Iron Oxide core-

Surface coating of Nanoparticles- Conjugation of molecules for Targeting- Magnetic Nanoparticles for Imaging and Therapy - Toxicity of nanoparticles - Gold nanoparticles- Dendrimer polymer nanoparticles-Dendritic Nano devices for targeting and therapeutic applications.

Module IV Nanotechnology in Energy and Food packaging Materials   (12 Hrs)
        Overview of the Principles of operation of Energy Conversion and Storage Devices - Lithium Ion Batteries - Fuel Cells – Photo electrochemical Solar Cells.
        Nanomaterials for food Applications: Metal/Metal oxides - Surface functionalized Nano materials - Organic Nano additives and processed nanostructures in food – Nanosized food ingredients and additives in relation to digestion of food – active packaging materials: Nanoparticles in oxygen scavenging- Nano-encapsulated Release systems – Intelligent packaging concepts :Time-Temperature Indicators Leakage indicators Spoilage indicators.

Module V Nanotechnology in cosmetics, Textiles and Water purification   (12 Hrs)
        Cosmetics and Nanotechnology: Anti aging Products- Nanotechnology for sunscreen and UV protection- Nano emulsions in Shampoo- vesicular Delivery Systems – Nano encapsulation for controlled Release- Use of Nanotechnology in Contact lens - Use of Nanotechnology in Dental Applications.
        Characteristics of nano finishing in garments – Functional, intelligent and smart textiles - Waterproof Textiles – Breathable Textiles - UV Protection Textiles - Odor Control Textiles – Anti-Static Textiles - Anti-Bacterial Textiles - Dust Free Textiles – Stain Resistant Textiles.
        Water cleaning and purification- Air cleaning and purification- soil Remediation.

Books for study:

1. Nano Electronics and Nano systems   : K.Goser, P.Glosekotter, J,Dienstuhl,
                                                 Springer International Edition, 3rd Edition,
                                                 2009.
2. Text book of Nanoscience and   : B.S.Murthy, P.Shankar, Baldevraj,
   Nanotechnology   B.B.Rath and James Murday, University
                                            Press Reprint 2013.
3. Bio-Nanotechnology   : Madurai Sharon, Maheswar Sharon, Sunil
                                            Pandey, Goldie Oza. Ane Books Pvt Ltd,
                                            New Delhi, 2012.
4. Nanotechnolgies in Food   : Qasim Chaudry, Laurence Castle &
                                            Richard Watknis., RSC Publishers, 2010.
5. Nanostructured Materials for   : David J. Lockwood, Springer, 2009.
   Electrochemical Energy Production
   and Storage

6. Nanomaterials:Nanotechnologies   : Michael F Ashy, PauloJ. Ferreira, David L
   and Design   Schaaek, BH Publishers,2011.

Books for Reference:
1. Nano computing   : Vishal Sahani, Debabrata Goswami
                                            Tata McGraw Hill Publications, 2008.

2. Nanotechnology: Technology   : Er. Rakesh Rathi, S.Chand &Company
   Revolution of 21st Century   Ltd, First Edition, 2009.
3. Nanotechnology in Biology   : Tuan Vo-Dinh, CRC press,2007.
   and Medicine
4. Environment Applications of   : Glen E Fryxell, Guozhong Cao, Imperial
   nano materials   College press, 2012.

M.Sc. Physics – Semester III

Elective III MATLAB (Theory & Practical)
Credits: 3   **Hours: 60 (Theory: 30, Practical: 25, A- 2, S-3)**   **QPC: 14MPE3**

Preamble:
     MATLAB is an integrated technical computing environment that combines numerical computation, advanced graphics and visualization and a high level programming language. This paper helps the student to solve scientific problems in an easy and quicker way.

Objectives:
- To impart knowledge in the basic concepts of MATLAB
- To learn the art of writing programs using MATLAB

MATLAB Theory (30 Hrs)

Unit I MATLAB Windows   **(6Hrs)**
     Command window – Edit window – figure window – help window – Command history window – Current directory-Workspace window.
     Data types in MATLAB – Variables-Keywords-Assignment statements – System commands - Common Mathematical operators – Relational operators - Writing Mathematical expressions in MATLAB – Math built – in functions.

Unit II Creating Arrays   **(6Hrs)**
     One dimensional array –Creating a two dimensional arrays – The transpose operator – Array addressing – Adding elements to existing variables – Built -in functions for handling arrays – Matrix manipulation.

Unit III Conditional Statements   **(6Hrs)**
     If …end structure – if else… end structure – if … else if… else …end structure – switch … case statements.
     Loops: For … end loops – while …end loops

Unit IV Script files and Function files   **(6Hrs)**
     Creating, saving, running a script file – input to a script file – opening and modifying an existing M file – output Commands.
     Structure of a Function file - Creating, saving and running a function file.

Unit V   **(6Hrs)**

Basic 2D plots – style options – Label – title – legend – Access control – property name and property value – fplot command – plotting multiple graphs in the same plot – 3D plots : Line plots –Mesh and surface plots.

Books for study:

1. MATLAB Programming   : Y.Kirani Singh & B.B.Chaudhuri, PHI Learing Private Limited, New Delhi, Third Printing, 2010.

2. MATLAB An Introduction with applications   : Amos Gilat, Wiley India Private Limited, Reprint 2007.

3. Classical Mechanics with MATLAB applications : Javier E.Hasburn, Jones & Bartlett India Private Limited, First Edition, 2010.

Books for Reference:

1. Getting started with MATLAB7   : Rudra Pratap, Oxford University Press,Fourth Impression 2006.

2. Mastering MATLAB7   : Duane Hanselman and Bruce Little field, Dorling Kindersley (India) Pvt. Ltd, Licensees of Pearson Education in South Asia, Third Impression 2008.

3. A Guide to MATLAB for Beginners and Experienced Users   : Brian R.Hunt, Ronard L.Lipsman, Jonathan M.Rosenberg, Cambridege University Press, First South Asian Edition 2002, Reprinted 2003, 2005, 2006.

Curriculum Framework for the students admitted in the academic year 2013-2014

Department of Physics

M.Sc. Physics
Semester wise distribution with Scheme of Examination and Credits
(For the students admitted during the academic year 2013 – 2014)

Semester	Title of the Course	Credits	Instruction hours per week	Duration of Exam (ESE)	Marks		Total
					CIA	ESE	
I	Core I Classical Mechanics	5	6	3	25	75	100
	Core II Mathematical Physics	5	6	3	25	75	100
	Core III Condensed Matter Physics	5	6	3	25	75	100
	Practical I	5	6	4	40	60	100
	Elective I Electronic Devices, Circuits and Applications	5	6	3	25	75	100
II	Core IV Quantum Mechanics	5	6	3	25	75	100
	Core V Electromagnetic Theory	5	6	3	25	75	100
	Core VI Nanoscience and Nanotechnology I – Fundamentals	5	6	3	25	75	100
	Practical II	5	6	4	40	60	100
	Elective II Digital Electronics and Microprocessors	5	6	3	25	75	100
	Advanced Learner's Course I Astrophysics	4*	-	3	-	100	100

M.Sc Physics – Semester I

Core II Mathematical Physics

Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   QPC: 13MP02

Preamble:

For proper understanding of the concepts of Quantum Mechanics, Sound, Electro Magnetism, Statistical Thermodynamics, Special theory of Relativity as well as other areas of Physics, thorough knowledge in Differential equations, Tensors, Complex Variables is required. Therefore Mathematical Physics is introduced as Core Paper in the I Semester.

Objectives:
- To learn the computational techniques associated with the subject
- To perform the problem solving activity of the physical aspects effectively

Unit I Differential Equations and Special Functions   **(16 hrs)**

Legendre Differential Equation and Legendre function – Generating function of Legendre Polynomials – Orthogonal properties of Legendre Polynomials – Bessel's Differential Equation and Bessel's function of first kind – Bessel's Half orders – Recurrence formulae for $J_n(x)$ – Hermite Differential Equation and Hermite Polynomials - Generating function of Hermite Polynomials – Recurrence formulae for Hermite Polynomials.

Unit II Laplace Transforms   **(16 hrs)**

Definition of the Laplace Transform – Properties of Laplace Transforms: Linearity Property – First Translation property and second translation property – Change of scalar property – Laplace Transform of Derivatives – Derivatives of Laplace Transform – Laplace Transform of integrals – Initial and final value theorems.

Methods for finding Laplace Transforms: Direct method – series expansion method – Method of Differential equations.

Inverse Laplace Transform: Linearity Property – First translation property – second translation property – Convolution property.

Application of Laplace Transforms to Differential equations – Applications of Laplace Transform to boundary value problems.

Unit III Fourier series, Integrals and Transforms   **(14 hrs)**

Definition and Expansion of a function of x – Drichlet's conditions – Assumptions for the validity of Fourier's series expansion and its theorems – Complex representation of Fourier series – Problems.

Convergence of Fourier series – Applications of Fourier series: Fourier series involving Phase Angles – Transverse Vibrations of a string – Fourier Transforms: Fourier Sine Transforms – Fourier Cosine Transforms - **Problems of direct applications.**

Unit IV Tensors   **(15 hrs)**

Definition of Contra variant, Covariant and Mixed tensors – Algebraic operation of Tensors: Addition and Subtraction of Tensors – Equality of tensors – Outer product – Contraction of tensors – Inner product of tensors – Quotient law – Symmetric and Anti

symmetric tensors – Invariant tensors: Kronecker delta symbol, Levi-Civita symbol – Metric tensors – Christoffel's 3 index symbols – Relation between Christoffel's symbols of first and second kind.

Unit V Complex Variables and Group Theory   (14 hrs)
      Complex Variables: Algebraic operation of Complex Numbers – Cauchy-Riemann Differential Equation – Cauchy's Integral theorem - Cauchy's Integral Formula – Laurent's series – Singularities of an Analytic function – Cauchy Residue theorem – **Problems.**
      Group Theory: Concept of a group – Abelian group – Generators of finite group – cyclic group – subgroup – Isomorphism and Homomorphism – Reducible and Irreducible Representations – The Orthogonality theorem.

Book for Study:
1.	Mathematical Physics	: B.D.Gupta, Vikas Publishing House , 4th Edition, 2010.

Books for Reference:
1.	Mathematical Physics	: Sathya Prakash, Sultan Chand & sons, 5th Revised Edition, 2011.
2.	Applied Mathematics for Engineers and Physicists	: Pipes Louis A and Harvill Lawerence, McGraw Hill Publishers, 1946.

M.Sc Physics - Semester I

Elective I Electronic Devices, Circuits and Applications
Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   QPC: 13MPE1

Preamble:
      The field of electronics has become the most important branch of science and engineering in our society. It is this field in which rapid developments are taking place every day. The electronic devices and gadgets are being used in almost all industries for quality control and automation. Because of growing applications of electronics, in almost all fields, the students of science disciplines have to be taught electronics both at the UG level and PG level.

Objectives:
- To educate about the various electronic devices and their characteristics
- To allow an understanding of their practical applications in our day-today life.

Unit I Diodes and Thyristors   (15 Hrs)
      Introduction - Schottky diode – Characteristics – Tunnel diode – Diode parameters – Applications – Photo diodes – Characteristics – Applications – Photoconductive cells - Characteristics – Applications – IR emitters – Liquid crystal display – Solar cells – Thermistors – Applications – Silicon Controlled Rectifiers (SCR) – SCR characteristics and rating – Applications – Battery charging regulator – Temperature controller – Light activated SCR – Diac – Diac in proximity detector – Triac – Triac in Phase (power) control – UJT - Characteristics.

Unit II Transistors (18 Hrs)

BJTs – Load line and operating point – Q- Point and maximum undistorted output – Voltage divider bias – Stability of voltage divider bias – Single stage BJT amplifier – Analysis and parameters of common emitter amplifier – Effect of A.C load on CE amplifier – Constant Current Source using BJT - Hybrid parameter – Determination and meaning – Amplifier expressions – Hybrid formulas for CE amplifier – Two stage RC coupled amplifier – Frequency response – Power amplifiers – performance parameters – A.C load line – Class B Amplifier – Push-Pull amplifier – Advantages – cross over distortion – efficiency – Feed back amplifier – Principle – Gain stability – Increased bandwidth – Decreased noise and distortion. – IC voltage regulators - **Problems of direct applications.**

Unit III Field Effect Transistors (15 Hrs)

JFET operations and characteristics – JFET parameters – Setting Q-Point using D.C load line – Voltage divider bias in FET – FET common source amplifier – Low frequency and high frequency response - Cascade configuration of JFET amplifier - Depletion type MOSFET - operations and characteristics – Enhancement type MOSFET - operations and characteristics - MOSFET handling precautions – VMOS – CMOS – MESFETs – Three channel audio mixer using JFET – Motion detection system using JFET - **Problems of direct applications.**

Unit IV   Oscillators (12 Hrs)

Comparison between an amplifier and an oscillator – Barkhausen criterion – FET Hartley oscillator – FET Colpitt's oscillator – Principle of RC oscillator – FET Phase shift oscillator – Wien bridge oscillator – Non sinusoidal oscillator – Astable multivibrator – Monostable multivibrator – Bistable multivibrator – Schmitt trigger – Blocking oscillator – UJT Relaxation oscillator - **Problems of direct applications**.

Unit V Operational Amplifiers (OP AMPs) (15 Hrs)

Integrated Circuits – Structure and function - fabrication process of ICs (Transistors, diodes, resistors, capacitances) - The Ideal OP-AMP – Inverting, Non–Inverting & Differential Amplifiers –Input offset voltage – Input offset current – CMRR - OP-AMP Characteristics - Open Loop Input Output Characteristics – Frequency Response and Slew rate – OP-AMP Applications – Adder, Subtractor, Integrator, Differentiator – Comparator – Voltage to Current Converter – Current to Voltage Converter – Electronic Analog Computation- **Problems of direct applications.**

Books for study:

1. A Text book of Applied Electronics   : R.S.Sedha, S.Chand and Company,
                                                              New Delhi, Revised Edition 2006,
                                                              Reprint 2010.
2. Electronic Devices and Circuit theory   : Robert L.Boylestad and Louis Nashelsky,
                                                              Pearson education Inc., Prentice hall,
                                                              9th Edition,2008.
3. OP-AMPs & Linear Integrated Circuits   : Ramakant A.Gayakwad, Prentice Hall of
                                                              India Private Ltd., New Delhi, 4th Edition,

2002.

4. Linear Integrated circuits	: D.Roy Choudhury and Shail Jain, New Age International (P) Ltd., Publishers, New Delhi, 10th Reprint,1997.

Books for Reference:

1. Basic electronics – Solid state	: B.L.Theraja, S.Chand & Co. Ltd, New Delhi, Reprint 2010.
2. Integrated Electronics: Analog and Digital Circuits and Systems	: Jacob Millman, Christos C. Halkias, McGraw Hill International Book Company, 24th Printing, 1982.

M.Sc Physics – Semester II

Core IV Quantum Mechanics

Credits: 5 Hours: 90 (C-75, T-4, S-5, Tu-3, A-3)   **QPC: 13MP04**

Preamble:

 In this technological era, Quantum Mechanics plays a vital role in the Physicist's Education. Branches of Physics like Solid State Physics, Nuclear Physics, and Elementary Particle Physics use Quantum Mechanics as a mathematical tool. It helps to understand the different behavior of matter and energy at the sub atomic scale.

Objectives:

- To understand the quantum concepts of atomic dimension as particle and its behavior.
- To impart basic knowledge about the nature of particles from macro to micro states

Unit I General Formalism   **(17 hrs)**

 Linear vector space – Postulates of Quantum mechanics – Simultaneous measurability of observables – General uncertainty relation – Dirac's Notation – Equation of Motion: Schrodinger's representation – Heisenberg representation – Interaction (Dirac) representation – Momentum representation.

 Particle moving in a spherically symmetric potential – System of two interacting particles – Rigid rotator – **Problems of direct applications.**

Unit II Angular Momentum   **(13 hrs)**

 The angular momentum operators – Angular momentum commutation relations – Eigen values and Eigen Functions of L^2 and L_Z – Eigen values of J^2 with J_z – Angular momentum matrices – Spin angular momentum – Spin vectors for Spin (1/2) system – Addition of angular momenta – Clebsh - Gordon coefficients – **Problems of direct applications.**

Unit III Approximation methods for Stationary   **(15 hrs)**

 Time independent perturbation theory – Basic concepts – Non degenerate energy levels – The ground state of Helium – Degenerate energy levels – Effect of electric field on the n=2 state

of H_2 atom – Variation method: The variation principle – <u>The ground state of Helium</u> – WKB approximation: The WKB method – **Problems of direct applications.**

Unit IV Time dependent perturbation theory   **(14 hrs)**

First order perturbation – Harmonic perturbation – Transition to continuum of states (Fermi – Golden rule) – The dipole approximation: Selection rules.
Scattering theory: Kinematics of the scattering process: Differential and total cross – section – The scattering amplitude – Green's functions – Born approximation and its validity – Partial wave analysis: Phase shift – **Problems of direct applications.**

Unit V Relativistic wave equation   **(16 hrs)**

Klein – Gordon equation: Plane wave solutions – Charge and current densities – Interaction with electromagnetic fields – Hydrogen like atoms – Dirac equation is electromagnetic fields – Significance of negative energy states.
Quantum field theory: Classical theory of electromagnetic field – Quantization of electromagnetic field.

M.Sc Physics – Semester II

Core VI   Nanoscience and Nanotechnology I - Fundamentals

Credits: 5 Hours: 90 (C-75, T-4, S-8, A-3)   **QPC: 13MP06**

Preamble:

Nanotechnology – The new technological revolution with polarizing views, inspiring world vision of transformation and stimulation to develop new tools that can touch all aspects of human society. Nanotechnology has the potential to provide the solution to global challenges that we face such as human health care, energy crisis, climate change and environmental pollution etc.

Nanotechnology mainly consists of the processing of separation, consolidation and deformation of materials by one atom or molecule.

The major development in the Nanotechnology and Nanoscience started from the birth of cluster science and invention of Scanning Tunneling Microscope (STM) which led to the development of Carbon NanoTubes(CNTs).

Objectives:
- To understand the inner concepts of Nanoscience towards material behavior
- To learn the technology involved in the fabrication and application of Nanomaterials

Unit I Synthesis of Nanomaterials – I   **(15 hrs)**

Low Dimensional 2D,1D,0D Nanomaterials – Top Down and Bottom up Techniques for synthesis of Nanomaterials – Chemical methods of synthesis: Colloids and Colloids in Solutions – Langmuir-Blodgett Method – Micro Emulsions - Sol-Gel Method – Hydrothermal synthesis – <u>Sonochemical synthesis – Microwave synthesis</u>.

Unit II Synthesis of Nanomaterials – II   **(13 hrs)**

Physical Methods of synthesis: Plasma Arc Discharge – Sputter Deposition – DC, RF, Magnetron Sputtering – Methods based on Evaporation: Thermal Evaporation, Electron Beam Evaporation, Laser Evaporation – Chemical Vapour Deposition – Molecular Beam Epitaxy – High Energy Ball Milling.

Unit III Characterization Methods   **(14 hrs)**

Optical Microscope: Confocal Microscope – Electron Microscopes: Scanning Electron Microscope, TEM – SPM: STM, AFM, SNOM – Diffraction Method: XRD – Atomic Scattering factor – Diffraction from different types of samples – Debye-Scherer formula.
Spectroscopes: UV-VIS-NIR Spectrometer – Raman Spectrometer.
Magnetic Measurements: VSM

Unit IV Lithographic Methods   **(17 hrs)**

Properties of Nanomaterials: Surface to volume ratio at Nanoscale – Thermal Properties – Mechanical properties - Magnetic properties – Optical properties
Lithographic Methods

Photolithography: Lithography using UV light, Laser Beams and X-rays – Lithography using Particle Beams: Electron Beam Lithography, Ion Beam Lithography and Neutral Beam Lithography – Scanning Probe Lithography: Dip Pen Lithography, Optical Scanning Probe Lithography – Soft Lithography: Microcontact Printing, Replica Molding, Micro transfer Moldings and Micro Molding in Capillaries.

Unit V Special Nanomaterials   **(16 hrs)**

Carboneous Nanomaterials – Fullerene – Carbon Nano Tubes – Types of Carbon Nano Tube – Synthesis and Purification of CNT – Filling of CNT – properties of CNT - Graphene – Porous Silicon: Mechanism of formation of Porous Silicon – Properties of Porous Silicon.
Self assembled Mono layers: Mono layers on Gold – Growth Process Applications
Quantum dots: Quantum confinement in semiconductor nano structures – Electronic density states – Synthesis of Quantum dots – Characterization of semiconductor nano structures – Applications

Books for Study:

1. Nanotechnology   : Sulabha K Kulkarni, Capital publishing
   Principles and Practices   Company, New Delhi, 2nd edition, 2011.
2. Introduction to NanoScience and   : K.K.Chattopadhyaya and A.N Banerjee,
   Nanotechnolgy   PHI Learning Private Ltd., New Delhi,
                                          First Edition, 2009.
3. NANO: The Essentials   : T.Pradeep, Tata McGraw-Hill Publishing
   Understanding Nanoscience and   Company Ltd,New Delhi, 3rd Reprint,2009.
   Nanotechnology
4. Nanotechnology: : Er. Rakesh Rathi, S.Chand &Company
   Technology Revolution of 21st Century   Ltd, New Delhi, First Edition, 2009.

5. Nanomaterials, Nanotechnologies   :Michael F.Ashby, Paulo J.Ferreira,Daniel L
   And Design   Schodel, Elsevier India Pvt. Ltd, First

Printed in India, 2011.

Books for Reference:

1. Nanotechnology   : Mick Wilson, Kamali Kannangara, Geoff
   Basic Science & Emerging Technologies   Smith,Michelle Simmons and Burkhard
                                                       Raguse Overseas Press India Pvt.Ltd,
                                                       Reprint 2008.

2. Introduction to   : Charles P. Poole Jr. and Frank J. Owens, A
   Nanotechnology   John, Wiley Sons, INC., Publication, 2003.

3. Characterization of   : Zhong Lin Wang, Wiley-VCH Verlag
   Nanophase materials   GmbH,2000.

4. Nanotechnology: An introduction   : Michael Kohler and Wolfgang Fritzsche,
   to Nanostructuring Techniques   Wiley-VCH Verlag GmbH& Co. KCaA,
                                                        2004.

5. Nano Electronics &   : K. Goser, P. Glosekotter, V. Dienstuhl,
   Nano Systems   Springer, 3rd Reprint 2009.

M.Sc Physics – Semester II

Elective II Digital Electronics and Microprocessors

Credits:5 Hours :90 (C-75, T-4, S-8, A-3)   **QPC:13MPE2**

Preamble:

In the modern world of electronics the term digital is often associated with computers. It is certainly difficult to think of an area of life today that is not influenced in one way or other by digital computers. The availability of the computational power is directly converted into the development of the digital fundamental circuits. The digital ICs which are smaller, faster, more economical and more powerful offer a great number of applications. Today digital circuits and systems can be found almost in every field.

An introduction to the field of digital electronics and microprocessors with a number of applications are intended to provide a strong background in the digital data manipulations.

Objectives:
- To impart the basic concepts of digital principles and digital circuits
- To cherish the applications of digital data manipulating systems

Unit I Data Processing Circuits (Or) Digital Data Circuits   (15 hrs)

Logic Gates – Boolean Algebra and De-Morgan's Theorem – Sum of Products Method – Karnaugh's Map and Simplifications – Half Adder , Full Adder – Half Subtractor, Full Subtractor – Binary Adder/Subtractor – Multiplexer – (16-1) Multiplexer – Demultiplexer – (1-16) Demultiplexer – BCD to Decimal Decoder – (1-of-10) Decoder – Seven Segment Decoder – Decimal to BCD Encoder – Parity generators/ checkers.

Unit II Flip Flops and Registers **(12 hrs)**

RS Flip Flop- Clocked RS Flip Flop – D Flip Flop – Edge Triggered D-Flip Flop - JK Flip Flop – JK Master Slaved Flip Flop – 555 Timer Astable - 555 Timer Monostable - Types of Registers – Serial-in Serial-out – Serial-in Parallel-out – Parallel-in Parallel-out – Parallel-in Serial-out – Universal Shift Register.

Unit III Counters **(15 hrs)**

Types of Counters – Asynchronous and Synchronous Counter –   MOD-3, MOD-5 and Decade Counters – Ring Counters – Shift Counters – Digital to Analog Converter – Binary Ladder Method – 4 bit Digital to Analog converter –Analog to Digital converter –Simultaneous Method – Memory – ROMs, PROMs, EPROMs and EEPROMs – RAMs – SRAM and DRAM.

Unit IV Microprocessors **(15 hrs)**

Intel 8085 Microprocessor – Architecture – Pin Configuration – Instruction Set of 8085 Microprocessor – Instruction Cycle – Timing Diagram – Op code Fetch Cycle – Memory Read Cycle for MOVE A,C & ADD M – Addressing Modes – Assembly Language Programming – Program to add and subtract two 8-bit numbers – Sort numbers by ascending and descending order – 8257 DMA Microcontroller – Pin Configuration – Block diagram of 8257.

Unit V Micro controllers **(18 Hrs)**

Microprocessor Vs Microcontroller – Applications of Microcontrollers (qualitative only) – commercial Microcontrollers – INTEL 8051 Microcontroller – Features of 8051 Microcontroller - Pin out of 8051Microcontroller - Architecture of INTEL 8051 Microcontroller - Memory organization – Addressing modes – Boolean Processor – Interrupts – 8051 Instruction execution – 8051 Instruction set – Data transfer Instructions – Arithmetic Instructions – Logic Instructions – Control transfer/Program control – 8051Microcontroller program to add two 16 bit numbers – 8051 Microcontroller program to find the maximum number from a given ten 8-bit numbers.

Books for Study:

1. Digital Principles and Applications   : A.P Malvino & D.P.Leach,
                                                 TataMcGraw Hill Edn., Pvt., Ltd,
                                                 New Delhi 7th Edition, 2011.
2. Introduction to Microprocessors   : Aditya .P.Mathur, TataMcGraw
                                                 Hill edn., Pvt.Ltd, New Delhi, 3rd
                                                 Edition, 32nd Reprint 2010.
3. Advanced Microprocessor and   : Prof.S.K.Venkataram, University
   Microcontroller   Science Press, Chennai, 1st Edition,
                                                 2002, Reprint 2008.

Books for Reference:

1. Electronic Principles and Applications   : A.B.Bhattacharya, New Central
                                                 Book Agency (P) Ltd, 2006.
2. Microprocessor Architecture, Programming : Ramesh Gaonkar, Penram
   And applications with the 8085   International Publishing (India)
                                                 Pvt.,Ltd, 5th Edition, 2010.

M.Sc Physics – Semester II

Advanced Learner's Course I Astrophysics

Credits: 4   **QPC: 13MPA1**

Preamble:
        Everyone is familiar with the fact that the universe is populated by stars and that these occur in huge assemblies. These huge assemblies called as galaxies contain stars of the order of 10^{11}, together with clouds of gas and dust. Also in the universe is present the non-luminous large fraction of matter called dark matter. The dark energy is estimated to about 70% of the bulk of the energy density in the universe. The striking success of the big bang theory with the observation of the red shift of galaxies, abundant presence of light elements, the existence of the all pervading cosmic microwave background radiation would intrigue any Astrophysicist to explore the nuances of universe. This paper gives a well defined explanation for the enthusiastic physics off springs to enjoy not only about space, but also about the cosmic rays and cosmic particles.

Unit I The expanding Universe**
        The Hubble expansion – Olber's Paradox - The Friedmann equation - The source of energy density – Observed energy densities and the age of the universe – The declaration parameter: the effects of cosmological constant – Cosmic microwave radiation – Radiation in the early universe – Radiation and matter eras – Baryogenesis and the matter – Antimatter asymmetry of the universe.

Unit II Dark matter and Dark energy in the universe**
        Dark matter in galaxies and clusters – Gravitational lensing – amplification by gravitational lenses: Microlensing and MACHOs – The lensing probability: Optical depth – Baryonic dark matter – Neutrinos – Axions – WIMPs – Expected WIMP cross-sections and event rates – Dark energy: The Hubble plot at large redshifts – Vacuum energy: The Casimir effect – Problems with the cosmological constant and dark energy.

Unit III Development of structure in the early Universe**
        Horizon and Flatness problems – Inflation - Chaotic inflation – Quantum fluctuations and inflation – The spectrum of primordial fluctuations – Large scale structure: Gravitational collapse and the Jeans mass – The growth of structure in an expanding universe – Evolution of fluctuations during the radiation era.

Unit IV Cosmic Particles**
        The spectrum and composition of cosmic rays – Geomagnetic and solar effects – Acceleration of cosmic rays – Secondary cosmic radiation: Hard and Soft components – Electromagnetic cascades and air showers – Ultra high energy cosmic ray shower – Radio galaxies and Quasars – Point sources of gamma rays: Gamma ray bursts – Atmospheric Neutrinos: Neutrino oscillations – Solar Neutrinos – Point Neutrino sources – The binary Pulsar.

Unit V Particle Physics in stars**

      Stellar evolution – The early stages – Hydrogen burning: the pp cycle in the sun – Helium burning and the production of Carbon and oxygen – Production of heavy elements – White dwarf stars – Stellar Collapse: Type II Supernovae – Neutrinos from SN1987A – Neutron stars and pulsars – Black holes – Hawking radiation from black holes.

** Problems associated with the topics Excluded

Book for study:

Particle Astrophysics   : Donald Perkins-Oxford Master series in Particle Physics, Astrophysics and Cosmology, Oxford University Press, Reprint 2004, 2005, 2008.

Book for Reference:

1. Astrophysics-Stars and Galaxies   : K.D.Abhyankar, University Press (India) Private limited 2001, Reprint 2009.
2. Astrophysics of the solar system   : K.D.Abhyankar, University Press (India) Private limited 1999, Reprint 2009.

DEPARTMENT OF CHEMISTRY
LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Name of the value added courses (with 30 or more contact hours) offered during last five years	Course Code	Explanation
2017- 2018		
EVS	EVS	To impart education on environmental science
VE	VEC	To impart education on values
Non Major Elective Course I: Chemistry in Everyday Life	315NCE	❖ To promote the core competency skills and augment citizenship values. ❖ To familiarize the students with few important chemical aspects of health care, beauty, medicine, housekeeping, industry, clinical health and biochemical analysis.
Skill based chemistry-I Applications of Computer in Chemistry	315CS1	To promote the computer competency skills To enable students to communicate chemical structures and perform data analysis
General Awareness (online)	415NGA	To give awareness on general knowledge
Skill based chemistry-II Chemistry for Entrepreneurship	415CS2	❖ To apply the chemistry principles in the preparation of specified house hold products. ❖ To develop entrepreneurship skills. ❖ To gain first hand information regarding functioning of the industries visited.
SBC III – Chemistry for Exploration	515CS3	❖ To provide an overview on Intellectual Property Rights to the graduates. ❖ To know the fundamental concepts of cheminformatics ❖ To identify various sources of information for literature review and data collection.
Elective III Project	615CE3	❖ To think critically and analyze chemical problems. ❖ To enhance the ability of working in teams as well as independently. ❖ To perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions. ❖ To present scientific and technical information resulting from laboratory experiments both in written and oral formats ❖ To assist students in developing scientific and practical skills

Skill Based Course IV: Nanoscience	615CS4	❖ To know the basics of nanoscience and nanotechnology. ❖ To acquire skill in synthesizing nanoparticles
2016- 2017		
Name of the value added courses (with 30 or more contact hours) offered during last five years	**Course Code**	**Explanation**
EVS	EVS	To impart education on environmental science
VE	VEC	To impart education on values
Non Major Elective Course I: Chemistry in Everyday Life	315NCE	❖ To promote the core competency skills and augment citizenship values. ❖ To familiarize the students with few important chemical aspects of health care, beauty, medicine, housekeeping, industry, clinical health and biochemical analysis.
Skill based chemistry-I Applications of Computer in Chemistry	315CS1	❖ To promote the computer competency skills ❖ To enable students to communicate chemical structures and perform data analysis. ❖ To familiarize with working of Chemdraw
General Awareness (online)	415NGA	To give awareness on general knowledge
Skill based chemistry-II Chemistry for Entrepreneurship	415CS2	❖ To apply the chemistry principles in the preparation of specified house hold products. ❖ To develop entrepreneurship skills. ❖ To gain first hand information regarding functioning of the industries visited.
Skill based chemistry III Chemistry for Exploration	514CS3	❖ To develop the skill of surveying scientific articles, report writing and to expose the students to basic laboratory maintenance techniques.
Skill based chemistry IV - Mini Project	614CS4	❖ To think critically and analyze chemical problems. To enhance the ability of working in teams as well as independently
2015- 2016		
Name of the value added courses (with 30 or more contact hours) offered during last five years	**Course Code**	**Explanation**
EVS	EVS	To impart education on environmental science
VE	VEC	To impart education on values
NME- Consumer Products for Home Needs	314NCP	❖ To promote the core competency skills and augment citizenship values. ❖ To familiarize the students with few important chemical aspects of health care, beauty, medicine, housekeeping, industry, clinical health and biochemical analysis.

Skill based chemistry-I Applications of Computers in Chemistry	314CS1	❖ To promote the computer competency skills ❖ To enable students to communicate chemical structures and perform data analysis. To familiarize with working of Chemdraw
General Awareness	412NGA	To give awareness on general knowledge
Skill based chemistry-II Chemistry for Entrepreneurship	414CS2	❖ To apply the chemistry principles in the preparation of specified house hold products. ❖ To develop entrepreneurship skills. To gain first hand information regarding functioning of the industries visited.
Elective III- Applied Chemistry	612CE3	❖ To create awareness about renewable and non renewable energy sources ❖ To give knowledge on green chemistry
Skill based course IV - Dye chemistry Practical & Project	612CS4	❖ To improve the skills in dyeing processes and entrepreneurship ❖ An ability to gain entry into higher studies and job market

2014-2015		
Name of the value added courses (with 30 or more contact hours) offered during last five years	**Course Code**	**Explanation**
EVS	EVS	To impart education on environmental science
VE	VEC	To impart education on values
NME- Consumer Products for Home Needs	312NCP	❖ To promote the core competency skills and augment citizenship values. ❖ To familiarize the students with few important chemical aspects of health care, beauty, medicine, housekeeping, industry, clinical health and biochemical analysis.
General Awareness	412NGA	To give awareness on general knowledge
Elective III- Applied Chemistry	612CE3	❖ To create awareness about renewable and non renewable energy sources ❖ To give knowledge on green chemistry
Skill based course IV - Dye chemistry Practical & Project	612CS4	❖ To improve the skills in dyeing processes and entrepreneurship ❖ An ability to gain entry into higher studies and job market

2013-2014		
Name of the value added courses (with 30 or more contact hours) offered during last five years	**Course Code**	**Explanation**
EVS	EVS	To impart education on environmental science
VE	VEC	To impart education on values
NME- Consumer Products for Home Needs	312NCP	❖ To promote the core competency skills and augment citizenship values.

		❖ To familiarize the students with few important chemical aspects of health care, beauty, medicine, housekeeping, industry, clinical health and biochemical analysis.
General Awareness	412NGA	To give awareness on general knowledge
Elective I Applied Chemistry	511CE1	To create awareness about renewable and non renewable energy sources
Skill based course IV - Dye chemistry Practical & Project	611CS4	❖ To improve the skills in dyeing processes and entrepreneurship ❖ An ability to gain entry into higher studies and job market

Curriculum design
SRI G. V. G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Department of Chemistry - B.Sc Chemistry
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2017 – 2018 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
117TA1/ 117MY1/ 117HD1/	Part I: Language I	6	3	25	75	100	4
117EN1	Part II: English I	6	3	25	75	100	4
117C01	Part III: Core I General Chemistry I	7	3	25	75	100	4
	Part III: Core Practical I Semi-micro Qualitative Analysis	3	-	-	-	-	-
117AC1	Part III: Allied I Physics I	4	3	25	50	75	3
	Part III: Allied Physics Practical	2	-	-	-	-	-
117EVS	Part IV: Environmental Studies	2	2	50	-	50	2
Semester II							
217TA2/ 217MY2/ 217HD2/ 217FR2	Part I: Language II	6	3	25	75	100	4
217EN2	Part II: English II	6	3	25	75	100	4
217C02	Part III: Core II General Chemistry II	7	3	25	75	100	4
217CP1	Core Practical I Semi-micro Qualitative Analysis	3	3	25	50	75	3
217AC2	Allied II Physics II	4	3	25	50	75	3
217ACP	Allied Physics Practical	2	3	20	30	50	2
217VEC	Part IV: Value Education	2	2	50	-	50	2
Semester III							
317TA3/ 317MY3/ 317HD3/ 317FR3	Part I: Language III	6	3	25	75	100	4
317EN3	Part II: English III	6	3	25	75	100	4
317C03	PartIII:Core III General Chemistry III	4	3	25	75	100	4
	Core Practical II Volumetric and Organic Analysis	3	-	-	-	-	-
317AC3	Part III: Allied III Mathematics I	6	3	25	75	100	4
317NCE	Part IV: Non Major Elective: Chemistry in Everyday Life	2	2	50	-	50	2
317CS1	Part IV: SEC I: Applications of Computer in Chemistry	3	3	75	-	75	3

	Semester IV						
417TA4/ 417MY4/ 417HD4/	Part I: Language IV	6	3	25	75	100	4
417EN4	Part II: English IV	6	3	25	75	100	4
417C04	Part III: Core IV General Chemistry IV	4	3	25	75	100	4
417CP2	Core Practical II Volumetric and Organic Analysis	3	6	40	60	100	4
417AC4	Allied IV Mathematics II	6	3	25	75	100	4
417NGA	Part IV: General Awareness	-	1	50	-	50	2
417CS2	Part IV: Skill Enhancement Course II: Chemistry for Exploration I	3	3	75	-	75	3
417GIS	Part IV: Information Security	2	2	50	-	Grade	Grade
417ALC	ALC I – Food Science	-	3	-	100	100	4*
	Semester V						
517C05	**Part III**: Core V Organic Chemistry I	5	3	25	75	100	4
517C06	Core VI Inorganic Chemistry I	4	3	25	75	100	4
517C07	Core VII Physical Chemistry I	5	3	25	75	100	4
517CE1/ 517CE2	ElectiveI Polymer and Dye chemistry / Agro-Industrial Chemistry	4	3	25	75	100	4
517CE3	Part III: Elective II Project	5	3	50	50	100	4
	Core Practical III Gravimetric Analysis & Physical Chemistry Experiments	5	-	-	-	-	-
517CS3	Part IV: Skill Enhancement Course III: Chemistry for Exploration II	2	3	75	-	75	3
	Semester VI						
617C08	Part III: Core VIII Organic Chemistry II	5	3	25	75	100	5
617C09	Core IX Inorganic Chemistry II	4	3	25	75	100	4
617C10	Core X Physical Chemistry II	4	3	25	75	100	4
617C11	Core XI Spectroscopy	4	3	25	75	100	4
617CE4/ 617CE5	Elective III Industrial Chemistry/ Applied Chemistry	4	3	25	75	100	4
617CP3	Core Practical III Gravimetric Analysis and Physical Chemistry Experiments	5	6	40	60	100	4
617CP4	Core Practical IV Applied Chemistry Practical	2	3	25	50	75	2
617CS4	Part IV: Skill Enhancement Course IV: Nanoscience	2	3	75	-	75	3
617EX1/ 617EX2/ 617EX3 617EX4/ 617EX5	Part V: Extension Activity	-	-	50	-	50	2
617ALC	ALC II - Dairy Chemistry	-	3	-	100	100	4*
	Total					3500	140

Curriculum Design
SRI G. V. G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Chemistry
B.Sc Chemistry
Scheme of Examination – CBCS Pattern
(For the Students admitted from the academic year 2016 – 2017 only)

Course Code	Course Title	Ins. Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
			Examination				
Semester I							
115TA1/ 115MY1/ 115HD1/ 115FR1	Part I: Language I	6	3	25	75	100	4
115EN1	Part II: English I	6	3	25	75	100	4
115C01	Part III: Core I General Chemistry I	7	3	25	75	100	4
	Part III: Core Practical I Semi micro qualitative analysis	3	-	-	-	-	-
115AC1	Part III: Allied I Physics I	4	3	25	50	75	3
	Part III: Allied Physics Practical	2	-	-	-	-	-
115EVS	Part IV: Environmental Studies	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	Part I: Language II	6	3	25	75	100	4
215EN2	Part II: English II	6	3	25	75	100	4
215C02	Part III: Core II General Chemistry II	7	3	25	75	100	4
215CP1	Part III: Core Practical I Semi micro qualitative analysis	3	3	25	50	75	3
215AC2	Part III: Allied II Physics II	4	3	25	50	75	3
215ACP	Part III: Allied Physics Practical	2	3	20	30	50	2
215VEC	Part IV: Value Education	2	2	50	-	50	2

	Semester III						
315TA3/ 315MY3/ 315HD3/ 315FR3	Part I: Language III	6	3	25	75	100	4
315EN3	Part II: English III	6	3	25	75	100	4
315C03	Part III: Core III General Chemistry III	4	3	25	75	100	4
	Part III: Core Practical II Volumetric and Organic analysis	3	-	-	-	-	-
315AC3	Part III: Allied III Mathematics I	6	3	25	75	100	4
315CS1	Part IV: Skill Based Course I: Applications of Computer in Chemistry	3	3	75	-	75	3
315NCE	Part IV: Non Major Elective Course I: Chemistry in Everyday Life	2	2	50	-	50	2

Semester IV							
415TA4/ 415MY4/ 415HD4/ 415FR4	Part I: Language IV	6	3	25	75	100	4
415EN4	Part II: English IV	6	3	25	75	100	4
415C04	Part III: Core IV General Chemistry IV	4	3	25	75	100	4
416CP2	**Part III: Core Practical II Volumetric and Organic Analysis**	**3**	**6**	**40**	**60**	**100**	**4**
415AC4	Part III: Allied IV Mathematics II	6	3	25	75	100	4
415CS2	Part IV: Skill Based Course II: Chemistry for Entrepreneurship	3	3	75	-	75	3
415NGA	Part IV: Non Major Elective Course II: General Awareness (Online)	-	1	50	-	50	2
415GIS	Part IV: Information Security	2	2	-	-	Grade	Grade
415ALC	Advanced Learners Course I – Food Science	-	-	-	100	100	4*
Semester V							
515C05	Part III: Core V Organic Chemistry I	5	3	25	75	100	5
515C06	Part III: Core VI Inorganic Chemistry I	4	3	25	75	100	4
515C07	Part III: Core VII Physical Chemistry I	5	3	25	75	100	4
515C08	Part III: Core VIII Spectroscopy	4	3	25	75	100	4
515CE1	Part III: Elective I Polymer and Dye Chemistry	4	3	25	75	100	4
	Part III: Core Practical III Gravimetric Analysis and Physical Chemistry experiments	5	-	-	-	-	-
515CS3	Part IV: Skill Based Course III: Chemistry for Exploration	3	3	75	-	75	3
Semester VI							
615C09	Part III: Core IX Organic Chemistry II	4	3	25	75	100	5
615C10	Part III: Core X Inorganic Chemistry II	4	3	25	75	100	4
615C11	Part III: Core XI Physical Chemistry II	4	3	25	75	100	4
615CE2	Part III: Elective II Analytical Chemistry	4	3	25	75	100	4
615CE3	Part III: Elective III Project	5	3	25	75	100	4

615CP3	Part III: Core Practical III Gravimetric Analysis and Physical Chemistry experiments	5	6	40	60	100	3
615CP4	Part III: Core Practical IV Applied Chemistry Practical	2	3	25	50	75	2
615CS4	Part IV: Skill Based Course IV: Nanoscience	2	-	75	-	75	3
615EX1/ 615EX2/ 615EX3 615EX4/ 615EX5	Part V: Extension activity	-	-	50	-	50	2
615ALC	Advanced Learners Course II - Dairy chemistry	-	-	-	100	100	4*
	Total					**3500**	**140**

- Starred credits are treated as additional credits, which are optional.

II UG Course
Semester – III
Part IV- Non Major Elective Course I - Chemistry in Everyday Life   315NCE
(For the students admitted from the academic year 2015 – 2016 onwards)
                                                                                                         Total hours: 38

Unit I: Chemistry in Health Care and Beauty   (8 Hours)   Health care: Vitamins and Proteins- sources, functions and deficiency diseases- Hazard alert and Precautions for safety: Asbestos, Silica, Lead paints, Cement, Welding fumes and gases.Cosmetics: Face powder- Face cream- Lipstick- Mascara-Nail polish- Perfumes-Shampoo-Tooth paste-Ingredients and uses.

Unit II: Chemistry in Medicine   (7 Hours)
        Analgesics, Antimicrobials, Antifertility drugs, Anaesthetics, Antibiotics, Antacids, Antihistamines, Tranquilizers, Hypnotics and Antidepressant drugs- definition, examples, uses and side effects.

Unit III: Chemistry in Housekeeping   (7 Hours)
        Soaps- definition, varieties of soap and their uses- cleansing action of soap -detergents, deodorants, acid cleaners, laundry aids, alkaline cleaners, metal polishes, solvent cleaners, floor seal, abrasive, antiseptics, disinfectants- definition, ingredients and examples.

Unit IV: Chemistry in Industry   (8 Hours)
        Role of Chemistry in photography- photographic process- preparation of sensitive plates-exposure- developing- fixing- printing- toning- colour photography.
        Food industry: Food adulterants and testing, Food colorants, Food preservatives and Food additives- Agriculture: Fertilizer- Bio fertilizers- requisites, manufacture and uses-micronutrients, macronutrients and mixed fertilizers- definition and examples-Pesticides and Insecticides- definition and examples- fate of pesticides and Insecticides in soil and plants.
        Plastics- definition- types, examples and recycling of plastics.

Unit V: Chemistry in Clinical Health and Biochemical Analysis   (8 Hours)

Diagnostic test for sugar, salt and cholesterol in serum and urine- detection of hallucinogens and poisons- Antitodes for poisons- detection of anemia and diabetics- transport of oxygen and maintenance of pH of blood, Analysis of R_h factor, blood pressure- normal, high and low and to control.

Books for Study:

1. Text book of Applied Chemistry   – Thangamma Jacob, Macmillan, 1987
                                              Home Science and Allied Science Edition
2. Industrial Chemistry   – B.K. Sharma, Goel publishing house
3. A Text of Pharmaceutical Chemistry – Jayashree ghosh, Sultan chand&sons, New
                                              Delhi,1997.

B.Sc. Chemistry
Semester III
Part IV- Skill Based Course I – Applications of Computer in Chemistry 315CS1
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **Total hours: 38**

This course in skill based learning provides the students with all the fundamental concepts of basics in computer which has become a necessity in the present era.

Unit I: Word Processing   **(6 Hours)**

Introduction- Word document window- Basic commands- Concept like editing, cutting, saving, pasting, formatting and tabular columns- Formatting the text and document-Working with header and footer- Typing texts and equations in Chemistry- Mail merge.

Unit II: Spread Sheet   **(5 Hours)**

Introduction- Navigating worksheets- entering and editing Data, text and formulas- Excel functions- Excel's Chart features(elementary idea only)- GraphPad (elementary idea only).

Unit III: PowerPoint Presentation   **(5 Hours)**

Powerpoint basics- Terminology- Color Schemes- templates- Creating presentations- Working with text in Power Point- editing, formatting and aligning text- slide preparation and presentation- Working with Animation.

Unit IV: Chemdraw   **(6 Hours)**

Introduction- salient features in Chemdraw- main tools- optional tools- significance of Chemdraw- Chemdraw Shortcuts- drawing chemical structures and pasting them in the text- working with structures- advantages.

Unit V: Internet   **(6 Hours)**

Internet – the working way of internet-internet protocols- internet addressing– domain name- WWW- webpages, home page, web browsers- search engine- E-mail- advantages and disadvantages- Intranet and Extranet- application of internet in Chemistry.

Practicals   **(10 Hours)**

1. Prepare Bio-Data using Word Processing.
2. Create a Newsletter using Word Processing.
3. Prepare a Mark statement using Word Processing.
4. Create a document using format options in Word Processing.
5. Design an advertisement copy in Word Processing.

6. Create a database using the formulas sum, average, max, min, Formulas in Chemistry (given by the teacher) in Spread Sheet.
7. Drawing charts and Graphs in Spread Sheet.
8. Prepare a Power Point slide using animation and sound effects.
9. Draw the structure of the molecules using Chemdraw.
10. Draw the structure of the molecule by using Chemdraw and paste into Word Document.

Books for study
1. Nellai Kannan C., 2008, MS OFFICE, NELS Publications, Tirunelveli.
2. Alexis Leon & Mathews Leon, 1999, Fundamentals of Information Technology, Leon Tech World, Chennai.

B.Sc. Chemistry
Semester IV
Part IV- Skill Based Course II – Chemistry for Entrepreneurship   415CS2
(For the students admitted from the academic year 2015 – 2016 onwards)
Total Hours: 38

Preamble:

Chemistry is the study of composition and characterization of substances. Consumer products are essential necessities of everyday life. Exposure to this kind may alter one's thought and outlook and open-up new avenues for self employment.

a) **Industrial visit (1 No.) – Report making on the visit- 12 hours**
b) **Preparation of following house hold products – 26 lab hours**
   (Formulation and Procedures)

Soap	Talcum powder	Bed bug repellant	Cake
Detergent	Shampoo	Mosquito repellant	Bread
Laundry blue	Perfumes	Cockroach repellant	Biscuits
Bleaching powder	Tooth powder	Chalk	Homemade chocolates
Phenoyl	Tooth paste	Candle	Ink
Incandescent sticks	Kumkum	Laundry starch	Cutflower Preservative

Curriculum Design
SRI G. V. G. VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Chemistry - B.Sc Chemistry
Scheme of Examination – CBCS Pattern
(For the Students admitted from the academic year 2015 – 2016 & 2016-2017 only)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
115TA1/ 115MY1/ 115HD1/ 115FR1	Part I: Language I	6	3	25	75	100	4
115EN1	Part II: English I	6	3	25	75	100	4

115C01	Part III: Core I General Chemistry I	7	3	25	75	100	4
	Part III: Core Practical I Semi micro qualitative analysis	3	-	-	-	-	-
115AC1	Part III: Allied I Physics I	4	3	25	50	75	3
	Part III: Allied Physics Practical	2	-	-	-	-	-
115EVS	Part IV: Environmental Studies	2	2	50	-	50	2
Semester II							
215TA2/ 215MY2/ 215HD2/ 215FR2	Part I: Language II	6	3	25	75	100	4
215EN2	Part II: English II	6	3	25	75	100	4
215C02	Part III: Core II General Chemistry II	7	3	25	75	100	4
215CP1	Part III: Core Practical I Semi micro qualitative analysis	3	3	25	50	75	3
215AC2	Part III: Allied II Physics II	4	3	25	50	75	3
215ACP	Part III: Allied Physics Practical	2	3	20	30	50	2
215VEC	Part IV: Value Education	2	2	50	-	50	2
Semester III							
315TA3/ 315MY3/ 315HD3/ 315FR3	Part I: Language III	6	3	25	75	100	4
315EN3	Part II: English III	6	3	25	75	100	4
315C03	Part III: Core III General Chemistry III	4	3	25	75	100	4
	Part III: Core Practical II Volumetric and Organic analysis	3	-	-	-	-	-
315AC3	Part III: Allied III Mathematics I	6	3	25	75	100	4
315CS1	Part IV: Skill Based Course I: Applications of Computer in Chemistry	3	3	75	-	75	3
315NCE	Part IV: Non Major Elective Course I: Chemistry in Everyday Life	2	2	50	-	50	2

	Semester IV						
415TA4/ 415MY4/ 415HD4/ 415FR4	Part I: Language IV	6	3	25	75	100	4
415EN4	Part II: English IV	6	3	25	75	100	4
415C04	Part III: Core IV General Chemistry IV	4	3	25	75	100	4
415CP2	Part III: Core Practical II Volumetric and Organic Analysis	3	6	40	60	100	4
415AC4	Part III: Allied IV Mathematics II	6	3	25	75	100	4
415CS2	Part IV: Skill Based Course II: Chemistry for Entrepreneurship	3	3	75	-	75	3
415NGA	Part IV: Non Major Elective Course II: General Awareness (Online)	-	1	50	-	50	2
415GIS	Part IV: Information Security	2	2	-	-	Grade	Grade
415ALC	Advanced Learner's Course I – Food Science	-	-	-	100	100	4*
	Semester V						
515C05	**Part III: Core V Organic Chemistry I**	**5**	**3**	**25**	**75**	**100**	**5**
515C06	**Core VI Inorganic Chemistry I**	**4**	**3**	**25**	**75**	**100**	**4**
515C07	**Core VII Physical Chemistry I**	**5**	**3**	**25**	**75**	**100**	**4**
515C08	**Core VIII Spectroscopy**	**4**	**3**	**25**	**75**	**100**	**4**
515CE1	**Elective I Polymer and Dye Chemistry**	**4**	**3**	**25**	**75**	**100**	**4**
	Core Practical III Gravimetric Analysis and Physical Chemistry experiments	**5**	**-**	**-**	**-**	**-**	**-**
515CS3	**Part IV: Skill Based Course III: Chemistry for Exploration**	**3**	**3**	**75**	**-**	**75**	**3**
	Semester VI						
615C09	**Part III: Core IX Organic Chemistry II**	**4**	**3**	**25**	**75**	**100**	**5**
615C10	**Core X Inorganic Chemistry II**	**4**	**3**	**25**	**75**	**100**	**4**
615C11	**Core XI Physical Chemistry II**	**4**	**3**	**25**	**75**	**100**	**4**
615CE2	**Elective II Analytical Chemistry**	**4**	**3**	**25**	**75**	**100**	**4**
615CE3	**Part III: Elective III Project**	**5**	**3**	**25**	**75**	**100**	**4**
615CP3	**Core Practical III Gravimetric Analysis and Physical Chemistry experiments**	**5**	**6**	**40**	**60**	**100**	**3**
615CP4	**Part III: Core Practical IV Applied Chemistry Practical**	**2**	**3**	**25**	**50**	**75**	**2**
615CS4	**Part IV: Skill Based Course IV: Nanoscience**	**2**	**-**	**75**	**-**	**75**	**3**
615EX1/ 615EX2/ 615EX3 615EX4/ 615EX5	Part V: Extension activity	-	-	50	-	50	2
615ALC	Advanced Learner's Course II - Dairy chemistry	-	-	-	100	100	4*
	Total					**3500**	**140**

- Starred credits are treated as additional credits, which are optional.

Part IV- Non Major Elective Course I - Chemistry in Everyday Life   315NCE
(For the students admitted from the academic year 2015 – 2016 onwards)

Total hours: 38

Unit I: Chemistry in Health Care and Beauty   (8 Hours) Health care: Vitamins and Proteins- sources, functions and deficiency diseases- Hazard alert and Precautions for safety: Asbestos, Silica, Lead paints, Cement, Welding fumes and gases.

Cosmetics: Face powder- Face cream- Lipstick- Mascara-Nail polish- Perfumes-Shampoo-Tooth paste-Ingredients and uses.

Unit II: Chemistry in Medicine   (7 Hours)

Analgesics, Antimicrobials, Antifertility drugs, Anaesthetics, Antibiotics, Antacids, Antihistamines, Tranquilizers, Hypnotics and Antidepressant drugs- definition, examples, uses and side effects.

Unit III: Chemistry in Housekeeping   (7 Hours)

Soaps- definition, varieties of soap and their uses- cleansing action of soap -detergents, deodorants, acid cleaners, laundry aids, alkaline cleaners, metal polishes, solvent cleaners, floor seal, abrasive, antiseptics, disinfectants- definition, ingredients and examples.

Unit IV: Chemistry in Industry   (8 Hours)

Role of Chemistry in photography- photographic process- preparation of sensitive plates-exposure- developing- fixing- printing- toning- colour photography.

Food industry: Food adulterants and testing, Food colorants, Food preservatives and Food additives- Agriculture: Fertilizer- Bio fertilizers- requisites, manufacture and uses-micronutrients, macronutrients and mixed fertilizers- definition and examples-Pesticides and Insecticides- definition and examples- fate of pesticides and Insecticides in soil and plants.

Plastics- definition- types, examples and recycling of plastics.

Unit V: Chemistry in Clinical Health and Biochemical Analysis   (8 Hours)

Diagnostic test for sugar, salt and cholesterol in serum and urine- detection of hallucinogens and poisons- Antitodes for poisons- detection of anemia and diabetics- transport of oxygen and maintenance of pH of blood, Analysis of R_h factor, blood pressure- normal, high and low and to control.

Books for Study:

1. Text book of Applied Chemistry   – Thangamma Jacob, Macmillan, 1987
                                           Home Science and Allied Science Edition
2. Industrial Chemistry   – B.K. Sharma, Goel publishing house
3. A Text of Pharmaceutical Chemistry – Jayashree ghosh, Sultan chand&sons, New
                                           Delhi,1997.

B.Sc. Chemistry
Semester III

Part IV- Skill Based Course I – Applications of Computer in Chemistry 315CS1
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **Total hours: 38**

This course in skill based learning provides the students with all the fundamental concepts of basics in computer which has become a necessity in the present era.

Unit I: Word Processing (6 Hours)

Introduction- Word document window- Basic commands- Concept like editing, cutting, saving, pasting, formatting and tabular columns- Formatting the text and document-Working with header and footer- Typing texts and equations in Chemistry- Mail merge.

Unit II: Spread Sheet (5 Hours)

Introduction- Navigating worksheets- entering and editing Data, text and formulas- Excel functions- Excel's Chart features(elementary idea only)- GraphPad (elementary idea only).

Unit III: PowerPoint Presentation (5 Hours)

Powerpoint basics- Terminology- Color Schemes- templates- Creating presentations- Working with text in Power Point- editing, formatting and aligning text- slide preparation and presentation- Working with Animation.

Unit IV: Chemdraw (6 Hours)

Introduction- salient features in Chemdraw- main tools- optional tools- significance of Chemdraw- Chemdraw Shortcuts- drawing chemical structures and pasting them in the text- working with structures- advantages.

Unit V: Internet (6 Hours)

Internet – the working way of internet-internet protocols- internet addressing– domain name- WWW- webpages, home page, web browsers- search engine- E-mail- advantages and disadvantages- Intranet and Extranet- application of internet in Chemistry.

Practicals (10 Hours)

11. Prepare Bio-Data using Word Processing.
12. Create a Newsletter using Word Processing.
13. Prepare a Mark statement using Word Processing.
14. Create a document using format options in Word Processing.
15. Design an advertisement copy in Word Processing.
16. Create a database using the formulas sum, average, max, min, Formulas in Chemistry (given by the teacher) in Spread Sheet.
17. Drawing charts and Graphs in Spread Sheet.
18. Prepare a Power Point slide using animation and sound effects.
19. Draw the structure of the molecules using Chemdraw.
20. Draw the structure of the molecule by using Chemdraw and paste into Word Document.

Books for study

3. Nellai Kannan C., 2008, MS OFFICE, NELS Publications, Tirunelveli.
4. Alexis Leon & Mathews Leon, 1999, Fundamentals of Information Technology, Leon Tech World, Chennai.

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B.Sc. Chemistry

Semester IV

Part IV- Skill Based Course II – Chemistry for Entrepreneurship   415CS2

(For the students admitted from the academic year 2015 – 2016 onwards)

Total Hours: 38

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Preamble:

Chemistry is the study of composition and characterization of substances. Consumer products are essential necessities of everyday life. Exposure to this kind may alter one's thought and outlook and open-up new avenues for self employment.

c) **Industrial visit (1 No.) – Report making on the visit- 12 hours**
d) **Preparation of following house hold products – 26 lab hours**
   (Formulation and Procedures)

Soap	Talcum powder	Bed bug repellant	Cake
Detergent	Shampoo	Mosquito repellant	Bread
Laundry blue	Perfumes	Cockroach repellant	Biscuits
Bleaching powder	Tooth powder	Chalk	Homemade chocolates
Phenoyl	Tooth paste	Candle	Ink
Incandescent sticks	Kumkum	Laundry starch	Cutflower Preservative

B.Sc. Chemistry
Semester V
Part IV Skill Based Course III – Chemistry for Exploration   515CS3
(For the Students admitted from the academic year 2015 –16 & 2016-17 only)

Objective: **Total Hours: 38**
- To provide an overview on Intellectual Property Rights to the graduates.
- To know the fundamental concepts of cheminformatics.
- To identify various sources of information for literature review and data collection.
- To assist students in developing scientific and practical skills.

a) Intellectual Property Rights   **(7 Hours)**
An overview of the IP system in India- IP Awareness and Promotion- Creation of IP- Legal and Legislative Framework- IP Administration and Management- Commercialization of IP- Enforcement and Adjudication- Human Capital Development- Integration of IP with recent government initiatives

b) Cheminformatics   **(3 Hours)**
Introduction to cheminformatics, History and Evolution of cheminformatics - Uses of cheminformatics.

c) Internship   **(18 Hours)**
d) Practical: Basic experiments in Chemistry   **(10 Hours)**
1. Servicing bunsen burners
2. To bore a hole in a cork
3. Preparation of H_2S gas using Kipp's apparatus
4. Calibration of volumetric apparatus
5. Preparation of laboratory reagents
6. Column chromatography-Separation of methylene blue and malachite green
7. Paper chromatography- Separation of metal ions of group I
8. TLC – Separation of different types of inks and aminoacids
9. Distillation and sublimation
10. Solvent purification-Ethanol and acetone

Reference:
1. Intellectual property rights, R. Radhakrishnan, S. Balasubramanian, Excel books, 1st ed., 2008.
2. Practical approach to Intellectual property rights, R. Karuppasamy, H. C. Bindhusha, Himalaya publishing house, 1st ed., 2008.

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B.Sc. Chemistry

Semester VI

Part III Elective III- Project   **615CE3**

(For the Students admitted from the academic year 2015 –16 & 2016-17 only)

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Objective: **Total Hours: 52**

- To think critically and analyze chemical problems.
- To enhance the ability of working in teams as well as independently.
- To perform accurate quantitative measurements with an understanding of the theory and use of contemporary chemical instrumentation, interpret experimental results, perform calculations on these results and draw reasonable, accurate conclusions.
- To present scientific and technical information resulting from laboratory experiments both in written and oral formats.

Instructions:

1. Students are allotted to various faculties of the department according to their CGPA and / or choice. They will be working on specialized problem related to the research interests of the respective guides.
2. Group size: Maximum 3
3. Review I   - Evaluated at the end of I CIA

    Review II   - Evaluated at the end of II CIA

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B.Sc. Chemistry

Semester – VI

Part IV Skill Based Course IV - Nanoscience   **615CS4**

(For the Students admitted from the academic year 2015 –16 & 2016-17 only)

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Objectives: **Total hours: 38**

- To know the basics of nanoscience and nanotechnology.
- To learn characterization techniques of nanomaterials.
- To understand the applications of nanomaterials.
- To acquire skill in synthesizing nanoparticles.

Unit I: Fundamentals and overview of nanoscience   **(3 Hours)**

Nanorevolution of the XX century, Properties at nanoscale-optical, electronic and magnetic, mechanical, thermal properties. Theory, definitions and scaling.

Unit II: Different classes of nanomaterials   **(4 hours)**

Metal and Semiconductor Nanomaterials, Quantum Dots, Wells and Wires, Molecule to bulk transitions Bucky balls and Carbon Nanotubes.

Unit III: Synthesis of nanomaterials   **(10 hours)**

Physical methods**:** Bottom up**-**Ball Milling, Melt mixing, Physical vapour deposition, Ionised cluster beam deposition, Laser pyrolysis, Sputter deposition.

Chemical methods**:** Hydrothermal combustion, bath deposition with capping techniques and top down, Chemical vapour deposition, Synthesis of metal & semiconductor nanoparticles by colloidal route, Microemulsions, Sol-gel method, Combustion method, Wet chemical method

Unit IV: Nano Materials and their Characterization: **(8 hours)**

Electron microscopes – scanning electron microscopes (SEM) – transmission electron microscopes (TEM) – scanning probe microscopy – atomic force microscopy (AFM) – scanning

tunneling electron microscope (STEM) – TEM and EDAX analysis, X-ray Diffraction, Fluorescence Microscopy and Imaging. (Basic principles only)

Unit V: Nanoapplications   **(5 hours)**

Solar energy conversion- Chemical semiconductor solar cells - Dye sensitized solar cells - Polymer solar cells - Nano quantum dot solar cells - and catalysis, Nanomedicine, Nanomaterials in water purification. Current status and future of nanomaterials.

Practicals : Synthesis of Nanomaterials: **(8 hours)**

1. Chemical Synthesis of Copper nanoparticles
2. Chemical Synthesis of iron oxide nanoparticles
3. Chemical Synthesis of CdS Nanoparticles
4. Chemical Synthesis of MnO_2 Nanoparticles
5. Eco friendly synthesis of metal oxide nanoparticles.
6. Bandgap calculation of nanoparticle using UV-Visible spectroscopy.
7. Chemical Synthesis of Silver nanoparticles (demonstration)
8. Synthesis of ZnO Nanoparticles using Sol-gel methods (demonstration)
9. Synthesis of nanoparticle using Ball milling technique (demonstration)

Books for study :

1. Nanotechnology principles and Practices Sulabha K Kulkarni,Second Edition, Capital publishing company, New Delhi, Reprint 2011.
2. Nano: The Essentials, T. Pradeep, Tata Mc-Graw Hill, New Delhi, Edition 2007.
3. Nanoscience and Nanotechnology, T. Pradeep, Tata Mc-Graw Hill, New Delhi, Edition 2012

Reference:

Essentials of Nanotechnology, Er. Rishabh Anand, MedTec Publisher, Edition 2015

B.Sc. Chemistry
Semester wise distribution with the Scheme of Examination
(For candidates admitted from 2014-2015 onwards)

Sem	Courses	Credit	Duration of exam Hrs ESE	CIA	ESE	Total
I	Part I Language I	3	3	25	75	100
	Part II English I	3	3	25	75	100
	Part III Core I General Chemistry I	6	3	25	75	100
	Part III Allied I Physics I	4	3	15	60	75
	Part IV Environmental studies	2		50		50
II	Part I Language II	3	3	25	75	100
	Part II English II	3	3	25	75	100
	Part III Core II General Chemistry II	3	3	25	75	100
	Part III Core III General Chemistry III	4	3	25	75	100
	Part III Core practical I Semi micro qualitative analysis	2	3	40	60	100
	Part III Allied II Physics II	4	3	15	60	75
	Part III Allied Practical	2	3	20	30	50
	Part IV Value education	2		50		50
	Part III Advanced Learner's Course I Food Science	3*	3		100	100
III	Part I Language III	3	3	25	75	100
	Part II English III	3	3	25	75	100
	Part III Core IV General Chemistry IV	4	3	25	75	100
	Part III Allied III Mathematics I	5	3	25	75	100
	Part IV Non Major Elective	2		75		75
	Part IV Skill Based course Skill Based chemistry I	3	3	100		100
IV	Part I Language IV	3	3	25	75	100
	Part II English IV	3	3	25	75	100
	Part III Core V General Chemistry V	5	3	25	75	100
	Part III Core practical II Volumetric and Organic analysis	3	6	40	60	100
	Part III Allied IV Mathematics II	5	3	25	75	100
	Part IV General Awareness	2		75		75
	Part IV Skill Based course Skill Based chemistry II	3	3	100		100
	Part III Advanced Learner's Course II Chemistry of non-metals	3*	3		100	100
	Part V Extension activities	1		50		50

	Part III Core VI Inorganic Chemistry	4	3	25	75	100
	Part III Core VII Organic Chemistry	4	3	25	75	100
V	Part III Core VIII Essential aspects of spectroscopy	4	3	25	75	100
	Part III Core IX Physical Chemistry	4	3	25	75	100
	Part III Elective I Polymer and Dye Chemistry	5	3	25	75	100
	<mark>Part IV Skill Based course Skill Based chemistry III</mark>	<mark>3</mark>		<mark>100</mark>		<mark>100</mark>
VI	Part III Core X Biomolecules and pharmaceutical chemistry	4	3	25	75	100
	Part III Core XI Industrial Chemistry	4	3	25	75	100
	Part III Core XII Electrochemistry	4	3	25	75	100
	Part III Elective II Analytical Chemistry	5	3	25	75	100
	Part III Elective III Applied Chemistry	5	3	25	75	100
	Part III Core practical III Gravimetric Analysis and physical chemistry experiments	3	6	60	90	150
	Part III Core practical IV Applied chemistry practical	2	3	20	30	50
	<mark>Part IV Skill Based course Skill Based chemistry IV Project</mark>	<mark>3</mark>		<mark>100</mark>		<mark>100</mark>
	Part III Advanced Learner's Course III Dairy chemistry	3*	3		100	100
	Total	140				

Starred credits are treated as additional credits.

Non- major elective course offered by the department – Consumer products for home needs.

B.Sc. Chemistry
Semester III
Non-major elective Consumer products for home needs   314NCP
For candidates admitted from 2014-2015 onwards

Total hours:26

Module I: Cosmetics   (6 Hours)
1.1   Cosmetics- introduction and classification.
1.2   Face powder- requirements and ingredients of a face powder.
1. 3   Face cream- (cold and vanishing) - ingredients, formulation and uses.
1.4   Lipstick- requirement of a lipstick and common ingredients of a lipstick.
1.5   Mascara – requirements and Formulation.
Module II: Perfumes and flavoring agents   (5 Hours)
2.1   Perfumes - Requirements, composition, formulation and blending.
2.2   Classification of perfumery materials.
2.3   Composition and characteristics of flavoring agents.
2.4   Food additives- classification and uses

2.5   Added food colours

Module III: Shampoos and dyes   **(5 Hours)**

3.1   Shampoos- requisites, formulation and ingredients

3.11   Dandruff curing shampoos- preparation only

3.2   Hair dyes – requirements, vegetable colorings, metal salts and oxidations.

3.3   Hair restorers and hair straighteners.

Module IV: Dentifrice   **(5 Hours)**

4.1   Basic dentifrice ingredients

4.2   Formulation and requisites of tooth powder and tooth paste.

4.3   Mouth wash – ingredients and their functions.

Module V: Soaps and Detergents   **(5 Hours)**

5.1   Soaps - definition, different raw materials in soap manufacture-hot and cold   process

5.2   Varieties of soap and their uses (brief study- manufacture not necessary)

5.3   Detergents- introduction

5.4   Cleansing action of soap.

5.5   Distinction between soaps and detergents.

Books for study:

1. Text book of applied chemistry   - Thangamma Jacob, Macmillan, 1987

                                         home science and allied science Edition.

2. Modern technology of perfumes,   - NIIR Board of technologies.flavors and essential oils

3. Modern technology of cosmetics   - NIIR Board of technologies.

4. Industrial chemistry   - B.K. Sharma, Goel publishing house

B.Sc. Chemistry

Semester III

Part IV- Skill based course –Skill based chemistry-I

Applications of Computers in Chemistry   314CS1

(For candidates admitted from 2014-2015 onwards)

Total hours: 38

Module 1: MS WORD   **(6 Hours)**

2.1 Introduction- Word document window

2.2 Basic commands

2.3 Concept like editing, cutting, saving, pasting, formatting and tabular columns

2.4 Formatting the text and document-Working with header and footer

2.5 Typing texts and equations in Chemistry

2.6 Mail merge

Module 2: MS EXCEL   **(5 Hours)**

3.1 Introduction- Navigating worksheets

3.2 Entering and editing Data, text and formulas

3.3 Excel functions

3.4 Excel's Chart features(elementary idea only)

Module 3: MS POWERPOINT   **(5 Hours)**

9.1 Powerpoint basics- Terminology- Color Schemes- templates

9.2 Creating presentations

9.3 Working with Text in Powerpoint- editing , formatting and aligning Text

9.4 Slide preparation and presentation

9.5 Working with Animation

Module 4: CHEMDRAW   (6 Hours)

12.1   Introduction- salient features in Chemdraw

12.2   Main tools- optional tools

12.3   Significance of Chemdraw

12.4   Chemdraw Shortcuts

12.5   Drawing Chemical Structures and pasting them in the text

12.6   Working with Structures- Advantages.

Module 5: INTERNET   (6 Hours)

15.1   Internet – the working way of internet-internet protocols- internet addressing – domain name.

15.2   WWW- WebPages, home page, Web browsers- search engine.

15.3   E-mail- advantages and disadvantages

15.4   Intranet and Extranet

15.5   Application of internet in Chemistry

Practicals   (10 Hours)

21. Prepare Bio-Data using MS Word

22. Create a Newsletter using MS Word

23. Prepare a Mark statement using MS Word

24. Create a document using format options in MS Word

25. Design an advertisement copy in MS Word

26. Create a database using the formulas sum, average, max, min, Formulas in Chemistry (given by the teacher) in Excel

27. Drawing charts and Graphs in Excel

28. Prepare a PowerPoint slide using animation and sound effects

29. Draw the structure of the molecules using Chemdraw

30. Draw the structure of the molecule by using Chemdraw and paste into MS Word Document

31. Create an E-mail ID

Books for study

1. Nellai Kannan C., 2008, MS OFFICE, NELS Publications, Tirunelveli.

2. Alexis Leon & Mathews Leon, 1999, Fundamentals of Information Technology, Leon Tech World, Chennai.

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B.Sc. Chemistry

Semester IV

Part IV- Skill based course –Skill based chemistry-II   414CS2

Chemistry for Entrepreneurship

(For candidates admitted from 2014-2015 onwards)   Total Hours: 38

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Preamble:

Chemistry is the study of composition and characterization of substances. Consumer products are essential necessities of everyday life. Exposure to this kind may alter one's thought and outlook and open-up new avenues for self employment.

e) **Industrial visit (2 no.) – Report making on the visit- 12 hours**
f) **Preparation of following house hold products – 26 lab hours**
   (Formulation and procedures)

Soap	Talcum powder	Bed bug repellant	Cake
Detergent	Shampoo	Mosquito repellant	Bread
Laundry blue	Perfumes	Cockroach repellant	Biscuits
Bleaching powder	Tooth powder	Chalk	Homemade chocolates
Phenoyl	Tooth paste	Candle	Ink
Incandescent sticks	Kumkum	Laundry starch	Cutflower Preservative

B.Sc. Chemistry

Semester V

Part IV- Skill based course - Skill based chemistry III   514CS3

Chemistry for Exploration   Total Hours: 38

(For candidates admitted from 2014-2015 onwards)

a) **Statistical survey and report making** related to issues in Chemistry   -12 hours

b) **Review of articles** and report making- A minimum of 20 journal articles collection
   and utilization   – 12 hours

Basic experiments in Chemistry   – 14 hours

TITLE	Time in hours
Experiment :1 Servicing bunsen burners	1
Experiment :2 To bore a hole in a cork	1
Experiment :3 Preparation of H_2S gas using Kipp's apparatus	1
Experiment :4 Calibration of volumetric apparatus	3
Experiment :5 Preparation of laboratory reagents	1
Experiment :6 Column chromatography-Separation of methylene blue and malachite green	1
Experiment :7 Paper chromatography- Separation of metal ions of group I	1
Experiment :8 TLC – Separation of different types of inks	1
Experiment :9 Distillation and sublimation	2
Experiment :10 Solvent purification-Ethanol and acetone	2

B.Sc. Chemistry
Semester VI
Part IV- Skill based course - Skill based chemistry IV   614CS4
Mini Project
(For candidates admitted from 2014-2015 onwards)

- Mini project of undergraduate level taking a simple chemistry problem.

(Problem must be synthesis / characterization/analytical/application
/comparisons/findings/theoretical oriented)

B.Sc. Chemistry
Semester wise distribution with the scheme of evaluation
(For candidates admitted from 2012-2013 onwards)

Sem	Courses	Credit	Duration of exam Hrs ESE	CIA	ESE	Total
I	Part I Language I	3	3	25	75	100
	Part II English I	3	3	25	75	100
	Part III Core I General Chemistry I	6	3	25	75	100
	Part III Allied I Physics I	4	3	15	60	75
	Part IV Environmental studies	2		50		50
II	Part I Language II	3	3	25	75	100
	Part II English II	3	3	25	75	100
	Part III Core II General Chemistry II	6	3	25	75	100
	Part III Core practical I Semi micro qualitative analysis	2	3	40	60	100
	Part III Core practical II Applied chemistry practical	2	3	40	60	100
	Part III Allied II Physics II	4	3	15	60	75
	Part III Allied Practical	2	3	20	30	50
	Part IV Value education	2		50		50
	Part III Advanced Learner's Course I Food Science	3*	3		100	100
III	Part I Language III	3	3	25	75	100
	Part II English III	3	3	25	75	100
	Part III Core III General Chemistry III	5	3	25	75	100
	Part III Allied III Mathematics I	5	3	25	75	100
	Part IV Non Major Elective	2		75		75
	Part IV Skill Based course Dye chemistry I	3		100		100
IV	Part I Language IV	3	3	25	75	100
	Part II English IV	3	3	25	75	100
	Part III Core IV General Chemistry IV	5	3	25	75	100
	Part III Core practical III Volumetric and Organic analysis	3	3	60	90	150
	Part III Allied IV Mathematics II	5	3	25	75	100
	Part IV General Awareness	2		75		75
	Part IV Skill Based course Dye chemistry II	3		100		100
	Part III Advanced Learner's Course II Metallurgy & applications of transition metals	3*	3		100	100
	Part V Extension activities	1		50		50

V	Part III Core V Advanced Inorganic Chemistry	4	3	25	75	100
	Part III Core VI Organic Chemistry	4	3	25	75	100
	Part III Core VII Essential aspects of spectroscopy	4	3	25	75	100
	Part III Core VIII Chemical kinetics and photochemistry	4	3	25	75	100
	Part III Elective I Polymer Chemistry	5	3	25	75	100
	Part IV Skill Based course Dye chemistry III	3		100		100
VI	Part III Core IX Biomolecules and pharmaceutical chemistry	4	3	25	75	100
	Part III Core X Industrial Chemistry	4	3	25	75	100
	Part III Core XI Electrochemistry and technology	4	3	25	75	100
	Part III Elective II Analytical Chemistry	5	3	25	75	100
	Part III Elective III Applied Chemistry	5	3	25	75	100
	Part III Core practical IV Gravimetric Analysis and physical chemistry experiments	3	6	60	90	150
	Part IV Skill Based course Dye chemistry practical & project	3	3	100		100
	Part III Advanced Learner's Course III Dairy chemistry	3*	3		100	100
	Total	140				

Starred credits are treated as additional credits.

Non- major elective course offered by the department – Consumer products for home needs.

30% of the Syllabus in each course is taught using OHP, LCD

B.Sc. Chemistry
Semester III
Non-major elective Consumer products for home needs   312NCP
For candidates admitted from 2012-2013 onwards

Module I: Cosmetics   (6 Hours)
1.1   Cosmetics- introduction and classification.
1.2   Face powder- requirements and ingredients of a face powder.
1. 3   Face cream- (cold and vanishing) - ingredients, formulation and uses.
1.4   Lipstick- requirement of a lipstick and common ingredients of a lipstick.
1.5   Mascara – requirements and Formulation.
Module II: Perfumes and flavoring agents   (5Hours)
2.1   Perfumes - Requirements, composition, formulation and blending.
2.2   Classification of perfumery materials.

2.3   Composition and characteristics of flavoring agents.

2.4   Food additives- classification and uses

2.5   Added food colours

Module III: Shampoos and dyes   (5 Hours)

3.1   Shampoos- requisites, formulation and ingredients

3.11   Dandruff curing shampoos- preparation only

3.2   Hair dyes – requirements, vegetable colorings, metal salts and oxidations.

3.3   Hair restorers and hair straighteners.

Module IV: Dentifrice   (5 Hours)

4.1   Basic dentifrice ingredients

4.2   Formulation and requisites of tooth powder and tooth paste.

4.3   Mouth wash – ingredients and their functions.

Module V: Soaps and Detergents   (5 Hours)

5.1   Soaps - definition, different raw materials in soap manufacture-hot and cold   process

5.2   Varieties of soap and their uses (brief study- manufacture not necessary)

5.3   Detergents- introduction

5.4   Cleansing action of soap.

5.5   Distinction between soaps and detergents.

Books for study:

1. Text book of applied chemistry for   - Thangamma Jacob, Macmillan, 1987
                                    home science and allied science Edition.

2. Modern technology of perfumes, - NIIR Board of technologies.flavors and essential oils

3. Modern technology of cosmetics - NIIR Board of technologies.

4. Industrial chemistry   - B.K. Sharma, Goel publishing house

Semester – VI

Part III Elective III- Applied Chemistry   **612CE3**

(For candidates admitted from 2012-2013 onwards)

Preamble: Total Hours: 65

The objective of this paper is to create awareness about renewable and non – renewable energy sources and give clear understanding about green chemistry. As nanotechnology gains momentum in field of science and technology, an introduction of it is included.

Module I   Energy Sources I   (13Hours)

1.1   Renewable and non renewable energy sources-introduction

 1.2   Fuels-introduction,classification and Characteristics of a good fuel

 1.3   Comparision between solid,liquid and gaseous fuels

 1.4   Calorific value-determination by bomb calorimeter

 1.5   Solid fuel-coal introduction and different grades of coal

1.51   Analysis of coal-proximate and ultimate analysis
        (Problem not necessary)

1.52   Carbonization of coal-low and high temperature carbonizations

1.53   Synthetic fuels from coal- Fischer tropsch method and Bergius process

1.6   Activated carbon- definition, classification and its applications

Module II - Energy Sources II   **(13Hours)**

2.1   Liquid fuels

2.11   Petroleum-origin and composition

2.12   Refining and fractionation of petroleum

2.2   Knocking- definition and its effects

2.21   Antiknocking - definition and TEL, Fe(CO)5

2.23   Octane number and cetane number- definition and example

2.24   Cracking- definition, catalytic and thermal cracking

2.3   Gaseous fuels

2.31   LPG-composition and uses

2.32   Composition, manufacture and uses of Natural gas, Coal gas, Oil gas, Producer gas
        and Water gas

Module III- Energy Sources III   **(13 Hours)**

3.1   Solar energy

3.11   Thermal applications-solar water heater, solar cooker, solar drier-description of the
        apparatus and uses

3.12   Solar silicon cells-description and uses

3.2   Wind energy-description of wind mill its component and uses(elementary idea only)

3.3   Biofuels- Gobar gas-construction of the plant, operation and uses

3.4   Geothermal energy different types and origin

3.41   Utilisation of geothermal energy

3.42   Environmental hazards from the use of geothermal energy

3.5   Elementary aspects of biomass energy and ocean energy

Module IV- Green Chemistry   **(13 Hours)**

4.1   Introduction and purpose

4.2   Twelve priciples of green chemistry

4.3   The elementary concept of atom economy and its application in
         Green synthesis of MMA and acetophenone only

4.4   Designing a green synthesis –choice of starting materials,reagent catalyst and solvents

4.5   Green synthesis-epoxy styrene, paracetomol, polyurethane and furfural

4.6   Application of green technology in paper and tanning industry

4.7   Role of green technology in ozone depletion problem

Module V- Nanoscience and technology   **(13 Hours)**

 5.0   Nanoscience and Nanotechnology – introduction- Nanoscale architecture –
         bottom up approach.

5.1   Nanoparticle, nanocrystalline material, nanocomposites – introduction, explanation and
        commercial applications.

5.2   Classification based on morphology, carbon nano tubes- applications of carbon
         nano tubes.

5.3   Electron microscopic studies in nano science and technology- SEM and AFM.

5.4   General applications of nanoparticles – solar cell, electrochromic devices.

Books for Study:

1. New Trends in Green Chemistry — V.K.Ahluwalia ,M.kidwai
   II edition
2. Environmental chemistry with Green chemistry — Asim k.Das
3. Engineering chemistry — P.C.Jain and Monika Jain
   Dhanpat and sons 1997 edition
4.Renewable energy — Maheswar Dayal
   Konark publishers pvt ltd 1994 edition
5.Industrial chemistry — B.K.Sharma Geol publishing house 2003
   edition

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B.Sc. Chemistry
Semester VI
Part IV- Skill based course IV - Dye chemistry Practical & Project   612CS4
(For candidates admitted from 2012-2013 onwards)

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I. Preparation of dyes:

1. Preparation of Azo dyes – Methyl orange, Phenyl azo – 2 - naphthal.
2. Preparation of a Triphenyl methane dyes – Malachite green.
3. Preparation of a Phthalein dyes – Fluorescein.
4. Preparation of a Xanthene dye – Eosin.

II. Dyeing processes:

1. Dyeing with an adjective dye: Mordants: Malachite green.
2. Dyeing with a substantive dye: Congo
3. Dyeing with an ingrain dye: Primoline.

Project : To be carried out in any of the dye industries

B.Sc. Chemistry
Semester wise distribution with the scheme of evaluation
(For 2011 – 2014 Batch students only)

Sem	Courses	Credit	Duration of exam Hrs ESE	Marks CIA	ESE	Total
				CIA	ESE	Total
III	Part I Language III	3	3	25	75	100
	Part II English III	3	3	25	75	100
	Part III Core III General Chemistry III	6	3	25	75	100
	Part III Core practical II Volumetric analysis	2	3	30	45	75
	Part III Allied III Mathematics I	5	3	25	75	100
	Part IV Non Major Elective	2	3		75	75
	Part IV Skill Based course I Dye chemistry I	3	2½	25	75	100
IV	Part I Language IV	3	3	25	75	100
	Part II English IV	3	3	25	75	100
	Part III Core IV General Chemistry IV	6	3	25	75	100
	Part III Core practical III Organic analysis	2	3	30	45	75
	Part III Allied IV Mathematics II	5	3	25	75	100
	Part IV General Awareness	2	2		75	75
	Part IV Skill Based course II Dye chemistry II	3	2½	25	75	100
	Part III Advanced Learners' Course II Metallurgy & applications of transition metals	3*	3		100	100
V	Part III Core V Advanced Inorganic Chemistry	4	3	25	75	100
	Part III Core VI Organic Chemistry	4	3	25	75	100
	Part III Core VII Essential aspects of spectroscopy	5	3	25	75	100
	Part III Core VII Essential aspects of spectroscopy	4	3	25	75	100
	Part III Elective I Applied Chemistry	5	3	25	75	100
	Part III Core practical IV Applied chemistry practical	2	3	40	60	100

	Part IV Skill Based course III Dye chemistry III	3	2½	25	75	100
VI	Part III Core VIII Biomolecules and pharmaceutical chemistry	5	3	25	75	100
	Part III Core IX Industrial Chemistry	4	3	25	75	100
	Part III Core X Electrochemistry and technology	4	3	25	75	100
	Part III Elective II Polymer Chemistry	5	3	25	75	100
	Part III Elective III Analytical Chemistry	5	3	25	75	100
	Part III Core practical V Gravimetric Analysis and physical chemistry experiments	4	6	60	90	150
	Part IV Skill Based course IV dye chemistry practical & Project	3	3	25	75	100
	Part III Advanced Learners' Course III Dairy chemistry	3*	3		100	100
	Part V Extension Activities	1				50
	Total	140				

Starred credits are treated as additional credits. Non- major elective course offered by the department – Consumer products for home needs. 30% of the Syllabus in each course is taught using OHP, LCD.

B.Sc. Chemistry
Semester – V
Part III Elective I- Applied Chemistry   **511CE1**
(For candidates admitted from 2011-2012 onwards)

Preamble: Total Hours: 65
      The objective of this paper is to create awareness about renewable and non – renewable energy sources and give clear understanding about green chemistry. As nanotechnology gains momentum in field of science and technology, an introduction of it is included.

Module I   Energy Sources I   **(13Hours)**
1.1   Renewable and non renewable energy sources-introduction
1.2   Fuels-introduction, classification and Characteristics of a good fuel
1.3   Comparison between solid, liquid and gaseous fuels
1.4   Calorific value-determination by bomb calorimeter
1.5   Solid fuel-coal introduction and different grades of coal
1.51   Analysis of coal-proximate and ultimate analysis
     (Problem not necessary)

1.52   Carbonization of coal-low and high temperature carbonizations

1.53   Synthetic fuels from coal- Fischer tropsch method and Bergius process

1.6   Activated carbon- definition, classification and its applications

Module II - Energy Sources II   **(13Hours)**

2.1   Liquid fuels

2.11   Petroleum-origin and composition

2.12   Refining and fractionation of petroleum

2.2   Knocking- definition and its effects

2.21   Antiknocking - definition and TEL, $Fe(CO)_5$

2.23   Octane number and cetane number- definition and example

2.24   Cracking- definition, catalytic and thermal cracking

2.3   Gaseous fuels

2.31   LPG-composition and uses

2.32   Composition, manufacture and uses of Natural gas, Coal gas, Oil gas, Producer gas
        and Water gas

Module III- Energy Sources III   **(13 Hours)**

3.1   Solar energy

3.11   Thermal applications-solar water heater, solar cooker, solar drier-description of the
        apparatus and uses

3.12   Solar silicon cells-description and uses

3.2   Wind energy-description of wind mill its component and uses(elementary idea only)

3.3   Biofuels- Gobar gas-construction of the plant, operation and uses

3.4   Geothermal energy different types and origin

3.41   Utilisation of geothermal energy

3.42   Environmental hazards from the use of geothermal energy

3.5   Elementary aspects of biomass energy and ocean energy

Module IV- Green Chemistry   **(13 Hours)**

4.1   Introduction and purpose

4.2   Twelve principles of green chemistry

4.3   The elementary concept of atom economy and its application in
         Green synthesis of MMA and acetophenone only

4.4   Designing a green synthesis –choice of starting materials, reagent catalyst and solvents

4.5   Green synthesis-epoxy styrene, paracetomol, polyurethane and furfural

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Module V- Nanoscience and technology   **(13 Hours)**

5.0   Nanoscience and Nanotechnology – introduction- Nanoscale architecture –
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5.1   Nanoparticle, nanocrystalline material, nanocomposites – introduction, explanation and
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5.2   Classification based on morphology, carbon nano tubes- applications of carbon
        nano tubes.

5.3   Electron microscopic studies in nano science and technology- SEM and AFM.

5.4   General applications of nanoparticles – solar cell, electrochromic devices.

Books for Study:

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                             II edition
2. Environmental chemistry with Green chemistry   -Asim k.Das
3. Engineering chemistry   - P.C.Jain and Monika Jain
                             Dhanpat and sons 1997 edition
4.Renewable energy   -Maheswar Dayal
                           Konark publishers pvt ltd 1994 edition
5.Industrial chemistry   -B.K.Sharma Geol publishing house 2003
                           edition

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B.Sc. Chemistry

Semester VI

Part IV- Skill based course IV - Dye chemistry Practical & Project   611CS4

(For candidates admitted from 2011-2012 onwards)

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I. Preparation of dyes:

1. Preparation of Azo dyes – Methyl orange, Phenyl azo – 2 - naphthal.

2. Preparation of a Triphenyl methane dyes – Malachite green.

3. Preparation of a Phthalein dyes – Fluorescein.

4. Preparation of a Xanthene dye – Eosin.

II. Dyeing processes:

1. Dyeing with an adjective dye: Mordants: Malachite green.

2. Dyeing with a substantive dye: Congo

3. Dyeing with an ingrain dye: Primoline.

III. Project to be done in one of the dye industries

LIST OF VALUE ADDED COURSES-2017-18

Program code	Course code	Name of the course	Explanation	Total No /Year
BZ	117EVS	**Environmental Science**	Environmental Studies is the study of interaction of human with the natural environment, which includes all kinds of biotic and abiotic conditions	
BZ	217VEC	**Value Education**	Inculcating the sense of humanism for the well being of others and the nation and also teaches the broad mindedness, tolerance, social and emotional qualities	
BZ	317ZS1	**Skill Enhancement Course I Apiculture**	To enable the students to learn the basics of honey bee rearing technology which provide self employment opportunity	
BZ	417ZS2	**Skill Enhancement Course II Ornamental Fishes**	To enable the students to gain knowledge in Ornamental fishes and to develop skill in rearing and marketing	9/2017-2018
BZ	415NGA	General Awareness		
BZ	415GIS	Information Security		
BZ	317AZ3	**Allied Botany I**	Understand the role of plants in industries and applied aspects of plants.	
BZ	417AZ4	**Allied Botany II**	Understand the economic importance of plants and also its medicinal values	
BZ	317NMC	**Mushroom Cultivation**	To gain the basic methods in mushroom cultivation and marketing.	

B.Sc., ZOOLOGY
PART IV- SKILL ENHANCEMENT COURSE I - APICULTURE   317ZS1

Credits: 3   **(Hours: 45)**

UNIT I: Species of Honey bee and life cycle   **(9 hrs)**
1. Types of honeybees: *Apis dorsata* (Rock bee) –*Apis indica* (Indian bee)
   – *Apis florae* (Little bee)- *Apis mellifera* (European bee).
2. Polymorphism in honey bee: Morphology and development of honey bee
3. Life cycle of Honeybee, functions of queen bee, worker bee and drone.

UNIT II: Rearing techniques   **(9 hrs)**
1. Social life in honeybees.

2. Structure of Bee hive: Natural bee hive and Newtons hive
3. Selection of Bees for Apiculture.
4. Methods of bee keeping – Indigenous method – modern method.

UNIT III: Functions of worker bee   (9 hrs)
1. Collection of Pollen from flowering plants.
2. Collection of nectar from flowering plants.
3. Inspection of bee hives.
4. Communication and memory of honeybees.
5. Pesticidal poisoning by agriculture.

UNIT IV: Management of Honey bee   (9 hrs)
1. Seasonal management of honeybee colonies.
2. Catching the swarm.
3. Natural enemies of honeybee.
4. Diseases of honeybee and their control.
5. Transportation of bee hives.

UNIT V: Products of Apiculture   (9 hrs)
1. Honey
   a. Equipments used for Honey Extraction
   b. Chemical composition of honey
   c. Nutritive and Medicinal values of honey
2. Bee wax and its uses   3. Royal jelly   4. Pollen
5. Propolis   6. Bee venom

Text Books:
1. The complete book on bee keeping and honey processing by NPCS Board of consultants and Engineers – Niir Project Consultancy Services 106-E, Kamala nagar, New Delhi – 110007 (INDIA)

Reference Books
1. Economic Zoology- Dr.G.S.Shukla and Dr.V.B. Upadhyay, 2003. Rastogi publication, 4th edition.
2. Honey bee and their Management - S.B Withhead, 2010. Revised edition –10.

Course Outcomes
On the successful completion of the course students will be able to
➢ **CO1:** Define and enlist the different species of honey bees.

➢ **CO2:** Understand and differentiate caste of honey bees – Queen, Drone and worker
➢ **CO3:** Discuss the various stages of life cycle – Egg, larva, pupa and adult

➢ **CO4:** Analyze and discuss the various types equipments used for honey bee culture.

➢ **CO5:** Find the chemical composition, nutritional value and medicinal value of honey.

B.Sc., ZOOLOGY
PART IV- SKILL ENHANCEMENT COURSE II - ORNAMENTAL FISHES   417ZS2
Credits: 3   **(Hours: 45)**

UNIT – I   **(9 hrs)**
1. Introduction – history of ornamental Fishes.
2. Construction of fish tank.
3. Setting up of tank.
4. Accessories: hood, light source, aerator and filters, light, nets, suction and tube scrapper tool.

UNIT –II   **(9 hrs)**
1. Water quality management:
     a).Total hardness   (b) Temperature   (c) pH
     (d) Dissolved oxygen   (e) Alkalinity   (f) Ammonia
2. Ornamental plants.

UNIT – III   **(9 hrs)**
1. Popular freshwater ornamental fishes
          a. Egg laying fishes – Siamese fighter fish, Gourami, gold fish, Barb, Tetras, Oscar, Cichlid and Angelfish.
          b. Live bearing fish – Molly, Guppy, Swordtail, Platy
2. Breeding methods of gold fish and angelfish.

UNIT –IV   **(9 hrs)**
1. Live feed organisms:
     a) Infusoria   (b) Daphnia   (c)Tubifex
     d) Chironomous larva   (e) Artemia   (f) Spirulina
2. Artificial feed preparation.

UNIT – V   **(9 hrs)**
1. Brood stock management
2. Brief account on ornamental fish diseases.
3. Packing and transportation of live fishes.

Text Book
1. Manual of Ornamental Fishes and Farming techniques - Jameson.J.D and Santhanam.R, 1996, Fisheries College, Tuticorin.

Reference Book
1. Ornamental Fish Culture - Dr.V.K.Venkataramani, 2007, Fisheries College and Research Institute, Tuticorin.

Course Outcomes
On the successful completion of the course students will be able to
CO1: define and enlist the different species of ornamental fishes.
CO2: understand the water quality management
CO3: understand the various types of ornamental fishes
CO4: gain knowledge about the feed of ornamental fishes.
CO5: gain knowledge in brood stock management, diseases and transport.

B.Sc. ZOOLOGY

PART III - Allied III – Botany – I 317AZ3

Credits: 3   **Hours: 60**

UNIT I   **(12 hours)**

Classification of plants: Cryptogams and Phanerogams

Cryptogams: Thallophyta - <u>Algae</u>: Structure and life cycle of Volvox, Dictyota, Spirulina - <u>Fungi</u>: Structure and life cycle of Agaricus, Saccharomyces.

UNIT II   **(12 hours)**

Cryptogams: <u>Bryophyta</u> – Introduction, Structure, reproduction and life cycle of Funaria
<u>Pteridophyta</u>: Introduction Structure, reproduction and life cycle of Adiantum

UNIT III   **(12 hours)**

Phanerogams: Gymnosperms and Angiosperms

<u>Gymnosperms</u> - General characters, structure, reproduction and life cycle Cycas
<u>Plant taxonomy</u>: Bentham and Hooker's system of classification (outline only) Annonaceae, Cucurbitacea, Amaranthaceae and Poaceae with economic importance.

UNIT IV   **(12 hours)**

Plant pathology: *<u>Symptoms, Causative organisms and Control measure in Red rot of Sugarcane</u>, Tikka disease in groundnut

Economic Botany: Sugar industry – sugarcane cultivation – process of extraction of juice and cane sugar. Paper industry- Raw materials and manufacturing methods- Biodiesel – Jatropha.

UNIT V   **(12 hours)**

Applied Botany: Plant Tissue Culture - Mushroom cultivation, Biofertilizers (cultivation and application of Azolla, Azospirillum, Rhizobium)- Biopesticide.

Text Books
1. Text book of Botany – Muneeswaran, Brighton Bookhouse, 2005
2. Plant Biotechnology – R. Keshavachandran, K.V. Peter, 2008, University's Press Pvt Ltd.

Reference Books
1. Taxonomy of Angiosperms – S.N. Pandey, S.P. Misra, 2009, Ane Books Pvt ltd.
2. Text book of Economic Botany – H.P. Pandey, 2012, Silver Life Publication.
3. Elements of Biotechnology – P.K. Gupta. 1996, Rastogi & Company.

Course outcome:

On the completion of this course the student will
- **CO1:** Understand the internal structure of plant kingdom.
- **CO2:** Understand and differentiate structure and lifecycle of funaria, adiantum and cycas.
- **CO3:** Discuss the plant taxonomy and its economic importance.
- **CO4:** enable to gain knowledge in sugarcane and paper industries.
- **CO5:** develop skills in mushroom cultivation and bio fertilizer production.

B.Sc. ZOOLOGY
PART III - Allied IV – Botany – II 417AZ4

Credits: 3   **Hours: 60**

UNIT I   **(12 Hours)**

Anatomy: Internal structure of dicot (young) and monocot stem - dicot (young) and monocot root -dicot and monocot leaf, normal secondary thickening in dicot stem and root.

Physiology: Absorption of water – definitions of diffusion, Osmosis, DPD imbibition, Active and passive absorption of water.

UNIT II (12 Hours)

Physiology: Transpiration- Structure of stoma - Mechanism- Photosynthesis – structure of chloroplast, pigment system, light and dark reactions (Calvin cycle) C_4 pathway. **Phytohormones**: Physiological role of Auxins, Gibberellins, Cytokinins. N_2 cycle and its significance.

UNIT III (12 Hours)

Horticulture: Importance of Horticulture, Propagating methods of horticultural plants – cutting, layering, grafting and budding. Organic manuring, irrigation, pruning, cultivation of Mango and Papaya, Preservation of Fruits – Marketing.

UNIT IV (12 Hours)

Ecology: Types of forest, social forestry and Agroforestry, *Afforestation and Reforestation, Soil erosion – Method to prevent soil erosion.

Landscape Gardening: History & Scope, Categories – residential, public and Commercial- Lily pond - Lawn making- Topiary, Bonsai – methods and its significance, Terrarium & its importance, Terrace garden.

UNIT V (12 Hours)

Pharmacognosy: Common name, binomial, chemical constituents & thrapeutical value of *curcuma longa, Cumimum cyminum, Zingiber officinale, Piper nigrum, Allium sativum, Azadiracta indica, Centella asiatica, Phyllanthus fraternus, Aloe vera,* and *Moringa indica.*

Text Books
1. Text book of Horticulture – K. Manibhushan Rao, 2005, Macmillan India Ltd. Text book of Pharmacognosy – Mohammed Ali, 2006, CBS publishers and Distributors.
2. Plant Anatomy – B.P. Pandey, 2002, S.Chand & Company.

Reference Books
1. Plant Physiology – V. Verma, 2008, EMKAY Publication, Delhi.
2. Herbs cultivation and medicinal uses – H. Panda, 2001, NIIR Publication, Delhi.
3. Design Elements of Landscape gardening – K.M.P. Nambisan, 1992, Oxford & IBH Publishers Pvt. Ltd.

Course outcome

On the completion of this course the student will
 ➢ **CO1:** Understand the basic concepts of anatomy and ecology
 ➢ **CO2:** Understand the physiological functions of plants
 ➢ **CO3:** Discuss the basic concepts of horticulture.
 ➢ **CO4:** Develop skill the skills in landscape designing.
 ➢ **CO5:** Enable to gain knowledge in pharmacognacy.

Part IV NON MAJOR ELECTIVE - I
MUSHROOM CULTIVATION   317NMC
Credits: 2   **Hours:30**

UNIT I (6 Hours)

Introduction to mushroom cultivation: general characters, classification and structure of mushrooms – identification of mushrooms – Edible mushroom and poisonous mushroom (toadstools).

UNIT II   **(6 Hours)**

Use of mushroom: nutritive and food values and medicinal value – mushroom cultivation – Infrastructure: substrates – shelves – trays – mushroom shed – water sprayer.

UNIT III   **(6 Hours)**

Mushroom culture techniques: spawn preparation – medium preparation - spawn running – incubation – commercial methods (*Pleurotus*).

UNIT IV   **(6 Hours)**

Post harvest operation: harvesting – storage and preservation – spoilage of mushroom packing – marketing.

UNIT V   **(6 Hours)**

Mushroom recipes: mushroom soup, samosa, sandwich, gravy, omelette, mushroom chilly, Manchurian, biryani and pickle.

Text Books:
1. Mushroom Cultivation – S.G. Borkas Nishapatil. 2016, Daya publishing house. Astral International Pvt Ltd. New Delhi.

Reference Books:
1. Mushroom Production – V.N. Pathak, 2013, Agrobios publishers.
2. Hand book on Mushroom Cultivation and Processing – NIIR Board of consultants and Engineers, Asia Pacific Business Press, 2011.

Course outcome

On the completion of this course the student will
- ➢ **CO1:** understand the basic concepts of mushroom cultivation technology
- ➢ **CO2:** understand the culture practices of mushroom
- ➢ **CO3:** enable the marketing practices.
- ➢ **CO4:** develop skill in Mushroom Cultivation.
- ➢ **CO5:** gain knowledge in nutritive values in mushroom.

1.3.2 Valued added Course 2016-2017

Program code	Course code	Name of the course	Explanation	Total No /Year
BZ	115EVS	**Environmental Science**	Environmental Studies is the study of interaction of human with the natural environment, which includes all kinds of biotic and abiotic conditions	
BZ	215VEC	**Value Education**	Inculcating the sense of humanism for the well being of others and the nation and also teaches the broad mindedness, tolerance, social and emotional qualities	
BZ	315ZS1	**Skill Based Course I Apiculture**	To enable the students to learn the basics of honey bee rearing technology which provide self employment opportunity	
BZ	415ZS2	**Skill Based Course II Ornamental Fishes**	To enable the students to gain knowledge in Ornamental fishes and to develop skill in rearing and marketing	
BZ	415GIS	**General Awareness**		12/2016-2017
BZ	**415NGA**	**Information Security**		
BZ	**515ZS3**	**Skill Based Course III Poultry farming**	To gain knowledge in Poultry farming and to develop skill in poultry management	
BZ	515ZE1	**Elective Course I Clinical Laboratory Techniques**	Gain basic knowledge clinical techniques and normal health infection and diseases	
BZ	515ZE2	**Elective Course II Applied Biotechnology**	Understand enable the students to learn the basics of techniques in biotechnology.	
BZ	316AZ3	**Allied Botany I**	Understand the role of plants in industries and applied aspects of plants.	
BZ	416AZ4	**Allied Botany II**	Understand the economic importance of plants and also its medicinal values	
BZ	316NMC	**Mushroom Cultivation**	To gain the basic methods in mushroom cultivation and marketing.	

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE I -ANIMAL CULTURE - APICULTURE   315ZS1
Credits: 3   **Hours 45**

UNIT – I: Species of Honey bee and life cycle   (9 hrs)
1. Types of honeybees: *Apis dorsata* (Rock bee) –*Apis indica* (Indian bee)
   – *Apis florae* (Little bee)- *Apis mellifera* (European bee).
2. Polymorphism in honey bee: Morphology and development of honey bee
3. Life Cycle: Life cycle of Honeybee Functions of queen bee, worker bee and drone.

UNIT –II: Culture techniques   (9 hrs)
1. Social life in honeybees.
2. Structure of Bee hive: Newtons hive
3. Selection of Bees for Apiculture.
4. Methods of bee keeping – Indigenous method – modern method.

UNIT – III: Functions of worker bee   (9 hrs)
1. Collection of Pollen from flowering plants.
2. Collection of nectar from flowering plants.
3. Inspection of bee hives.
4. Communication and memory of honeybees.
5. Pesticidal poisoning by agriculture.

UNIT –IV: Management of Honey bee   (9 hrs)
1. Seasonal management of honeybee colonies.
2. Catching the swarm.
3. Natural enemies of honeybee.
4. Diseases of honeybee and their control.
5. Transportation of bee hives.

UNIT –V: Products of Apiculture   (9 hrs)
1. Honey
   * Equipments used for Honey Extraction
   * Chemical composition of honey
   * Nutritive and Medicinal values of honey
2. Bee wax and its uses   3. Royal jelly   4. Pollen   5.Propolis   6. Bee venom

Text Books:
1. The complete book on bee keeping and honey processing by NPCS Board of consultants and Engineers – Niir Project Consultancy Services 106-E, Kamala nagar, New Delhi –110007 (INDIA)
2. Economic Zoology- Dr.G.S.Shukla and Dr.V.B. Upadhyay, 2003. Rastogi publication, 4th edition.
3. Honey bee and their Management - S.B Withhead, 2010. Revised edition –10.

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE II -ANIMAL CULTURE- ORNAMENTAL FISHES   415ZS2

Credits: 3   **Hours 45**

UNIT – I   **(9 hrs)**
5. Introduction – History of Ornamental Fishes.
6. Construction of fish tank.
7. Setting up of tank.
8. Accessories: hood, light source, aerator and filters, light, nets, suction tube scrapper tool.

UNIT –II   **(9 hrs)**
3. Water quality management:

(a) Total hardness	(b) Temperature	(c) pH
(d) Dissolved oxygen	(e) Alkalinity	(f) Ammonia

4. Ornamental plants.

UNIT – III   **(9 hrs)**
1. Popular freshwater ornamental fishes
   a. Egg laying fishes – Siamese Fighter Fish, Gourami, Gold Fish, Barb, Tetras, Oscar, Cichlid and Angelfish.
   b. Live bearing fish – molly, guppy, swordtail, platy
2. Breeding methods of gold fish and angelfish.

UNIT –IV   **(9 hrs)**
1. Live feed organisms:

b) Infusoria	(b) Daphnia	(c)Tubifex
d) Chironomous larva	(e) Artemia	(f) Spirulina

2. Artificial feed preparation

UNIT – V   **(9 hrs)**
1. Brood stock management
2. Brief account on ornamental fish diseases.
3. Packing and transportation of live fishes.

Text Book

Manual of Ornamental Fishes and Farming techniques - Jameson.J.D and Santhanam.R, 1996, Fisheries College, Tuticorin.

Reference Book

Ornamental Fish Culture - Dr.V.K.Venkataramani, 2007, Fisheries College and Research Institute, Tuticorin.

B.Sc. ZOOLOGY

PART IV - SKILL BASED COURSE III - ANIMAL CULTURE - POULTRY FARMIMG

515ZS3

Credits: 3   **Hours : 60**

UNIT-I   **(9 hrs)**
1. Poultry industry in India- Breeds of fowls – breeding methods- systems of breeding – modern methods of breeding .
2. Commercial layers & broilers.
3. Poultry housing.
4. The deep litter system.
5. Cage rearing.

UNIT –II   **(9 hrs)**
1. Practical aspects of chick rearing.
2. Management of layers & broilers
3. Summer and winter management of broilers.
4. Debeaking.

UNIT – III   **(9 hrs)**
1. Poultry nutrition
   a Protein & Amino acids
   b.Vitamins
   c. Essential inorganic elements.
2. Feed additives (Non-nutritive)
3. Feed stuffs for poultry
4. Feed formulation

UNIT –IV   **(9 hrs)**
1. Viral diseases   a) Ranikhet   b) Fowl pox
2. Bacterial diseases   a) Fowl Cholera   b) Salmonellosis
3. Fungal Diseases   a) Aspergillosis   b) Aflatoxicosis
4. Animal parasite   a) Coccidiosis.

UNIT – V   **(9 hrs)**
1. Vaccination - Vaccination programme.
2. Animal health products in the treatment of poultry diseases
3. Homeopathy in poultry diseases

Text Book
1. Modern aspects of Commercial Poultry keeping - Gnanamani.M.R., 2006, Giri publications, Madurai.

Reference Books
1. Disease of Poultry - Bisres, H.E., and Schwarte, 1989. Oxford and IBH, UK
2. Poultry husbandry – Jull M.A., 1972, Tata McGraw Hill, Chennai.

B.Sc. ZOOLOGY

PART III - Allied III – Botany – I   316AZ3

Credits: 3   **Hours: 60**

UNIT I   **(12 hours)**
Classification of plants: Cryptogams and Phanerogams
Cryptogams: Thallophyta - <u>Algae</u>: Structure and life cycle of Volvox, Dictyota,
Spirulina - <u>Fungi</u>: Structure and life cycle of Agaricus, Saccharomyces.

UNIT II   **(12 hours)**
Cryptogams: <u>Bryophyta</u> – Introduction, Structure, reproduction and life cycle of Funaria
<u>Pteridophyta</u>: Introduction Structure, reproduction and life cycle of Adiantum.

UNIT III   **(12 hours)**
Phanerogams: Gymnosperms and Angiosperms
<u>Gymnosperms</u> - General characters, structure, reproduction and life cycle Cycas
<u>Plant taxonomy</u>: Bentham and Hooker's system of classification (outline only) Annonaceae,
Cucurbitacea, Amaranthaceae and Poaceae with economic importance.

UNIT IV   **(12 hours)**
Plant pathology: <u>*Symptoms, Causative organisms and Control measure of Red rot of
Sugarcane</u>, Tikka disease in groundnut
Economic Botany: Sugar industry – sugarcane cultivation – process of extraction of juice
and cane sugar. Paper industry- Raw materials and manufacturing methods- Biodiesel –
Jatropha.

UNIT V   **(12 hours)**
Applied Botany: Plant Tissue Culture - Mushroom cultivation, Biofertilizers (cultivation
and application of Azolla, Azospirillum, Rhizobium)- Biopesticide.

Text Books
1. Text book of Botany – Muneeswaran, Brighton Bookhouse, 2005
2. Plant Biotechnology – R. Keshavachandran, K.V. Peter, 2008, University's Press Pvt
   ltd.

Reference Books
1. Taxonomy of Angiosperms – S.N. Pandey, S.P. Misra, 2009, Ane Books Pvt ltd.
2. Text book of Economic Botany – H.P. Pandey, 2012, Silver Life Publication.
3. Elements of Biotechnology – P.K. Gupta. 1996, Rastogi & Company.

PART III - Allied IV – Botany – II   **416AZ4**

Credits: 3   **Hours: 60**

UNIT I   **(12 Hours)**

Anatomy: Internal structure of dicot (young) and monocot stem - dicot (young) and monocot root -dicot and monocot leaf, normal secondary thickening in dicot stem and root.

Physiology: Absorption of water – definitions of diffusion, Osmosis, DPD imbibition, Active and passive absorption of water.

UNIT II   **(12 Hours)**

Physiology: Transpiration- Structure of stoma - Mechanism- Photosynthesis – structure of chloroplast, pigment system, light and dark reactions (Calvin cycle) C_4 pathway.

Phytohormones: Physiological role of Auxins, Gibberellins, Cytokinins. N_2 cycle and its significance.

UNIT III   **(12 Hours)**

Horticulture: Importance of Horticulture, Propagating methods of horticultural plants – cutting, layering, grafting and budding. Organic manuring, irrigation, pruning, cultivation of Mango and Papaya, *Preservation of Fruits – Marketing.

UNIT IV   **(12 Hours)**

Ecology: Types of forest, social forestry and Agro forestry, *Afforestation and Reforestation, Soil erosion – Method to prevent soil erosion.

Landscape Gardening: History & Scope, Categories – residential, public and Commercial- Lily pond - Lawn making- Topiary, Bonsai – methods and its significance, Terrarium & its importance, Terrace garden.

UNIT V   **(12 Hours)**

Pharmacognosy: Common name, binomial, chemical constituents & thrapeutical value of *curcuma longa, Cumimum cyminum, Zingiber officinale, Piper nigrum, Allium sativum, Azadiracta indica, Centella asiatica, Phyllanthus fraternus, Aloe vera,* and *Moringa indica.*

Text Books
1. Text book of Horticulture – K. Manibhushan Rao, 2005, Macmillan India Ltd. Text book of Pharmacognosy – Mohammed Ali, 2006, CBS publishers and Distributors.
2. Plant Anatomy – B.P. Pandey, 2002, S.Chand & Company.

Reference Books
1. Plant Physiology – V. Verma, 2008, EMKAY Publication, Delhi.
2. Herbs cultivation and medicinal uses – H. Panda, 2001, NIIR Publication, Delhi.
3. Design Elements of Landscape gardening – K.M.P. Nambisan, 1992, Oxford & IBH Publishers Pvt. Ltd.

Credits: 2   **Hours :30**

UNIT I   **(6 Hours)**

Introduction to mushroom cultivation: general characters, classification and structure of mushrooms – identification of mushrooms – Edible mushroom and poisonous mushroom (toadstool).

UNIT II   **(6 Hours)**

Use of mushroom: nutritive and food values and medicinal value – mushroom cultivation – Infrastructure: substrates – shelves – trays – mushroom shed – water sprayer.

UNIT III   **(6 Hours)**

Mushroom culture techniques: spawn preparation – medium preparation - spawn running – incubation – commercial methods (*Pleurotus*).

UNIT IV   **(6 Hours)**

Post harvest operation: harvesting – storage and preservation – spoilage of mushroom packing – marketing.

UNIT V   **(6 Hours)**

Mushroom recipes: mushroom soup, samosa, sandwich, gravy, omelette, mushroom chilly, Manchurian, biryani and pickle.

Text Books:
1. Mushroom Cultivation – S.G. Borkas Nishapatil. 2016, Daya publishing house. Astral International Pvt Ltd. New Delhi.

Reference Books:
1. Mushroom Production – V.N. Pathak, 2013, Agrobios publishers.
2. Hand book on Mushroom Cultivation and Processing – NIIR Board of consultants and Engineers, Asia Pacific Business Press, 2011.

B.Sc. ZOOLOGY
Part III – Elective I – CLINICAL LABORATORY TECHNIQUES   **515ZE1**

Credits: 4   **Hours (C-56, T-2, A-2)**
UNIT I : Collection and Sample Analysis   **(12 Hrs)**

1. Collection and disposal of specimen (Brief account only) - Urine, blood, stool and sputum.
2. Reporting pattern of sample analysis.
3. Safety regulations in clinical lab.
4. First aid for superficial wounds, burns and electrical shocks.
5. Widal test
6. Mountoux test

UNIT II: Clinical Haematology (12 Hrs)

1. Collection of blood – capillary blood collection and venous blood collection.
2. Anti – coagulants preparation - Double oxalate mixture, EDTA, heparin and sodium citrate.
3. Blood cell count: RBC count and WBC count.
4. Erythrocyte sedimentation Rate (ESR): Westergren's method and wintrobe's method.
5. Haemoglobin Estimation (Hb): Acid haematin method
6. Bleeding Time (BT)   Blotting paper method
   Clotting time (CT)   Slide Method

UNIT III: Serology and Blood bank (12 Hrs)

1. VDRL test – Kahn's test and flocculation test.
2. Blood – Urea – Nitrogen (BUN) estimation: Hench and Aldrich's method
3. Serum cholesterol estimation – Anderson and Key's method.
4. Blood sugar estimation – Glucose Tolerance Test (GTT)
5. Quantitative analysis of sugar by Folin-wu tube method.
6. Testing the blood donor - blood transfusion – donor screening
7. Compatibility test – Coombs test only.

UNIT IV: Urine Analysis: (only 2 test for each) (12 Hrs)

1. Physical properties of urine: Colour, specific gravity, pH,
2. Microscopical examination of pus cells and casts in urine
3. Chemical properties of urine: Albumin,Sugar, Blood, Bile salt and
   Bile pigment: Bilirubin and Urobilinogen (qualitative analysis).

Faecal Analysis:

4. Physical and Microscopical Examination of stool
5. Identification of intestinal parasite – Direct smear examination –Anal Swab method only.
6. Diagnosis of chronic disease*: Mycobacterium leprae* causing leprosy.

UNIT V: Analysis of Gastric Juice and Body Fluids (12 Hrs)

1. GJ - aspiration by Ryles tube, Fractional test meal – Free acid and Total acid (FA & TA)
2. CSF examination: Composition, physical examination, chemical examination, total Count, differential count and Pandy's test.
3. Semen analysis: Total count, abnormality, movement, pH and Viscosity
4. Pregnancy test – Male frog test, gravindex test and card method.

Text books

1. Clinical Lab Techniques – K.M. Samuel, M.K.G. Iyyer & sons edition 1990
2. Clinical Pathology and Bacteriology, Dr.K.N. Sachdev, Jaypee Brothers Medical Publishers, 1990

Reference Book:

1. Medical Laboratory Techniques – Vol-I, II & III – Kanaiah Mukerjii,Tata MC Graw Hill publishing Company,4th edition, 2006.
2. Medical Laboratory Technology – Dr. Ramnik Sood M.D. Jaypee Brothers, Medical publishers, 2003.

B.Sc.Zoology

Part III - Elective Course II - APPLIED BIOTECHNOLOGY   612ZE2
(65 hrs)
MODULE I   **(13 Hrs)**
Applications of genetic engineering in
1. Industry
2. Alcohol fermentation
3. Medicine (Insulin and Vaccine Production)
4. ***Agriculture (N2 fixation – agro bacterium).**
5. Nif genes – genetically transformed plants.

MODULE II   **(13 Hrs)**
1. Production of single cell protein (SCP) – Spirulina, Chlorella
2. Production of Fungal biomass- Mushroom culture
3. Production of Bacterial algal biomass.
4. Production of yeast biomass.
5. Bioremediation

MODULE III   **(13 Hrs)**
1. Source and production of commercially important enzymes – cellulase, amylase, pectinase, proteinase.
2. Immobilization of enzymes-Applications.
3. Biodegradation
4. Cryobiology-Methods and applications of cryopreservation.

MODULE IV   **(13 Hrs)**
1. Human genome project
2. Manipulation of reproduction in animals- artificial insemination, embryo transfer.
3. Invitro fertilization technology – Embryo cloning, embryonic stem cells.

MODULE V   **(13 hrs)**
1. NanoBiotechnology-Definition,Drug delivery system,DNA micro array
2. Drug designing
3. Proteomics

Text Books
1. Biotechnology – V. Kumaresan, Sara's Publications,revised edition 2010.
2. A text book of Biotechnology – R.C. Dubey, S. Chand & Co 2010.

Reference Book
1. A textbook of Biotechnology – U.Satyanarayana, Uppla Author Publisher Interlinks, 2005.

1.3.2 Valued added Course 2015-2016

Program code	Course code	Name of the course	Explanation	Total No /Year
BZ	**115EVS**	**Environmental Science**	To study the interaction of human with the natural environment, which includes all kinds of biotic and abiotic conditions	
BZ	**215VEC**	**Value Education**	Inculcating the sense of humanism for the well being of others and the nation and also teaches the broad mindedness, tolerance, social and emotional qualities	
BZ	**315ZS1**	**Skill Based Course I Apiculture**	To enable the students to learn the basics of honey bee rearing technology which provide self employment opportunity	11/2015-2016
BZ	**415ZS2**	**Skill Based Course II Ornamental Fishes**	To enable the students to gain knowledge in Ornamental fishes and to develop skill in rearing and marketing	
BZ	**415ZS2**	**Skill Based Course III Poultry Farming**	To gain knowledge in Poultry farming and to develop skill in poultry management	
BZ	**515ZS3**	General Awareness		
BZ	515ZE1	**Elective Course I Clinical Laboratory Techniques**	To gain basic knowledge clinical techniques and normal health infection and diseases	
BZ	515ZE2	**Elective Course II Applied Biotechnology**	To enable the students to learn the basics of techniques in biotechnology.	
BZ	315AZ3	**Allied Botany I**	To understand the role of plants in industries and applied aspects of plants.	
BZ	415AZ4	**Allied Botany II**	Understand the economic importance of plants and also its medicinal values	
BZ	315NHT /NLD	**Herbal Therapeutics/Land scape Designing**	To gain the basic methods in Herbal Therapeutics/Landscape Designing	

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE I -ANIMAL CULTURE - APICULTURE   315ZS1
Credits: 3   **Hours (C -40, A-5)**

UNIT – I: Species of Honey bee and life cycle   **(9 hrs)**
    1. Types of honeybees: *Apis dorsata* (Rock bee) –*Apis indica* (Indian bee)
     – *Apis florae* (Little bee)- *Apis mellifera* (European bee).
    2. Polymorphism in honey bee: Morphology and development of honey bee
    3. Life Cycle: Life cycle of Honeybee Functions of queen bee, worker bee and drone.

UNIT –II: Culture techniques   **(9 hrs)**
    5.   Social life in honeybees.
    6.   Structure of Bee hive: Newtons hive
    7.   Selection of Bees for Apiculture.
    8.   Methods of bee keeping – Indigenous method – modern method.

UNIT – III: Functions of worker bee   **(9 hrs)**
    6. Collection of Pollen from flowering plants.
    7. Collection of nectar from flowering plants.
    8. Inspection of bee hives.
    9. Communication and memory of honeybees.
    10. Pesticidal poisoning by agriculture.

UNIT –IV: Management of Honey bee   **(9 hrs)**
    6. Seasonal management of honeybee colonies.
    7. Catching the swarm.
    8. Natural enemies of honeybee.
    9. Diseases of honeybee and their control.
    10. Transportation of bee hives.

UNIT –V: Products of Apiculture   **(9 hrs)**
1. Honey
- Equipments used for Honey Extraction
- Chemical composition of honey
- Nutritive and Medicinal values of honey

2. Bee wax and its uses   3. Royal jelly   4. Pollen   5.Propolis   6. Bee venom

Text Books:
1. The complete book on bee keeping and honey processing by NPCS Board of consultants and Engineers – Niir Project Consultancy Services 106-E, Kamala nagar, New Delhi –110007 (INDIA)
2. Economic Zoology- Dr.G.S.Shukla and Dr.V.B. Upadhyay, 2003. Rastogi publication, 4th edition.
3. Honey bee and their Management - S.B Withhead, 2010. Revised edition –10.

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE II -ANIMAL CULTURE- ORNAMENTAL FISHES   415ZS2

Credits: 3   **Hours (C-40, A-5)**

UNIT – I   **(9 hrs)**
9. Introduction – History of Ornamental Fishes.
10. Construction of fish tank.
11. Setting up of tank.
12. Accessories: hood, light source, aerator and filters, light, nets, suction tube scrapper tool.

UNIT –II   **(9 hrs)**
5. Water quality management:

(b) Total hardness	(b) Temperature	(c) pH
(d) Dissolved oxygen	(e) Alkalinity	(f) Ammonia

6. Ornamental plants.

UNIT – III   **(9 hrs)**
1. Popular freshwater ornamental fishes
   a. Egg laying fishes – Siamese Fighter Fish, Gourami, Gold Fish, Barb, Tetras, Oscar, Cichlid and Angelfish.
   b. Live bearing fish – molly, guppy, swordtail, platy
2. Breeding methods of gold fish and angelfish.

UNIT –IV   **(9 hrs)**
1. Live feed organisms:

c) Infusoria	(b) Daphnia	(c)Tubifex
d) Chironomous larva	(e) Artemia	(f) Spirulina

2. Artificial feed preparation

UNIT – V   **(9 hrs)**
1. Brood stock management
2. Brief account on ornamental fish diseases.
3. Packing and transportation of live fishes.

Text Book
    Manual of Ornamental Fishes and Farming techniques - Jameson.J.D and Santhanam.R, 1996, Fisheries College, Tuticorin.

Reference Book
    Ornamental Fish Culture - Dr.V.K.Venkataramani, 2007, Fisheries College and Research Institute, Tuticorin.

B.Sc. ZOOLOGY

PART IV - SKILL BASED COURSE III - ANIMAL CULTURE - POULTRY FARMIMG

515ZS3

Credits: 3   **Hours :60**

UNIT-I   **(9 hrs)**

  1. Poultry industry in India- Breeds of fowls – breeding methods- systems of breeding – modern methods of breeding .

  2. Commercial layers & broilers.

  3. Poultry housing.

  4. The deep litter system.

  5.Cage rearing.

UNIT –II   **(9 hrs)**

  1. Practical aspects of chick rearing.

  2. Management of layers & broilers

  3. Summer and winter management of broilers.

  4. Debeaking.

UNIT – III   **(9 hrs)**

  1. Poultry nutrition

  2. Protein & Amino acids

  3. Vitamins

  4. Essential inorganic elements.

  5. Feed additives (Non-nutritive)

  6. Feed stuffs for poultry

  7. Feed formulation

UNIT –IV   **(9 hrs)**

1. Viral diseases	a) Ranikhet	b) Fowl pox
2. Bacterial diseases	a) Fowl Cholera	b) Salmonellosis
3. Fungal Diseases	a) Aspergillosis	b) Aflatoxicosis
4. Animal parasite	a) Coccidiosis.	

UNIT – V   **(9 hrs)**

  1. Vaccination - Vaccination programme.

  2. Animal health products in the treatment of poultry diseases

  3. Homeopathy in poultry diseases

Text Book

  1. Modern aspects of Commercial Poultry keeping - Gnanamani.M.R., 2006, Giri publications, Madurai.

Reference Books

  1. Disease of Poultry - Bisres, H.E., and Schwarte, 1989. Oxford and IBH, UK

  2. Poultry husbandry – Jull M.A., 1972, Tata McGraw Hill, Chennai.

PART III - Allied III – Botany – I   **315AZ1**

Credits: 3   **Hours (C-56, T-2, A-2)**

Objectives
1. To know the biodiversity of plants from Thallophyta to Phanerogams.
2. To understand the role of plants in industries.
3. To learn the applied aspects of plants

UNIT I   **(12 hours)**

Cryptogams- Introduction- classification

Thallophyta

Algae: Structure and life cycle of Volvox, Dictyota, Spirulina.

Fungi: Structure and life cycle of Yeast, Penicillium – Symptoms, Causative organisms and Control measure of Red rot of sugar cane.

UNIT II   **(12 hours)**

Bryophyte, Pteridophyte and Gymnosperm - General characters, structure and life cycle of Funaria (Bryophyte), Adiantum (Pteridophyte) and Cycas (Gymnosperm).

UNIT III   **(12 hours)**

Plant taxonomy: Bentham and Hook's system of classification (outline only) Annonaceae, Cucurbitacea, Amaranthaceae and Poaceae with economic importance.

UNIT IV   **(12 hours)**

Economic Botany: Sugar industry – sugarcane cultivation, extraction of juice, clarification, concentration and crystallization, recovery molasses. Paper Industry – Raw materials [wood pulp, baggase & waste paper] - Manufacturing Methods. Biodiesel – Jatropha.

UNIT V   **(12 hours)**

Applied Botany: Mushroom cultivation, Biofertilizers – cultivation and application of Azolla, Azospirillum, Rhizobium - Biopesticide.

Reference Books

Text book of Botany – Muneeswaran, Brighton Bookhouse, 2005

Taxonomy of Angiosperms – S.N. Pandey, S.P. Misra, 2009, Ane Books Pvt ltd.

Text book of Economic Botany – H.P. Pandey, 2012, Silver Life Publication.

Plant Biotechnology – R. Keshavachandran, K.V. Peter, 2008, University's Press Pvt ltd

Elements of Biotechnology – P.K. Gupta. 1996, Rastogi & Company.

B.Sc. ZOOLOGY
PART III - Allied IV – Botany – II   **415AZ2**

Credits: 3   **Hours (C-56, T-2, A-2)**

UNIT I   **(12 Hours)**

Anatomy: Internal structure of dicot (young) and monocot stem, dicot (young) and monocot root dicot and monocot leaf, normal secondary thickening in dicot stem and root.

UNIT II   **(12 Hours)**

Physiology: Absorption of water – definitions of diffusion, Osmosis, DPD imbibition, Active and passive absorption of water, factors. Photosynthesis – structure of chloroplast, pigment system, light and dark reactions (Calvin cycle). Phytohormones – Physiological role of Auxins, Gibberellins, Cytokinins.

UNIT III (12 Hours)

Horticulture: Importance of Horticulture, Propagating methods of horticultural plants – cutting, layering, grafting and budding. Organic manuring, irrigation, pruning, cultivation of Mango and Papaya, Preservation of Fruits.

UNIT IV (12 Hours)

Landscape Gardening: History & Scope, Categories – residential, public and commercial, lily pond, Lawn making, Topiary, Bonsai – methods and its significance, Terrarium & its importance, Terrace garden.

UNIT V (12 Hours)

Pharmacognosy: Common name, binomial, chemical constituents & thrapeutical value of *curcuma longa, Cumimum cyminum, Zingiber officinale, Piper nigrum, Allium sativum, Azadiracta indica, Centella asiatica, Phyllanthus fraternus, Aloe vera.*

Reference Books

Plant Anatomy – B.P. Pandey, 2002, S.Chand & Company.
Plant Physiology – V. Verma, 2008, EMKAY Publication, Delhi
Text book of Horticulture – K. Manibhushan Rao, 2005, Macmillan India Ltd. Text book of Pharmacognosy – Mohammed Ali, 2006, CBS publishers and Distributors.
Herbs cultivation and medicinal uses – H. Panda, 2001, NIIR Publication, Delhi.
Design Elements of Landscape gardening – K.M.P. Nambisan, 1992, Oxford & IBH Publishers Pvt. Ltd.
Indigenous Herbal Medicines – Dr. Deepak Achanga, Dr. Anshu Shrivatsava, Aavishkar Publishers.

B.Sc. ZOOLOGY
Part III – Elective I – CLINICAL LABORATORY TECHNIQUES   515ZE1

Credits: 4   **Hours (C-56, T-2, A-2)**

UNIT I : Collection and Sample Analysis (12 Hrs)

1. Collection and disposal of specimen (Brief account only) - Urine, blood, stool and sputum.
2. Reporting pattern of sample analysis.
3. Safety regulations in clinical lab.
4. First aid for superficial wounds, burns and electrical shocks.
5. Widal test
6. Mountoux test

UNIT II: Clinical Haematology (12 Hrs)

1. Collection of blood – capillary blood collection and venous blood collection.
2. Anti – coagulants preparation - Double oxalate mixture, EDTA, heparin and sodium citrate.
3. Blood cell count: RBC count and WBC count.
4. Erythrocyte sedimentation Rate (ESR): Westergren's method and wintrobe's method.
5. Haemoglobin Estimation (Hb): Acid haematin method
6. Bleeding Time (BT)   Blotting paper method
7. Clotting time (CT) Slide Method

UNIT III: Serology and Blood bank (12 Hrs)

1.VDRL test – Kahn's test and flocculation test.
2.Blood – Urea – Nitrogen (BUN) estimation: Hench and Aldrich's method
3.Serum cholesterol estimation – Anderson and Key's method.
4.Blood sugar estimation – Glucose Tolerance Test (GTT)
5.Quantitative analysis of sugar by Folin-wu tube method.
6.Testing the blood donor - blood transfusion – donor screening
7.Compatibility test – Coombs test only.

UNIT IV: Urine Analysis: (only 2 test for each) (12 Hrs)

1.Physical properties of urine: Colour, specific gravity, pH,
2.Microscopical examination of pus cells and casts in urine
3.Chemical properties of urine: Albumin,Sugar, Blood, Bile salt and
4.Bile pigment: Bilirubin and Urobilinogen (qualitative analysis).
Faecal Analysis:

Physical and Microscopical Examination of stool
Identification of intestinal parasite – Direct smear examination –Anal Swab method only.
Diagnosis of chronic disease: *Mycobacterium leprae* causing leprosy.

UNIT V: Analysis of Gastric Juice and Body Fluids (12 Hrs)

1.GJ - aspiration by Ryles tube, Fractional test meal – Free acid and Total acid (FA & TA)
2.CSF examination: Composition, physical examination, chemical examination, total Count, differential count and Pandy's test.
3.Semen analysis: Total count, abnormality, movement, pH and Viscosity
4.Pregnancy test – Male frog test, gravindex test and card method.

Text books
1.Clinical Lab Techniques – K.M. Samuel, M.K.G. Iyyer & sons edition 1990
2.Clinical Pathology and Bacteriology, Dr.K.N. Sachdev, Jaypee Brothers Medical Publishers, 1990

Reference Book:

1.Medical Laboratory Techniques – Vol-I, II & III – Kanaiah Mukerjii,Tata MC Graw Hill publishing Company,4th edition, 2006.
2.Medical Laboratory Technology – Dr. Ramnik Sood M.D. Jaypee Brothers, Medical publishers, 2003.

B.Sc.Zoology

Part III - Elective Course II - APPLIED BIOTECHNOLOGY   612ZE2
(65 hrs)
MODULE I **(13 Hrs)**
Applications of genetic engineering in
1. Industry
2. Alcohol fermentation
3. Medicine (Insulin and Vaccine Production)
4. ***Agriculture (N2 fixation – agro bacterium).**
5. Nif genes – genetically transformed plants.

MODULE II   **(13 Hrs)**
1.Production of single cell protein (SCP) – Spirulina, Chlorella
2.Production of Fungal biomass- Mushroom culture
3.Production of Bacterial algal biomass.
4.Production of yeast biomass.
5.Bioremediation

MODULE III   **(13 Hrs)**
1.Source and production of commercially important enzymes – cellulase, amylase, pectinase, proteinase.
2.Immobilization of enzymes-Applications.
3.Biodegradation
4.Cryobiology-Methods and applications of cryopreservation.

MODULE IV   **(13 Hrs)**
1.Human genome project
2.Manipulation of reproduction in animals- artificial insemination, embryo transfer.
3.Invitro fertilization technology – Embryo cloning, embryonic stem cells.

MODULE V   **(13 hrs)**
1.NanoBiotechnology-Definition,Drug delivery system,DNA micro array
2.Drug designing
3.Proteomics

Text Books
1.Biotechnology – V. Kumaresan, Sara's Publications,revised edition 2010.
2.A text book of Biotechnology – R.C. Dubey, S. Chand & Co 2010.
Reference Book
    1. A textbook of Biotechnology – U.Satyanarayana, Uppla Author Publisher Interlinks, 2005.

1.3.2 Valued added Course 2014-2015

Program code	Course code	Name of the course	Explanation	Total No /Year
BZ	**115EVS**	**Value Education**		
BZ	**215VEC**	**Environmental Science**		
BZ	**315ZS1**	**Skill Based Course I Apiculture**	To enable the students to learn the basics of honey bee rearing technology which provide self employment opportunity	
BZ	**415ZS2**	**Skill Based Course II - Ornamental Fishes**	To enable the students to gain knowledge in Ornamental fishes and to develop skill in rearing and marketing	9/2014-2015
BZ	**515ZS3**	**Skill Based Course III - Poultry farming**	To gain knowledge in Poultry farming and to develop skill in poultry management	
BZ	**515ZE1**	**Elective Course-**	To gain basic knowledge	

		Clinical Laboratory Techniques	in clinical techniques and normal health infection and diseases	
BZ	312AZ3	**Allied Botany I**	Understand the role of plants in industries and applied aspects of plants.	
BZ	412AZ4	**Allied Botany II**	Understand the economic importance of plants and also its medicinal values	
BZ	312NHT/ 312NLD	Herbal Therapeutics/Landscape Designing	To gain the basic methods in Herbal Therapeutics/Landscape Designing	

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE I -ANIMAL CULTURE - APICULTURE   312ZS1
Credits: 3   **Hours (C-40, A-5)**

UNIT – I: Species of Honey bee and life cycle   **(9 hrs)**
    1. Types of honeybees: *Apis dorsata* (Rock bee) –*Apis indica* (Indian bee)
     – *Apis florae* (Little bee)- *Apis mellifera* (European bee).
    2. Polymorphism in honey bee: Morphology and development of honey bee
    3. Life Cycle: Life cycle of Honeybee Functions of queen bee, worker bee and drone.

UNIT –II: Culture techniques   **(9 hrs)**
    9.   Social life in honeybees.
    10. Structure of Bee hive: Newtons hive
    11. Selection of Bees for Apiculture.
    12. Methods of bee keeping – Indigenous method – modern method.

UNIT – III: Functions of worker bee   **(9 hrs)**
    11.   Collection of Pollen from flowering plants.
    12.   Collection of nectar from flowering plants.
    13.   Inspection of bee hives.
    14.   Communication and memory of honeybees.
    15.   Pesticidal poisoning by agriculture.

UNIT –IV: Management of Honey bee   **(9 hrs)**
    11. Seasonal management of honeybee colonies.
    12. Catching the swarm.
    13. Natural enemies of honeybee.
    14. Diseases of honeybee and their control.
    15. Transportation of bee hives.

UNIT –V: Products of Apiculture   **(9 hrs)**
1. Honey
    • Equipments used for Honey Extraction

- Chemical composition of honey
- Nutritive and Medicinal values of honey

2. Bee wax and its uses   3. Royal jelly   4. Pollen   5.Propolis   6. Bee venom

Text Books:

1. The complete book on bee keeping and honey processing by NPCS Board of consultants and Engineers – Niir Project Consultancy Services 106-E, Kamala nagar, New Delhi –110007 (INDIA)

2. Economic Zoology- Dr.G.S.Shukla and Dr.V.B. Upadhyay, 2003. Rastogi publication, 4th edition.

3. Honey bee and their Management - S.B Withhead, 2010. Revised edition –10.

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE II -ANIMAL CULTURE- ORNAMENTAL
FISHES   412ZS2

Credits: 3   **Hours (C-40, A-5)**

UNIT – I   **(9 hrs)**
13. Introduction – History of Ornamental Fishes.
14. Construction of fish tank.
15. Setting up of tank.
16. Accessories: hood, light source, aerator and filters, light, nets, suction tube scrapper tool.

UNIT –II   **(9 hrs)**
7. Water quality management:
   (c) Total hardness   (b) Temperature   (c) pH
   (d) Dissolved oxygen   (e) Alkalinity   (f) Ammonia
8. Ornamental plants.

UNIT – III   **(9 hrs)**
1. Popular freshwater ornamental fishes
      a. Egg laying fishes – Siamese Fighter Fish, Gourami, Gold Fish, Barb, Tetras, Oscar, Cichlid and Angelfish.
      b. Live bearing fish – molly, guppy, swordtail, platy
2. Breeding methods of gold fish and angelfish.

UNIT –IV   **(9 hrs)**
1. Live feed organisms:
   d) Infusoria   (b) Daphnia   (c)Tubifex
   d) Chironomous larva   (e) Artemia   (f) Spirulina
2. Artificial feed preparation

UNIT – V   **(9 hrs)**
1. Brood stock management
2. Brief account on ornamental fish diseases.
3. Packing and transportation of live fishes.

Text Book

Manual of Ornamental Fishes and Farming techniques - Jameson.J.D and Santhanam.R, 1996, Fisheries College, Tuticorin.

Reference Book

Ornamental Fish Culture - Dr.V.K.Venkataramani, 2007, Fisheries College and Research Institute, Tuticorin.

B.Sc. ZOOLOGY

PART IV - SKILL BASED COURSE III - ANIMAL CULTURE - POULTRY FARMIMG

512ZS3

Credits: 3   **Hours :60**

UNIT-I   **(9 hrs)**

1. Poultry industry in India- Breeds of fowls – breeding methods- systems of breeding – modern methods of breeding .
2. Commercial layers & broilers.
3. Poultry housing.
4. The deep litter system.
5. Cage rearing.

UNIT –II   **(9 hrs)**

1. Practical aspects of chick rearing.
2. Management of layers & broilers
3. Summer and winter management of broilers.
4. Debeaking.

UNIT – III   **(9 hrs)**

1. Poultry nutrition
   a. Protein & Amino acids
   b. Vitamins
   c.Essential inorganic elements.
2. Feed additives (Non-nutritive)
3. Feed stuffs for poultry
4. Feed formulation

UNIT –IV   **(9 hrs)**

1. Viral diseases   a) Ranikhet   b) Fowl pox
2. Bacterial diseases a) Fowl Cholera   b) Salmonellosis
3. Fungal Diseases   a) Aspergillosis   b) Aflatoxicosis
4. Animal parasite   a) Coccidiosis.

UNIT – V   **(9 hrs)**

1. Vaccination - Vaccination programme.
2. Animal health products in the treatment of poultry diseases
3. Homeopathy in poultry diseases

Text Book
1. Modern aspects of Commercial Poultry keeping - Gnanamani.M.R., 2006, Giri publications, Madurai.
Reference Books
1. Disease of Poultry - Bisres, H.E., and Schwarte, 1989. Oxford and IBH, UK
2. Poultry husbandry – Jull M.A., 1972, Tata McGraw Hill, Chennai.

PART III - Allied III – Botany – I   **312AZ1**

Credits: 3   **Hours (C-56, T-2, A-2)**
Objectives
  4. To know the biodiversity of plants from Thallophyta to Phanerogams.
  5. To understand the role of plants in industries.
  6. To learn the applied aspects of plants

UNIT I   **(12 hours)**
Cryptogams- Introduction- classification
Thallophyta
Algae: Structure and life cycle of Volvox, Dictyota, Spirulina.
Fungi: Structure and life cycle of Yeast, Penicillium – Symptoms, Causative organisms and Control measure of Red rot of sugar cane.

UNIT II   **(12 hours)**
Bryophyte, Pteridophyte and Gymnosperm - General characters, structure and life cycle of Funaria (Bryophyte), Adiantum (Pteridophyte) and Cycas (Gymnosperm).

UNIT III   **(12 hours)**
Plant taxonomy: Bentham and Hook's system of classification (outline only) Annonaceae, Cucurbitacea, Amaranthaceae and Poaceae with economic importance.

UNIT IV   **(12 hours)**
Economic Botany: Sugar industry – sugarcane cultivation, extraction of juice, clarification, concentration and crystallization, recovery molasses. Paper Industry – Raw materials [wood pulp, baggase & waste paper] - Manufacturing Methods. Biodiesel – Jatropha.

UNIT V   **(12 hours)**
Applied Botany: Mushroom cultivation, Biofertilizers – cultivation and application of Azolla, Azospirillum, Rhizobium - Biopesticide.

Reference Books
    Text book of Botany – Muneeswaran, Brighton Bookhouse, 2005
    Taxonomy of Angiosperms – S.N. Pandey, S.P. Misra, 2009, Ane Books Pvt ltd.
    Text book of Economic Botany – H.P. Pandey, 2012, Silver Life Publication.
    Plant Biotechnology – R. Keshavachandran, K.V. Peter, 2008, University's Press Pvt ltd
    Elements of Biotechnology – P.K. Gupta. 1996, Rastogi & Company.

PART III - Allied IV – Botany – II   **412AZ2**

Credits: 3   **Hours (C-56, T-2, A-2)**
UNIT I   **(12 Hours)**
Anatomy: Internal structure of dicot (young) and monocot stem, dicot (young) and monocot root dicot and monocot leaf, normal secondary thickening in dicot stem and root.

UNIT II   (12 Hours)

Physiology: Absorption of water – definitions of diffusion, Osmosis, DPD imbibition, Active and passive absorption of water, factors. Photosynthesis – structure of chloroplast, pigment system, light and dark reactions (Calvin cycle). Phytohormones – Physiological role of Auxins, Gibberellins, Cytokinins.

UNIT III   (12 Hours)

Horticulture: Importance of Horticulture, Propagating methods of horticultural plants – cutting, layering, grafting and budding. Organic manuring, irrigation, pruning, cultivation of Mango and Papaya, Preservation of Fruits.

UNIT IV   (12 Hours)

Landscape Gardening: History & Scope, Categories – residential, public and commercial, lily pond, Lawn making, Topiary, Bonsai – methods and its significance, Terrarium & its importance, Terrace garden.

UNIT V   (12 Hours)

Pharmacognosy: Common name, binomial, chemical constituents & thrapeutical value of *curcuma longa, Cumimum cyminum, Zingiber officinale, Piper nigrum, Allium sativum, Azadiracta indica, Centella asiatica, Phyllanthus fraternus, Aloe vera.*

Reference Books

Plant Anatomy – B.P. Pandey, 2002, S.Chand & Company.
Plant Physiology – V. Verma, 2008, EMKAY Publication, Delhi
Text book of Horticulture – K. Manibhushan Rao, 2005, Macmillan India Ltd. Text book of Pharmacognosy – Mohammed Ali, 2006, CBS publishers and Distributors.
Herbs cultivation and medicinal uses – H. Panda, 2001, NIIR Publication, Delhi.
Design Elements of Landscape gardening – K.M.P. Nambisan, 1992, Oxford & IBH Publishers Pvt. Ltd.
Indigenous Herbal Medicines – Dr. Deepak Achanga, Dr. Anshu Shrivatsava, Aavishkar Publishers.

B.Sc. ZOOLOGY
Part III – Elective I – CLINICAL LABORATORY TECHNIQUES   512ZE1

Credits: 4   **Hours (C-56, T-2, A-2)**

UNIT I : Collection and Sample Analysis   (12 Hrs)

1. Collection and disposal of specimen (Brief account only) - Urine, blood, stool and sputum.
2. Reporting pattern of sample analysis.
3. Safety regulations in clinical lab.
4. First aid for superficial wounds, burns and electrical shocks.
5. Widal test
6. Mountoux test

UNIT II: Clinical Haematology   (12 Hrs)

1. Collection of blood – capillary blood collection and venous blood collection.
2. Anti – coagulants preparation - Double oxalate mixture, EDTA, heparin and sodium citrate.
3. Blood cell count: RBC count and WBC count.

4. Erythrocyte sedimentation Rate (ESR): Westergren's method and wintrobe's method.
5. Haemoglobin Estimation (Hb): Acid haematin method
6. Bleeding Time (BT)   Blotting paper method
7. Clotting time (CT) Slide Method

UNIT III: Serology and Blood bank   (12 Hrs)

1. VDRL test – Kahn's test and flocculation test.
2. Blood – Urea – Nitrogen (BUN) estimation: Hench and Aldrich's method
3. Serum cholesterol estimation – Anderson and Key's method.
4. Blood sugar estimation – Glucose Tolerance Test (GTT)
5. Quantitative analysis of sugar by Folin-wu tube method.
6. Testing the blood donor - blood transfusion – donor screening
7. Compatibility test – Coombs test only.

UNIT IV: Urine Analysis: (only 2 test for each)   (12 Hrs)

1. Physical properties of urine: Colour, specific gravity, pH,
2. Microscopical examination of pus cells and casts in urine
3. Chemical properties of urine: Albumin,Sugar, Blood, Bile salt and
4. Bile pigment: Bilirubin and Urobilinogen (qualitative analysis).

Faecal Analysis:

5. Physical and Microscopical Examination of stool
6. Identification of intestinal parasite – Direct smear examination –Anal Swab method only.
7. Diagnosis of chronic disease*: Mycobacterium leprae* causing leprosy.

UNIT V: Analysis of Gastric Juice and Body Fluids   (12 Hrs)

1. GJ - aspiration by Ryles tube, Fractional test meal – Free acid and Total acid (FA & TA)
2. CSF examination: Composition, physical examination, chemical examination, total Count, differential count and Pandy's test.
3. Semen analysis: Total count, abnormality, movement, pH and Viscosity
4. Pregnancy test – Male frog test, gravindex test and card method.

Text books
1. Clinical Lab Techniques – K.M. Samuel, M.K.G. Iyyer & sons edition 1990
2. Clinical Pathology and Bacteriology, Dr.K.N. Sachdev, Jaypee Brothers Medical Publishers, 1990

Reference Book:

1. Medical Laboratory Techniques – Vol-I, II & III – Kanaiah Mukerjii,Tata MC Graw Hill publishing Company,4th edition, 2006.
2. Medical Laboratory Technology – Dr. Ramnik Sood M.D. Jaypee Brothers, Medical publishers, 2003.

<p align="center">**B.Sc.Zoology**</p>

<p align="center">**Part III - Elective Course II - APPLIED BIOTECHNOLOGY   612ZE2**</p>
<p align="right">**(65 hrs)**</p>
MODULE I   **(13 Hrs)**
Applications of genetic engineering in
   1. Industry
   2. Alcohol fermentation
   3. Medicine (Insulin and Vaccine Production)
   4. ***Agriculture (N2 fixation – agro bacterium)**.

5. Nif genes – genetically transformed plants.

MODULE II (13 Hrs)
1. Production of single cell protein (SCP) – Spirulina, Chlorella
2. Production of Fungal biomass- Mushroom culture
3. Production of Bacterial algal biomass.
4. Production of yeast biomass.
5. Bioremediation

MODULE III (13 Hrs)
1. Source and production of commercially important enzymes – cellulase, amylase, pectinase, proteinase.
2. Immobilization of enzymes-Applications.
3.Biodegradation
4. Cryobiology-Methods and applications of cryopreservation.

MODULE IV (13 Hrs)
1. Human genome project
2. Manipulation of reproduction in animals- artificial insemination, embryo transfer.
3. Invitro fertilization technology – Embryo cloning, embryonic stem cells.

MODULE V (13 hrs)
1. NanoBiotechnology-Definition,Drug delivery system,DNA micro array
2. Drug designing
3. Proteomics

Text Books
1. Biotechnology – V. Kumaresan, Sara's Publications,revised edition 2010.
2. A text book of Biotechnology – R.C. Dubey, S. Chand & Co 2010.

Reference Book
1. A textbook of Biotechnology – U.Satyanarayana, Uppla Author Publisher Interlinks, 2005.

1.3.2 Valued added Course 2013-2014

Program code	Course code	Name of the course	Explanation	Total No /Year
BZ	**115EVS**	**Environmental Science**		
BZ	**215VEC**	**Value Education**		
BZ	**315ZS1**	**Skill Based Course Apiculture**	To enable the students to learn the basics of honey bee rearing technology which provide self employment opportunity	
BZ	**415ZS2**	**Ornamental Fishes**	To enable the students to gain knowledge in Ornamental fishes and to develop skill in rearing and marketing	
BZ	**515ZS3**	**Poultry farming**	To gain knowledge in Poultry farming and to develop skill in poultry management	9/2013-2014
BZ	**515ZE1**	**Elective Course-Clinical Laboratory Techniques**	Understand the role of plants in industries and applied aspects of plants.	
BZ	312AZ3	**Allied Botany I**	Understand the economic importance of plants and also its medicinal values	
BZ	412AZ4	**Allied Botany II**	To gain the basic methods in mushroom cultivation and marketing.	
BZ	312NHT / 312NLD	Herbal Therapeutics/Landscape Designing	To gain the basic knowledge in Herbal Therapeutics/Landscape Designing	

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE I -ANIMAL CULTURE - APICULTURE   312ZS1
Credits: 3   **Hours (C -40, A-5)**

UNIT – I: Species of Honey bee and life cycle   **(9 hrs)**
    1. Types of honeybees: *Apis dorsata* (Rock bee) –*Apis indica* (Indian bee)
       – *Apis florae* (Little bee)- *Apis mellifera* (European bee).
    2. Polymorphism in honey bee: Morphology and development of honey bee
    3. Life Cycle: Life cycle of Honeybee Functions of queen bee, worker bee and drone.

UNIT –II: Culture techniques   **(9 hrs)**
    13. Social life in honeybees.
    14. Structure of Bee hive: Newtons hive
    15. Selection of Bees for Apiculture.
    16. Methods of bee keeping – Indigenous method – modern method.

UNIT – III: Functions of worker bee   **(9 hrs)**
    16. Collection of Pollen from flowering plants.
    17. Collection of nectar from flowering plants.
    18. Inspection of bee hives.
    19. Communication and memory of honeybees.
    20. Pesticidal poisoning by agriculture.

UNIT –IV: Management of Honey bee   **(9 hrs)**
    16. Seasonal management of honeybee colonies.
    17. Catching the swarm.
    18. Natural enemies of honeybee.
    19. Diseases of honeybee and their control.
    20. Transportation of bee hives.

UNIT –V: Products of Apiculture   **(9 hrs)**
1. Honey
- Equipments used for Honey Extraction
- Chemical composition of honey
- Nutritive and Medicinal values of honey

2. Bee wax and its uses   3. Royal jelly   4. Pollen   5.Propolis   6. Bee venom

Text Books:
1. The complete book on bee keeping and honey processing by NPCS Board of consultants and Engineers – Niir Project Consultancy Services 106-E, Kamala nagar, New Delhi –110007 (INDIA)
2. Economic Zoology- Dr.G.S.Shukla and Dr.V.B. Upadhyay, 2003. Rastogi publication, 4th edition.
3. Honey bee and their Management - S.B Withhead, 2010. Revised edition –10.

B.Sc. ZOOLOGY
PART IV- SKILL BASED COURSE II -ANIMAL CULTURE- ORNAMENTAL
FISHES   412ZS2

Credits: 3   **Hours (C-40, A-5)**

UNIT – I   **(9 hrs)**
   17. Introduction – History of Ornamental Fishes.
   18. Construction of fish tank.
   19. Setting up of tank.
   20. Accessories: hood, light source, aerator and filters, light, nets, suction tube scrapper tool.

UNIT –II   **(9 hrs)**
   9. Water quality management:
       (d) Total hardness   (b) Temperature   (c) pH
       (d) Dissolved oxygen   (e) Alkalinity   (f) Ammonia
   10. Ornamental plants.

UNIT – III   **(9 hrs)**
   1. Popular freshwater ornamental fishes
       a. Egg laying fishes – Siamese Fighter Fish, Gourami, Gold Fish, Barb, Tetras, Oscar, Cichlid and Angelfish.
       b. Live bearing fish – molly, guppy, swordtail, platy
   2. Breeding methods of gold fish and angelfish.

UNIT –IV   **(9 hrs)**
   1. Live feed organisms:
       e) Infusoria   (b) Daphnia   (c)Tubifex
       d) Chironomous larva   (e) Artemia   (f) Spirulina
   2. Artificial feed preparation

UNIT – V   **(9 hrs)**
   1. Brood stock management
   2. Brief account on ornamental fish diseases.
   3. Packing and transportation of live fishes.

Text Book
   Manual of Ornamental Fishes and Farming techniques - Jameson.J.D and Santhanam.R, 1996, Fisheries College, Tuticorin.

Reference Book
   Ornamental Fish Culture - Dr.V.K.Venkataramani, 2007, Fisheries College and Research Institute, Tuticorin.

B.Sc. ZOOLOGY

PART IV - SKILL BASED COURSE III - ANIMAL CULTURE - POULTRY FARMIMG

512ZS3

Credits: 3   **Hours :60**

UNIT-I   **(9 hrs)**
   1. Poultry industry in India- Breeds of fowls – breeding methods- systems of breeding – modern methods of breeding .
   2. Commercial layers & broilers.
   3. Poultry housing.
   4. The deep litter system.
   5. Cage rearing.

UNIT –II   **(9 hrs)**
 1. Practical aspects of chick rearing.
 2. Management of layers & broilers
 3. Summer and winter management of broilers.
 4. Debeaking.

UNIT – III   **(9 hrs)**
1. Poultry nutrition
                a. Protein & Amino acids
                b. Vitamins
                c.Essential inorganic elements.
2. Feed additives (Non-nutritive)
3. Feed stuffs for poultry
4. Feed formulation

UNIT –IV   **(9 hrs)**
1. Viral diseases   a) Ranikhet   b) Fowl pox
2. Bacterial diseases a) Fowl Cholera   b) Salmonellosis
3. Fungal Diseases   a) Aspergillosis   b) Aflatoxicosis
4. Animal parasite   a) Coccidiosis.

UNIT – V   **(9 hrs)**
1. Vaccination - Vaccination programme.
2. Animal health products in the treatment of poultry diseases
3. Homeopathy in poultry diseases

Text Book
1. Modern aspects of Commercial Poultry keeping - Gnanamani.M.R., 2006, Giri publications, Madurai.
Reference Books
1. Disease of Poultry - Bisres, H.E., and Schwarte, 1989. Oxford and IBH, UK
2. Poultry husbandry – Jull M.A., 1972, Tata McGraw Hill, Chennai.

PART III - Allied III – Botany – I　　　　　　**312AZ1**

Credits: 3　　　　　　　　　　　　　　**Hours (C-56, T-2, A-2)**
Objectives
7. To know the biodiversity of plants from Thallophyta to Phanerogams.
8. To understand the role of plants in industries.
9. To learn the applied aspects of plants

UNIT I　　　　　　　　　　　　　　　　　　**(12 hours)**
Cryptogams- Introduction- classification
Thallophyta
Algae: Structure and life cycle of Volvox, Dictyota, Spirulina.
Fungi: Structure and life cycle of Yeast, Penicillium – Symptoms, Causative organisms and Control measure of Red rot of sugar cane.

UNIT II　　　　　　　　　　　　　　　　　　**(12 hours)**
Bryophyte, Pteridophyte and Gymnosperm - General characters, structure and life cycle of Funaria (Bryophyte), Adiantum (Pteridophyte) and Cycas (Gymnosperm).

UNIT III　　　　　　　　　　　　　　　　　**(12 hours)**
Plant taxonomy: Bentham and Hook's system of classification (outline only) Annonaceae, Cucurbitacea, Amaranthaceae and Poaceae with economic importance.

UNIT IV　　　　　　　　　　　　　　　　　**(12 hours)**
Economic Botany: Sugar industry – sugarcane cultivation, extraction of juice, clarification, concentration and crystallization, recovery molasses. Paper Industry – Raw materials [wood pulp, baggase & waste paper] - Manufacturing Methods. Biodiesel – Jatropha.

UNIT V　　　　　　　　　　　　　　　　　　**(12 hours)**
Applied Botany: Mushroom cultivation, Biofertilizers – cultivation and application of Azolla, Azospirillum, Rhizobium - Biopesticide.

Reference Books
Text book of Botany – Muneeswaran, Brighton Bookhouse, 2005
Taxonomy of Angiosperms – S.N. Pandey, S.P. Misra, 2009, Ane Books Pvt ltd.
Text book of Economic Botany – H.P. Pandey, 2012, Silver Life Publication.
Plant Biotechnology – R. Keshavachandran, K.V. Peter, 2008, University's Press Pvt ltd
Elements of Biotechnology – P.K. Gupta. 1996, Rastogi & Company.

PART III - Allied IV – Botany – II   412AZ2

Credits: 3   **Hours (C-56, T-2, A-2)**

UNIT I   **(12 Hours)**

Anatomy: Internal structure of dicot (young) and monocot stem, dicot (young) and monocot root dicot and monocot leaf, normal secondary thickening in dicot stem and root.

UNIT II   **(12 Hours)**

Physiology: Absorption of water – definitions of diffusion, Osmosis, DPD imbibition, Active and passive absorption of water, factors. Photosynthesis – structure of chloroplast, pigment system, light and dark reactions (Calvin cycle). Phytohormones – Physiological role of Auxins, Gibberellins, Cytokinins.

UNIT III   **(12 Hours)**

Horticulture: Importance of Horticulture, Propagating methods of horticultural plants – cutting, layering, grafting and budding. Organic manuring, irrigation, pruning, cultivation of Mango and Papaya, Preservation of Fruits.

UNIT IV   **(12 Hours)**

Landscape Gardening: History & Scope, Categories – residential, public and commercial, lily pond, Lawn making, Topiary, Bonsai – methods and its significance, Terrarium & its importance, Terrace garden.

UNIT V   **(12 Hours)**

Pharmacognosy: Common name, binomial, chemical constituents & thrapeutical value of *curcuma longa, Cumimum cyminum, Zingiber officinale, Piper nigrum, Allium sativum, Azadiracta indica, Centella asiatica, Phyllanthus fraternus, Aloe vera.*

Reference Books

Plant Anatomy – B.P. Pandey, 2002, S.Chand & Company.
Plant Physiology – V. Verma, 2008, EMKAY Publication, Delhi
Text book of Horticulture – K. Manibhushan Rao, 2005, Macmillan India Ltd. Text book of Pharmacognosy – Mohammed Ali, 2006, CBS publishers and Distributors.
Herbs cultivation and medicinal uses – H. Panda, 2001, NIIR Publication, Delhi.
Design Elements of Landscape gardening – K.M.P. Nambisan, 1992, Oxford & IBH Publishers Pvt. Ltd.
Indigenous Herbal Medicines – Dr. Deepak Achanga, Dr. Anshu Shrivatsava, Aavishkar Publishers.

Part III – Elective I – CLINICAL LABORATORY TECHNIQUES   512ZE1

Credits: 4   **Hours (C-56, T-2, A-2)**

UNIT I : Collection and Sample Analysis   **(12 Hrs)**

1. Collection and disposal of specimen (Brief account only) - Urine, blood, stool and sputum.
2. Reporting pattern of sample analysis.

3. Safety regulations in clinical lab.
4. First aid for superficial wounds, burns and electrical shocks.
5. Widal test
6. Mountoux test

UNIT II: Clinical Haematology (12 Hrs)

1. Collection of blood – capillary blood collection and venous blood collection.
2. Anti – coagulants preparation - Double oxalate mixture, EDTA, heparin and sodium citrate.
3. Blood cell count: RBC count and WBC count.
4. Erythrocyte sedimentation Rate (ESR): Westergren's method and wintrobe's method.
5. Haemoglobin Estimation (Hb): Acid haematin method
6. Bleeding Time (BT)   Blotting paper method
7. Clotting time (CT) Slide Method

UNIT III: Serology and Blood bank (12 Hrs)

1. VDRL test – Kahn's test and flocculation test.
2. Blood – Urea – Nitrogen (BUN) estimation: Hench and Aldrich's method
3. Serum cholesterol estimation – Anderson and Key's method.
4. Blood sugar estimation – Glucose Tolerance Test (GTT)
5. Quantitative analysis of sugar by Folin-wu tube method.
6. Testing the blood donor - blood transfusion – donor screening
7. Compatibility test – Coombs test only.

UNIT IV: Urine Analysis: (only 2 test for each) (12 Hrs)

1. Physical properties of urine: Colour, specific gravity, pH,
2. Microscopical examination of pus cells and casts in urine
3. Chemical properties of urine: Albumin,Sugar, Blood, Bile salt and
4. Bile pigment: Bilirubin and Urobilinogen (qualitative analysis).

Faecal Analysis:

5. Physical and Microscopical Examination of stool
6. Identification of intestinal parasite – Direct smear examination –Anal Swab method only.
7. Diagnosis of chronic disease*: Mycobacterium leprae* causing leprosy.

UNIT V: Analysis of Gastric Juice and Body Fluids (12 Hrs)

1. GJ - aspiration by Ryles tube, Fractional test meal – Free acid and Total acid (FA & TA)
2. CSF examination: Composition, physical examination, chemical examination, total Count, differential count and Pandy's test.
3. Semen analysis: Total count, abnormality, movement, pH and Viscosity
4. Pregnancy test – Male frog test, gravindex test and card method.

Text books
1. Clinical Lab Techniques – K.M. Samuel, M.K.G. Iyyer & sons edition 1990
2. Clinical Pathology and Bacteriology, Dr.K.N. Sachdev, Jaypee Brothers Medical Publishers, 1990

Reference Book:

1. Medical Laboratory Techniques – Vol-I, II & III – Kanaiah Mukerjii,Tata MC Graw Hill publishing Company,4th edition, 2006.
2. Medical Laboratory Technology – Dr. Ramnik Sood M.D. Jaypee Brothers, Medical publishers, 2003.

B.Sc.Zoology

Part III - Elective Course II - APPLIED BIOTECHNOLOGY   612ZE2

(65 hrs)

MODULE I   **(13 Hrs)**

Applications of genetic engineering in
   1. Industry
   2. Alcohol fermentation
   3. Medicine (Insulin and Vaccine Production)
   4. ***Agriculture (N2 fixation – agro bacterium).**
   5. Nif genes – genetically transformed plants.

MODULE II   **(13 Hrs)**
   1. Production of single cell protein (SCP) – Spirulina, Chlorella
   2. Production of Fungal biomass- Mushroom culture
   3. Production of Bacterial algal biomass.
   4. Production of yeast biomass.
   5. Bioremediation

MODULE III   **(13 Hrs)**
   1. Source and production of commercially important enzymes – cellulase, amylase, pectinase, proteinase.
   2. Immobilization of enzymes-Applications.
   3.Biodegradation
   4. Cryobiology-Methods and applications of cryopreservation.

MODULE IV   **(13 Hrs)**
   1. Human genome project
   2. Manipulation of reproduction in animals- artificial insemination, embryo transfer.
   3. Invitro fertilization technology – Embryo cloning, embryonic stem cells.

MODULE V   **(13 hrs)**
   1. NanoBiotechnology-Definition,Drug delivery system,DNA micro array
   2. Drug designing
   3. Proteomics

Text Books
   1. Biotechnology – V. Kumaresan, Sara's Publications,revised edition 2010.
   2. A text book of Biotechnology – R.C. Dubey, S. Chand & Co 2010.
Reference Book
   1. A textbook of Biotechnology – U.Satyanarayana, Uppla Author Publisher Interlinks, 2005.

DEPARTMENT OF COMMERCE

LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Prg. Code	Year	Course Code	Name of the course	Explanation	No. of Cours e/ Year
BA	2017-18	117AB1	Part - III Computer Application Tools-Practicals	To inculcate knowledge on the usage of computer application tools in office, to provide hands on training, to develop skills in computer application	10
BA	2017-18	117EVS	Part IV - Environmental Studies	To create awareness about environmental issues.	
BA	2017-18	217VEC	Part IV - Value Education	To nurture a holistic perspective among students towards life.	
BA	2017-18	315B08	Part III - Entrepreneurial Development	To provide orientation towards entrepreneurship.	
BA	2017-18	315BS1	SBC I- Business Application Tools: Image Designing - Practicals	To provide knowledge on working with images	
BA	2017-18	415GIS	Part V- Information Security	To create awareness on information security.	
BA	2017-18	415BS2	SBC II - Business Application Tools: Image Editor - Practicals	To work with images and to inculcate skills in working with graphics.	
BA	2017-18	515B13	Core XIII - E-Accounting	To provide knowledge on practical applications of computer in accounting.	
BA	2017-18	515BS3	SBC III -Business Data Analytics using Excel-Practicals	To acquaint with practical applications of Excel functions.	
BA	2017-18	515BS4	SBC - IV Export Import Documentation -Practicals	To give practical exposure in filling up the documents relating to export and import formalities	
MC	2017-18	17MC04	Computer Applications in Business	To expose with the practical applications of computer in business.	10
MC	2017-18	17MC05	Executive Communication	To provide oral and written communication skills.	
MC	2017-18	17MC09	Accounting in Computerised Environment Practicals	To provide knowledge on practical applications of computer in accounting.	
MC	2017-18	17MGCS	Cyber Security	To create awareness on cyber security	
MC	2017-18	17MCIT	Institutional Training	To provide practical working experience in commerce and business organisations	
MC	2017-18	17MCA1	Online Courses	To develop online working experience	
MC	2017-18	15MC10	E- Tools and	To enlighten on the statistical tools	

			Techniques for Research	applicable for research in business and management	
MC	2017-18	15MC13	Information Technology in Business	To provide knowledge on information technology and its applications in business	
MC	2017-18	15MCRM	Retail Management	To provide knowledge on concepts in retail management	
MC	2017-18	15MCMI	Management Information System	To provide knowledge on Management Information System	
BA	2016-17	115AB1	Part - III Office Automation Tools	To inculcate knowledge on the usage of computer application tools in office, to provide hands on training, to develop skills in computer application	12
BA	2016-17	115EVS	Part IV - Environmental Studies	To create awareness about environmental issues.	
BA	2016-17	215VEC	Part IV - Value Education	To nurture a holistic perspective among students towards life.	
BA	2016-17	315B08	Part III - Entrepreneurial Development	To provide orientation towards entrepreneurship.	
BA	2016-17	315BS1	SBC - I Business Application Tools: Image Designing	To provide knowledge on working with images	
BA	2016-17	415GIS	Part V- Information Security	To create awareness on information security.	
BA	2016-17	415BS2	SBC II - Business Application Tools: Image Editor - Practicals	To work with images and to inculcate skills in working with graphics.	
BA	2016-17	515BS3	SBC III -Business Data Analytics using Excel-Practicals	To acquaint with practical applications of Excel functions.	
BA	2016-17	512BE1	Part - III Basics of Banking	To provide knowledge on basics of banking	
BA	2016-17	615BS4	SBC - IV Export Import Documentation -Practicals	To give practical exposure in filling up the documents relating to export and import formalities	
BA	2016-17	612BE2	Part III - Banking Operations	To provide knowledge on banking operations	
BA	2016-17	612BE3	Computerised Accounting –Tally	To provide knowledge on practical applications of computer in accounting.	
MC	2016-17	15MC04	Computer Applications in Business	To expose with the practical applications of computer in business.	9
MC	2016-17	15MC05	Entrepreneurship	To impart knowledge on entrepreneurship.	
MC	2016-17	15MC09	Computerised Accounting	To provide knowledge on practical applications of computer in accounting.	
MC	2016-17	15MCIT	Institutional Training	To provide practical working experience in commerce and business organisations	
MC	2016-17	15MGCS	Cyber Security	To create awareness on cyber security	
MC	2016-17	15MC13	Information	To provide knowledge on information	

			Technology in Business	technology and its applications in business	
MC	2016-17	15MC10	E- Tools and Techniques for Research	To enlighten on the statistical tools applicable for research in business and management	
MC	2016-17	15MCRM	Retail Management	To provide knowledge on concepts in retail management	
MC	2016-17	15MCMI	Management Information System	To provide knowledge on Management Information System	
BA	2015-16	115AB1	Office Automation Tools	To inculcate knowledge on the usage of computer application tools in office, to provide hands on training, to develop skills in computer application	11
BA	2015-16	115EVS	Part IV - Environmental Studies	To create awareness about environmental issues.	
BA	2015-16	215VEC	Part IV - Value Education	To nurture a holistic perspective among students towards life.	
BA	2015-16	312B08	Export Import Procedures & Documentation	To familiarize with the procedures of Export Import Trade	
BA	2015-16	315BS1	SBC I - Page Maker	To provide knowledge on working with images	
BA	2015-16	415BS2	SBC II - Business Application Tools : Photoshop	To work with images and to inculcate skills in working with graphics.	
BA	2015-16	512BE1	Basics of Banking	To provide knowledge on basics of banking	
BA	2015-16	512BS3	Entrepreneurial Development: Practicals	To provide experiential learning through hands on training for small scale entreprenurial ventures	
BA	2015-16	612BE2	Part III - Banking Operations	To provide knowledge on banking operations	
BA	2015-16	612BE3	Computerised Accounting –Tally	To provide knowledge on practical applications of computer in accounting.	
BA	2015-16	612BS4	Entrepreneurial Development: Project	To give field experience in real time entrepreneurial activities	
MC	2015-16	15MC04	Computer Applications in Business	To expose with the practical applications of computer in business.	9
MC	2015-16	15MC05	Entrepreneurship	To impart knowledge on entrepreneurship.	
MC	2015-16	15MC09	Computerised Accounting	To provide knowledge on practical applications of computer in accounting.	

MC	2015-16	15MGCS	Cyber Security	To create awareness on cyber security	
MC	2015-16	15MCIT	Institutional Training	To provide practical working experience in commerce and business organisations.	
MC	2015-16	14MCIE	Internet & E-Commerce	To impart knowledge on various applications of Internet & e-commerce .	
MC	2015-16	14MCD3	Data Analysis using MS-Excel	To acquaint with practical applications of Excel functions.	
MC	2015-16	14MCMI	Management Information System	To provide knowledge on Management Information System	
MC	2015-16	14MCD4	Diploma Paper: Photoshop	To work with images and to inculcate skills in working with graphics.	
BA	2014-15	112AB1	Computer Application in Business -Theory	To impart knowledge of computer applications in business.	12
BA	2014-15	112EVS	Part IV - Environmental Studies	To create awareness about environmental issues.	
BA	2014-15	212AB2	Computer Application in Business Practicals	To inculcate knowledge on the usage of computer application tools in office, to provide hands on training, to develop skills in computer application	
BA	2014-15	212VEC	Value Education	To nurture a holistic perspective among students towards life.	
BA	2014-15	312B08	Export Import Procedures & Documentation	To familiarize with the procedures of Export Import Trade	
BA	2014-15	312BS1	SBC - I Entrepreneurial Development -I	To give exposure to the entrepreneurial culture	
BA	2014-15	412BS2	SBC - II Entrepreneurial Development - II	To provide knowledge on preparation of feasibility report	
BA	2014-15	512BE1	Basics of Banking	To provide knowledge on basics of banking	
BA	2014-15	512BS3	Entrepreneurial Development: Practicals	To provide experiential learning through hands on training for small scale entrepreneurial ventures	
BA	2014-15	612BE2	Banking Operations	To provide knowledge on banking operations	
BA	2014-15	612BE3	Computerised Accounting –Tally	To provide knowledge on practical applications of computer in accounting.	
BA	2014-15	612BS4	Entrepreneurial Development: Project	To give field experience in real time entrepreneurial activities	
MC	2014-15	NIL	Ms Office –Practicals	To expose with the practical applications of computer in business.	7
MC	2014-15	NIL	Institutional Training	To provide practical working experience in commerce and business organisations.	
MC	2014-15	14MCE2	Retail Management	To provide knowledge on concepts in retail	

				management	
MC	2014-15	NIL	Diploma Paper: HTML & DHTML	To provide knowledge and hands on training for webpage creation	
MC	2014-15	NIL	Diploma Paper III : Photoshop	To provide knowledge on working with images	
MC	2014-15	14MCE4	Internet & E-Commerce	To impart knowledge on various applications of Internet & e-commerce .	
MC	2014-15	NIL	Diploma Paper IV: Pagemaker	To provide knowledge on working with images	
BA	2013-14	112AB1	Computer Application in Business Theory	To impart knowledge of computer applications in business.	11
BA	2013-14	112EVS	Part IV - Environmental Studies	To create awareness about environmental issues.	
BA	2013-14	212AB2	Computer Application in Business Practicals	To inculcate knowledge on the usage of computer application tools in office, to provide hands on training, to develop skills in computer application	
BA	2013-14	212VEC	Value Education	To nurture a holistic perspective among students towards life.	
BA	2013-14	312B08	Export Import Procedures & Documentation	To familiarize with the procedures of Export Import Trade	
BA	2013-14	312BS1	Entrepreneurial Development: I	To give exposure to the entrepreneurial culture	
BA	2013-14	412BS2	Entrepreneurial Development: II	To provide knowledge on preparation of feasibility report	
BA	2013-14	511B15	Computerised Accounting –Tally	To provide knowledge on practical applications of computer in accounting.	
BA	2013-14	511B16	Entrepreneurial Development: Practicals	To provide experiential learning through hands on training for small scale entrepreneurial ventures	
BA	2013-14	NIL	SBC III -E-Banking	To provide knowledge on practical applications of computer in accounting.	
BA	2013-14	NIL	SBC IV- Online Banking Course	To provide knowledge on banking operations	
MC	2013-14	NIL	Diploma Paper I : C Programming	To impact knowledge on C programming language	7
MC	2013-14	12MC06	Ms Office –Practicals	To expose with the practical applications of computer in business.	
MC	2013-14	12MCIT	Institutional Training	To provide practical working experience in commerce and business organisations.	
MC	2013-14	NIL	Diploma Paper II: HTML & DHTML	To provide knowledge and hands on training for webpage creation	
MC	2013-14	NIL	Diploma Paper III : Photoshop	To provide knowledge on working with images	
MC	2013-14	11MCE2	Internet & E-Commerce	To impart knowledge on various applications of Internet & e-commerce .	
	2013-14	NIL	Diploma Paper IV: Pagemaker	To provide knowledge on working with images	

Scheme of Examination - CBCS
(For the students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Inst Hrs/ week	Examination Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	Credits
117BT1/ 117MY1/ 117HD1/ 117FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
117EN1	Part II – English – I	6	3	25	75	100	4
117B01/ 117R01/ 117N01	Part III - Core I- Financial Accounting – I	5	3	25	75	100	4
117B02/ 117R02	Core II- Business Organisation	5	3	25	75	100	4
117AB1	Allied I – Computer Application Tools -Practicals	6	3	40	60	100	4
117EVS	Part IV – Environmental Studies	2	2	50	-	50	2
217BT2/ 217MY2/ 217HD2/ 217FR2	**Semester – II** Part I – Language -II	6	3	25	75	100	4
217EN2	Part II – English – II	6	3	25	75	100	4
217B03/ 217R03/ 217N03	Part III - Core III – Financial Accounting – II	5	3	25	75	100	4
217B04/ 217R04/ 217V04	Core IV –Principles of Marketing	5	3	25	75	100	4
217AB2	Allied II – Business Economics	6	3	25	75	100	4
217VEC	Part IV – Value Education	2	2	50	-	50	2
317B05/ 317R05/ 317N05	**Semester – III** Part III-Core V–Corporate Accounting	5	3	25	75	100	4
317B06/ 317V06	Core VI - Commercial Law	5	3	25	75	100	4
317B07/ 317N07	Core VII- Principles of Management	5	3	25	75	100	4
317B08	Core VIII- Entrepreneurial Development	4	3	25	50	75	3
317AB3/ 317AR3/ 317AN3	Allied III – Mathematics in Business	6	3	25	75	100	4
317NED	Part IV – Non Major Elective -Entrepreneurial Development	2	2	50	-	50	2
317BS1/ 317NS1	Part IV- Skill Enhancement Course I – Business	3	3	75	-	75	3

	Application Tools: Image Editor – Practicals						
417B09/ 417N09	**Semester – IV** Part III - Core IX - Company Law	5	3	25	75	100	4
417B10/ 417R10/ 417N10/	Core X - Cost Accounting	5	3	25	75	100	4
417B11/ 417R11	Core XI - Banking Law and Practice	5	3	25	75	100	4
417B12	Core XII-Auditing	4	3	25	75	100	4
417AB4/ 417AR4/ 417AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
417NGA	Part IV – General Awareness	-	1	50	-	50	2
417BS2/ 417NS2	Part IV-Skill Enhancement Course II - Business Application Tools: Business Data Analytics using Excel-Practicals	3	3	75	-	75	3
417GIS	Information Security-Level I	2	2	50	-	Grade	Grade
417ALB	Advanced Learners Course I-Principles of Insurance	-	-	-	100	100	4*
517B13/ 517R13/ 517N13/ 517V13	**Semester – V** Part III-Core XIII- E-Accounting- Practicals	5	3	40	60	100	4
517B14/ 517R14/ 517N14/ 517V14	Core XIV- Income Tax	6	3	25	75	100	4
517B15/ 517R15/ 517V15	Core XV- Business Finance	5	3	25	75	100	4
517B16/ 517R16/ 517N16/ 517V16	Core XVI- Business Communication	5	3	25	75	100	4
517BE1/ 517RE1/ 517BE2/ 517RE2/ 517NE2	Elective I – Investment Management/ Retail Marketing	6	3	25	75	100	4
517BS3	Part IV- Skill Enhancement Course III- Business Application Tools: MY SQL –Practicals	3	3	75	-	75	3
617B17/ 617R17/ 617N17	**Semester – VI** Part III-Core XVII- Management Accounting	6	3	25	75	100	4

617B18	Core XVIII – Export Management	6	3	25	75	100	4
617B19	Core XIX – Internship Training	3	-	-	75	75	3
617BE3/ 617RE3/ 617BE4/ 617RE4/ 617NE4	Elective II – Capital Markets/ Services Marketing	6	3	25	75	100	4
617BE5/ 617RE5/ 617BE6/ 617RE6/ 617NE6	Elective III – Financial Services/ Digital Marketing	6	3	25	75	100	4
617BS4/ 617RS4/ 617NS4	Part IV-Skill Enhancement Course IV- Business Application Tools: Business Skills-Practicals	3	3	75	-	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V – Extension Activity	-	-	50	-	50	2
617ALB	Advanced Learners Course II E-Commerce	-	-	-	100	100	4*
Total						**3500**	**140**

B.Com
Semester I
Allied I – Computer Application Tools – Practicals   117AB1
(For the students admitted from the academic year 2017-2018 onwards)
Course Objectives   (75 Hours)
CA_1:To inculcate knowledge on the usage of computer application tools in office.
CA_2:To provide hands on training in computer applications.
CA_3:To develop skills in word processing and presentation.
CA_4:To gain knowledge in web designing.
List of Practicals
Word
  ➢ Formatting documents: formatting page and setting margin, font style, type, paragraph formatting, table creation, inserting clip arts, pictures, diagrams.
      o Using table and drawing tools, preparation of time table/ invoice.
      o Designing a cheque leaf.
      o Creation of curriculum vitae without using wizard.
      o Creation of curriculum vitae using wizard.
      o Using mail merge prepare invitation for a department function/ opening of new branch/ special offer.
      o Design an advertisement copy/ invitation card.
      o Creation of flow chart reflecting organizational hierarchy.
Power point
  ➢ Formatting a presentation, setting background, layouts, setting presentation style, adding effects to the presentation, slide transition.

o Preparation of slides for paper presentation.
o Preparation of slides for forms of organisation.
o Presentation of slide show for department function/ College day celebration
o Demonstration of product with custom animation.

HTML
➢ HTML document: Dividing documents - Paragraphs, Titles, List, Managing Images in HTML - Table tags - Link tags - Managing forms.
o Design a web page for a product advertisement using basic tags.
o Design the application form for B.Com degree.
o Design the invoice using forms.

Course Outcomes
On the completion of the course, the student will be able to:
COA$_1$:Gain knowledge to work with computer in office environment.
COA$_2$: Gain word processing skill.
COA$_3$: Skill to perform power point presentation.
COA$_4$: Skill to create web page.

Mapping

Course Outcomes	PO$_1$	PO$_2$	PO$_3$	PO$_4$	PO$_5$	PO$_6$	Knowledge Level
COA$_1$	H	H	M	M	H	M	K
COA$_2$	H	H	M	M	M	L	U
COA$_3$	H	H	M	H	M	L	A
COA$_4$	H	H	M	H	H	H	A

Course Designed By : Mrs.R.Surya Priya & Ms.S.Subhashree
Course Reviewed By : Dr.K.Umamaheswari
Checked By : Dr.N.Lakshmi

Programme - B.Com
Scheme of Examination - CBCS
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	
	Semester – I						
115TA1/ 115MY1/ 115HD1/ 115FR1	Part I – Language – I	6	3	25	75	100	4
115EN1	Part II – English – I	6	3	25	75	100	4
115B01/ 115R01/ 115N01/	Part III - Core I- Financial Accounting	5	3	25	75	100	4
115 B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I – Office Automation Tools - Practicals	6	3	40	60	100	4
115EVS	Part IV – Environmental Studies	2	2	50	-	50	2
	Semester – II						
215TA2/ 215MY2/ 215HD2/ 215FR2	Part I – Language -II	6	3	25	75	100	4
215EN2	Part II – English – I	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III - Core III – Company Law	5	3	25	75	100	4
215 B04/ 215R04/ 215N04/ 215V04	Core IV – Marketing	5	3	25	75	100	4
215AB2	Allied II – Business Economics	6	3	25	75	100	4
215VEC	Part IV – Value Education	2	2	50	-	50	2
	Semester – III						
315B05/ 315R05/ 315N05	Part III-Core V– Higher Financial Accounting	5	3	25	75	100	4
315 B06/ 315V06	Core VI - Commercial Law	5	3	25	75	100	4
315 B07	Core VII- Principles of Insurance	5	3	25	75	100	4
315 B08	Core VIII- Entrepreneurial Development	4	3	25	50	75	3
315 AB3/ 315AR3/ 315AN3	Allied III – Mathematics in Business	6	3	25	75	100	4

315NED	Part IV – Non Major Elective Course I - Entrepreneurial Development	2	2	50	-	50	2
314BS1/ 315 BS1	Part IV Skill Based Course I – Business Application Tools- Image Designing	3	3	75	-	75	3
415B09/ 415R09/ 415N09/ 415V09	**Semester – IV** Part III - Core IX - Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X - Cost Accounting	5	3	25	75	100	4
415B11	Core XI - Banking Law and Practice	5	3	25	75	100	4
415B12	Core XII-Auditing	4	3	25	75	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV – Non Major Elective Course II - General Awareness (online)	-	1	50	-	50	2
414BS2/ 415BS2	Part IV Skill Based Course II – Business Application Tools- Image Editor	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALB	Advanced Learners Course I Subject Viva Voce	-	-	-	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13	**Semester – V** Part III – Core XIII- E Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV- Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV- Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI- Higher Corporate Accounting	5	3	25	75	100	4
515BE1	Elective I – Investment Management	5	3	25	75	100	4
514BS3/ 515BS3/ 515VS3	Part IV– Skill Based Course III – Business Data Analytics using EXCEL	3	3	75	-	75	3
615B17/ 615R17/ 615N17/ 615V17	**Semester – VI** Part III-Core XVII-Management Accounting	6	3	25	75	100	4

615B18/ 615R18/ 615N18	Core XVIII – E Commerce	6	3	25	75	100	4
615B19	Core XIX - Export Import Procedures	3	3	25	50	75	3
615BE2	Elective II – Capital Markets	6	3	25	75	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
614BS4/ 615BS4	Part IV – Skill Based Course IV – Export Import Documentation-Practicals	3	3	75	-	75	3
615ALB	Advanced Learners Course II Subject Viva Voce	-	-	-	100	100	3*
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V – Extension Activities	-	-	50	-	50	2
Total						**3500**	**140**

B.Com
Semester III
Part III - Core VIII – Entrepreneurial Development   315B08
(For the students admitted from the academic year 2015-2016 onwards)

Preamble :   **(50 Hours)**

The objectives of this course are:

- To provide exposure to entrepreneurial environment.
- To guide students to setup and manage small units.

Unit I

Entrepreneur: Meaning– Characteristics – skills for Entrepreneur- Functions - Types – Entrepreneurs and managers – Entrepreneur and Economic Development.   **(10 Hours)**

Unit II

Entrepreneurship – Entrepreneur Vs Entrepreneurship – Factors stimulating Entrepreneurship – Environment for Entrepreneurship -Factors affecting Entrepreneurship growth.   **(10 Hours)**

Unit III

Entrepreneurial Development Programmes- need – objectives –phases of EDP - Problems of EDP.Women Entrepreneurs –types-problems-remedial measures.   **(10 Hours)**

Unit IV

Project Identification and project Appraisal   **(10 Hours)**

Unit V

Micro Small and Medium Enterprises - Steps for starting MSME.

Institutional support to Entrepreneurs –Small Scale Industries Board-Small Industries Development Organization - Small Industries Service Institute - National Small Industries Corporation - Khadi and Village Industries Commission.   **(10 Hours)**

Book for study

Entrepreneurship development   : E. Gordon and K. Natarajan
                                      Himalayan Publishing House, New Delhi, Reprint 2013.

Books for Reference

Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
                                      Sultan Chand and Sons, Delhi, Reprint 2014.

                    Course Designed By   : Dr. R. Vanamadevi
                    Course Reviewed By   : Dr. R. Parameswari
                    Checked By   : Dr. K. Punithavalli

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B.Com
Semester III
Part IV Skill Based Course I –Business Application Tools – Image Designing
314BS1/315BS1
(For the students admitted from the academic year 2014-2015 onwards)

</div>

List of Practical: **(35 Hours)**

1. Resize an object and modify text.
2. Design a product using drawing tool.
3. Import an image and make alignment.
4. Place graphic in page maker.
5. Design a business card.
6. Design an invitation for inauguration of an organisation.
7. Design a newsletter.
8. Design a banner for a function with pictures.
9. Design a cover page of a magazine.
10. Design an advertisement copy.

                    Course Designed By   : Mrs.R.Suryapriya
                    Course Reviewed By   : Mrs.R.Jayalakshi
                    Checked By   : Dr.K.Punithavalli

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B.Com
Semester IV
Part IV Skill Based Course II –Business Application Tools – Image Editor
414BS2/415BS2
(For the students admitted from the academic year 2014-2015 onwards)

</div>

List of Practical: **(35**
Hours)

1. Change an image using Brush.
2. Make colour balance adjustment.
3. Make Curve adjustment on an image.
4. Basic image correction, minor retouches.
5. Apply filter to an image.
6. Create, modify and transform an image.
7. Merge two or more images.
8. Design a logo with 3D effect.
9. Create light effect on an image for web poster.
10. Animate Images.

                    Course Designed By   : Mrs.R.Suryapriya
                    Course Reviewed By   : Mrs.R.Jayalakshi
                    Checked By   : Dr.K.Punithavalli

B.Com/B.Com (CA)/B.Com (e-Commerce)/BBA (CA)
Semester V
Part III –Core XIII –E Accounting 515B13/515RP5/515N13/515V13
(For the students admitted from the academic year 2015-2016 onwards)
List of Practicals **(75 Hours)**

1) Creation of Company in Tally and Enabling Accounting Features.
2) Group Creation and Alteration (single and multiple).
3) Ledger Creation and Alteration (single and multiple).
4) Entering transactions in accounting vouchers.
5) Display of list of accounts, books.
6) Report display: Trial Balance, Profit and Loss Account and Balance Sheet.
7) Altering Inventory, Statutory, Taxation Features.
8) Measures of units, Stock Group, Stock Item creation and alteration, Display of Stock summary.
9) Cost centre creation and alteration.
10) Creation of Tax Masters.

Course Designed By : Dr. C.Pushpalatha
Course Reviewed By : Dr. N. Lakshmi
Checked By : Dr. K. Punithavalli

B.Com/BBA (CA)
Semester V
Part IV Skill Based Course III –Business Data Analytics using EXCEL
514BS3/515BS3/515VS3
(For the students admitted from the academic year 2014-2015 onwards)
List of Practicals: **(35 Hours)**

1. Sort data in ascending and descending order.
2. Prepare employee payroll.
3. Design Mark Sheet.
4. Prepare chart for analysing students result.
5. Summarise and present data using pivot table.
6. Calculate mean, median and standard deviation.
7. Analyse the data using correlation.
8. Analyse the data using regression.
9. Calculate Time Value of money - NPV, IRR, ROI, using FV, NPER, PMT, PV, TYPE functions.
10. Calculate interest using financial functions.

Course Designed By : Mrs.R.Suryapriya
Course Reviewed By : Mrs.R.Jayalakshi
Checked By : Dr.K.Punithavalli

B.Com
Semester VI
Part IV-Skill Based Course IV-Export and Import Documentation-Practicals
614BS4/ 615BS4
(For the students admitted from the academic year 2014-2015 onwards)
Preamble: **(35 Hours)**

To give practical exposure to the students by filling up the documents relating to export and import formalities.

1. Application form for Obtaining Importer and Exporter Code Number (IEC)

2. Application form for modification of existing IEC number.
3. Obtaining bank certificate for obtaining of IEC.
4. Application for Registration cum Membership (RCMC) Certificate.
5. Commercial invoice.
6. Packing list.
7. Mates receipt.
8. Bill of Lading.
9. Certificate of Origin.
10. Shipping bill
11. Shipment Advice
12. Guaranteed Remittance (GR) form
13. Export license.
14. Preparing bill of Entry

Course Designed By   : Dr.R.Vanamadevi
Course Reviewed By   : Dr.C.Pushpalatha
Checked By   : Dr.K.Punithavalli

Scheme of Examination - CBCS Pattern
Programme - M.Com
(For the students admitted from the academic year 2017 - 2018 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
			Exam				
	Semester I						
17MC01	Core I - Business Environment	5	3	25	75	100	4
17MC02	Core II - Marketing Management	5	3	25	75	100	4
17MC03	Core III - Financial Management	5	3	25	75	100	4
17MC04	Core IV- Computer Applications in Business- Practicals	5	3	40	60	100	4
17MC05	Core V- Executive Communication	5	3	25	75	100	4
17MCE1/ 17MCE2	Elective I - International Business/ Security Analysis and Portfolio Management	5	3	25	75	100	4
	Semester II						
17MC06	Core VI - Research Methodology	5	3	25	75	100	4
17MC07	Core VII - Human Resource Management	5	3	25	75	100	4
17MC08	Core VIII - Statistical Methods	5	3	25	75	100	4
17MC09	Core IX-Accounting in Computerised Environment- Practicals	5	3	40	60	100	4
17MGCS	Cyber Security-Level I	2	2	50	-	Grade	Grade
17MCIT	Institutional Training	3	-	-	50	50	2
17MCE3/ 17MCE4	Elective II - International Marketing/ Stock Market Operations	5	3	25	75	100	4
17MCA1	Advanced Learners Course - I Online Course(s)(Self Learning)	-	-	-	100	100	4*
	Semester III						
17MC10	Core X - E Tools and Techniques for Research-Practicals	5	3	40	60	100	4
17MC11	Core XI - Organisational Behaviour	5	3	25	75	100	4
17MC12	Core XII - Applied Costing	5	3	25	75	100	4
17MC13	Core XIII - Services Marketing	5	3	25	75	100	4
17MCE5/	Elective III - Export Import Procedures and Documentation/ Financial Services	5	3	25	75	100	4

17MCE6	Project / Optional paper: Project						
17MCPV	Optional paper I: Retail	5	-	-	-	-	-
17MCRM	Management	5	3	25	75	100	4
	Semester IV						
17MC14	Core XIV - Managerial Economics	6	3	25	75	100	4
17MC15	Core XV- Entrepreneurial Development	6	3	25	75	100	4
17MC16	Core XVI - Advanced Corporate Accounting	6	3	25	75	100	4
17MCE7/ 17MCE8	Elective IV - Institutional Support for International Trade/ Internship in Financial Sector	6	3	25	75	100	4
		6	-	-	100	100	4
17MCPV 17MCIB	Project / Optional paper: Project						
	Optional paper II: Information	6	-	100	100	200	8
	Technology in Business	6	3	25	75	100	4
17MCA2	Advanced Learners Course - II						
	Online Course(s)(Self Learning)	-	-	-	100	100	4*
	Total					2250	90

M.Com

Semester I

Core IV- Computer Applications in Business -Practicals   17MC04

(For the students admitted from the academic year 2017-2018 onwards)

Course Objectives   (65 Hours)

- To expose with the practical applications of computer in business.
- To impart knowledge on documentation, spreadsheet, presentation and web designing.

List of Practical:

Word

➢ Formatting a document: Alignment and font formatting, Inserting bullets, Find and Replace, Inserting header, Footer and Page number, Paragraph formatting and Column creation.
  o Creation of resume without using wizard
  o Creation of resume using wizard.
  o Creation of an advertisement copy / Program sheet preparation / Invitation card designing.
  o Using mail merge, create and send invitation / notice of meeting / opening a new Bank branch / Special Offer / Department function. (minimum 10 recipients)

Excel

➢ Creation of workbook, apply insert options, Editing and Style formatting options menu.
  o Creation of Employees payroll.
  o Preparation of Students mark sheet.
  o Consolidation of data using Pivot Table.
  o Diagrammatic and graphic representation.
  o Calculation of Standard Deviation, Variance, minimum value, maximum value, range.
  o Correlation calculation.

PowerPoint

➤ Preparation of Power Point presentation and setting hyperlinks to slides, animation effect, slide transition, time setting:
  o Product Advertisement / Sports day celebration.
  o Product Demonstration / College Day celebration.

HTML

HTML document: Dividing documents - Header tag, Body tag- Paragraphs, Titles, List, Logical style, Physical style. Managing Images in HTML, Table tags – Titles cell, Data cell, Cell spacing, Table size. Link tags and Managing forms.

o Design a web page for a product advertisement using basic tags and formatting tags.
o Create webpage using frames and hyperlink for ordered list and unordered list.
o Design Web page to zoom the small image to big image using alignment tags.
o Creation of Invoice Bill using Forms.
o Design an application form for B.Com Degree using Forms.

Course Designed By	: Dr.C.Pushpalatha
Course Reviewed By	: Dr.M.Kalavathi
Checked By	: Dr.N.Lakshmi

M.Com
Semester I

Core V- Executive Communication   **17MC05**
(For the students admitted from the academic year 2017-2018 onwards)

Course Objectives   **(65 Hours)**

• To sharpen oral and written communication skills.
• To facilitate experiential learning through role plays, presentations, group discussion and mock interview.

UNIT I

Communication - Importance of effective communication in business - Objectives - Types-Media -Principles of Communication- Barriers to communication.   **(13 Hours)**

UNIT II

Non-verbal Communication: Characteristics- Sign language- Kinesics- Paralanguage-Artifactual communication- Proxemics- Chronemics- Listening-Functions of non-verbal communication- Positive and negative non-verbal clues- Guidelines for developing non-verbal communication.Soft skills-importance –Kinds of soft skills: Corporate skills – Employability skills-Growth skills – Developing soft skills. Interpersonal communication- Characteristics- Importance-Developing inter - personal skills.   **(13 Hours)**

UNIT III

Job Application letter and preparation of resume: Personal analysis – Types of application letters -Preparation of resume/ bio-data/ curriculum vitae.Inter-departmental communication-Memorandums - purpose - format- advantages-office orders.   Circulars- Notices- Preparation of agenda and minutes.   **(13 Hours)**

UNIT IV

Reports: Importance- Types of business reports-Steps for preparing a report- Organisation of a report- Characteristics of a report-Report by individuals – Reports by committees.   **(13 Hours)**

* UNIT V

Oral and other forms of communication- Speech-Characteristics of good speech. Telephone skills: making effective telephone calls - guidelines for effective use of telephone and answering telephone-voice mail.Interview: Preparation for the interview -Facing interviews.Presentation skills- Stages.Group discussion- Participating in group discussion -Effective participation in a Group discussion. **(13 Hours)**
Starred Unit is self- learning portion.

Book for Study			
Unit	Author	Title	Publisher, Place of Publication, Edition, Year of Publication
I-V	Rajendra Paul and J.S.Korlahalli	Essentials of Business Communication	S Chand and Sons, New Delhi, Edition 2014.
Books for Reference			
Author		Title	Publisher, Place of Publication, Edition, Year of Publication
Dr. C.B. Gupta		Basic Business Communication	Sultan Chand and Sons, New Delhi, Edition 2014.
Dr.V.K.Jain and Dr.Omprakash Biyani		Business Communication	Sultan Chand and Sons, New Delhi, Edition 2015.

Course Designed By : Dr.R.Vanamadevi
Course Reviewed By : Dr.C.Pushpalatha
Checked By : Dr.N.Lakshmi

M.Com
Semester II

Core IX - Accounting in Computerised Environment-Practicals   17MC09
(For the students admitted from the academic year 2017-2018 onwards)

Course Objectives   **(65 Hours)**
- To provide knowledge on practical applications of computer in accounting.
- To gain expertise in working with accounting package.

List of practical:
- ➢ **Company Information**
  - o Company creation
    - Selecting a Company
    - Shutting a Company
    - Altering Company
- ➢ **Accounts information**
  - o **Creating Group**
    - Displaying Groups
    - Altering Groups
  - o **Ledger Creation**
    - Displaying Ledgers
    - Altering Ledgers
    - Deleting Ledgers
  - o **Cost Categories and Cost Centres**
    - Creating Cost Catgories
    - Displaying Cost Categories
    - Altering Cost Categories
  - o **Creating a Cost Centre**
    - Displaying a Cost Centre
    - Altering a Cost Centre
    - Deleting a Cost Centre
  - o **Vouchers**
    - Creating Vouchers
    - Displaying Vouchers

- Altering Vouchers
- Cancelling Vouchers
- **Inventory information**
  - **Stock Group**
    - Creating Stock Group
    - Displaying Stock Group
    - Altering Stock Group
  - **Stock Category**
    - Creating Stock Category
    - Displaying Stock Category
    - Altering Stock Category
    - Deleting Stock Category
  - **Stock item**
    - Creating Stock item
    - Displaying Stock item
    - Altering Stock item
  - **Godowns**
    - Creating Godowns
    - Displaying Godowns
    - Altering Godowns
  - **Units of Measure**
    - Creating Units of Measure
    - Displaying Units of Measure
    - Altering Units of Measure
  - **Inventory Vouchers**
  - **Payroll**
    - Pay heads
    - Employee group
    - Employee head
    - Managing units
    - Vouchers
    - Attendance Sheet
    - Payroll reports
  - **Statutory and Taxation requirements**
    - Tax Head Creation
    - Tax Deducted at Source (TDS)
    - Tax Collected at Source (TCS)
    - Service Tax
- **Display**
  - Trial Balance
  - Day Book
  - Accounts Book
  - Statement of Accounts
  - Inventory Books
  - Statement of Inventory
  - Cash flow and Fund flow Statements

Course Designed By   : Dr.C.Pushpalatha
Course Reviewed By   : Dr.R.Parameswari
Checked By   : Dr.N.Lakshmi

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M.Com

Semester II

Institutional Training   **17MCIT**

(For the students admitted from the academic year 2017-2018 onwards)
</div>

The student shall undergo the institutional training in any of the following institutions for two weeks:

- Commercial Banks
- Insurance Companies
- Joint Stock Companies
- Logistic Companies
- Co-operative Societies
- Share Brokers, Firms of Investment Consultants
- Professional Firms - like firms of Chartered Accountants / Cost Accounts / Company Secretaries
- Travel Agencies and Courier Services.

A Report submitted by the student on the completion of the training would be subject to evaluation by two internal examiners.

Advanced Learners Course - II Online Course(s)   **17MCA2**

Students eligible for ALC can register for any of the self - learning online course(s) for a minimum period of 20 hours duration. After obtaining course completion certificate, a viva voce will be conducted by two internal examiners.

Curriculum Design
SRI G.V.G.VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Commerce
Scheme of Examination – CBCS Pattern
Programme - M.Com
(For the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	Semester I						
15MC01	Core I - Business Environment	5	3	25	75	100	4
15MC02	Core II - Marketing	5	3	25	75	100	4
15MC03	Management	5	3	25	75	100	4
15MC04	Core III - Financial	5	3	40	60	100	4
	Management						
15MC05	Core IV- Computer	5	3	25	75	100	4
15MCE1	Applications in Business	5	3	25	75	100	4
	Core V - Entrepreneurship						
	Elective I - Managerial						
	Economics						
	Semester II						
15MC06	Core VI – Research	5	3	25	75	100	4
15MC07	Methodology						
	Core VII – Human Resource	5	3	25	75	100	4
15MC08	Management						
	Core VIII - Working Capital	5	3	25	75	100	4
15MC09	Management	5	3	40	60	100	4
15MGCS	Core IX – Computerised	2	2	50	-	Grade	Grade
15MCIT	Accounting	-	-	50	-	50	2
15MCE2	Cyber Security	5	3	25	75	100	4
	Institutional Training						
15MCL1	Elective II - Services Marketing	-	-	-	100	100	4*
	Advanced Learners' Course – I						
	Subject Viva-Voce						
	Semester III						
15MC10	Core X – E Tools and Techniques for Research	5	3	40	60	100	4
15MC11	Core XI - Security Analysis and Portfolio Management	5	3	25	75	100	4
15MC12	Core XII – Applied Costing	5	3	25	75	100	4
15MC13	Core XIII - Information Technology in Business	5	3	25	75	100	4
15MCE3	Elective III - Organisational Behaviour	5	3	25	75	100	4
15MCPV/	Project / Optional paper:	-	-	-	-	-	-
15MCRM	Retail Management	5	3	25	75	100	4

	Semester IV						
15MC14	Core XIV – Strategic	5	3	25	75	100	4
15MC15	Management	5	3	25	75	100	4
15MC16	Core XV- Financial Services	5	3	25	75	100	4
15MCE4	Core XVI – Export	5	3	25	75	100	4
15MCPV/	Management	-	-	100	100	200	8
15MCMI	Elective IV Logistics	5	3	25	75	100	4
	Management						
15MCL2	Project / Optional paper	-	-	-	100	100	4*
	Management Information System						
	Advanced Learners' Course II						
	Subject Viva Voce						
	Total					2250	90

*Starred Credits are treated as additional credits which are optional.

M.Com
Semester III
Core X – E Tools and Techniques for Research – Practicals
15MC10
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

The objectives of this course are:
- To provide knowledge of the applications of computers in research activities.
- To enlighten on the statistical tools applicable for research in business and management.
1. Preparation of a questionnaire.
2. Coding and Preparation of Master Table.
3. Measures of Central Value: Mean, Quartiles and Percentiles.
4. Measures of Variation: Range, Quartile deviation, Standard deviation, Coefficient of Variation.
5. Correlation Analysis: simple correlation, rank correlation.
6. Regression analysis.
7. Hypothesis Testing for Mean.
8. Hypothesis Testing for Variance
9. Hypothesis Testing: Chi-square test.
10. Diagrammatic and graphic representation.

            Course Designed By   : Dr.N.Lakshmi
             Course Reviewed and Checked By   : Dr.K. Punithavalli

M.Com
Semester III
Core XIII – Information Technology in Business   15MC13
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

- To inculcate the knowledge among the students about information technology and its applications in Business.
- To expose them with the Processing and Management of computer based information.

Unit I:

Information technology: Characteristics- Uses- Flow of information in organisation- Categories of information. Computer Applications in Business: Personal department, Finance department, Marketing department, Production department and Office automation.

(13 Hours)

Unit II:

Data processing: Concepts-Data processing cycle- objectives-steps of data processing- practical data processing applications in business- data processing operations- database- database management system- methods of data processing-transaction processing. Network: Meaning-types. **(13Hours)**

Unit III:

E-Commerce and Internet: Meaning- Reasons for the growth- features- importance- objectives- types.Internet: Evolution-services of internet.Intranet: Features-services- advantages. Extranet: Uses. **(13 Hours)**

Unit IV:

Computer based information system: Need. Transaction processing system: characteristics-models- advantages. Management information system: characteristics- designing of MIS- benefits. Decision support system: Definition- characteristics- difference between MIS and DSS- benefits of DSS. Group decision support system- Expert system: Components-Traditional vs Knowledge based expert system- development of expert system- merits. **(13 Hours)**

*Unit V:

Information Technology Act 2000: definitions-digital signature and electronic signature- electronic governance-attribution, acknowledgement and despatch of electronic records- regulation of certifying authorities- electronic signature certificates- duties of subscribes- penalties, compensation and adjudication- cyber appellate tribunal- offences.

(13 Hours)

Starred Unit is self- learning portion.
Books for Reference:
A TextBook of Information Technology: R. Sarvana Kumar, R.Parameswaran
                              and T.Jayalakshmi.
                              S.Chand & Company ltd.
                              NewDelhi, Edition 2014

Information Technology and its
Business Applications   : S.Chakraborthy
                              Books and Allied (P) Ltd,
                              Kolkata, Edition 2009

                  Course Designed By   : Dr.M.Kalavathi
                  Course Reviewed By   : Dr.N.Lakshmi
                  Checked By   : Dr.K. Punithavalli

M.Com
Semester III
Project Optional Paper I - Retail Management   15MCRM
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

The objectives of this course are:
- To understand the concepts in retail management.
- To promote the practitioners of retail trade.

Unit I

Retail – Meaning- Role of the retailer- Growth of retailer- Challenges of retailers- evolution of retail in India-drivers of retail change in India – Factors influencing retailing.

(13 Hours)

Unit II

Retail strategy-steps in retail strategy- retail value chain.Retail location- types- steps in choosing retail location. **(13 Hours)**

*Unit III

Retail merchandising- role and responsibilities of merchandiser- role and responsibilities of buyer- methods of buying- principles of merchandising - types of merchandise - Merchandise planning- process of merchandise planning . **(13 Hours)**

Unit IV

Category management- concept- reasons for the emergence of category management – components of category management – process of category management – role of Category Captain - drawbacks of category management.Retail Marketing - Retail marketing mix – STP Approach -Retail communication mix. **(13 Hours)**

Unit-V

Role of technology in retail – need for product identification : UPC – importance of IT in retail – Data Base Management, Data Warehousing, Data Mining – Internet Retailing .

Legal aspects of retail business –People perspective – Operations perspective. Ethical issues in retailing. **(13 Hours)**

Starred Unit is self- learning portion.

Books for Reference

1.Retail Management   : Swapna Pradhan
   Text and Cases   Tata McGraw-Hill Education Pvt Ltd
            New Delhi. 4th Ed. 2012.

2. Retail Management   : Barry Berman and Joel R Evans
A Strategic Approach –   Prentice Hall of India (P) Ltd.
           New Delhi 2007

          Course Designed By   : Dr.C.Pushpalatha
          Course Reviewed By   : Dr.K.Umamageswari
          Checked By   : Dr.K. Punithavalli

M.Com
Semester IV
Project Optional Paper II - Management Information System   15MCMI
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **(65 Hours)**

The objectives of this course are:
- To impart knowledge on the management information system.
- To know about the structure of various information systems.

Unit I

Management Information System: Evolution of MIS – Growth of MIS – Theories of evolution of MIS – Characteristics of MIS – Subsystems of MIS – Executive Information System – Information Resource Management – Role of MIS – Enterprise Information System.
(13 Hours)

Unit II

System Concepts – Types of Systems – Structure of MIS: Organizational Function and Information Requirement – Extent of Integration of Information System – Man-Machine Interaction – Information Network. Transaction Processing System: Transaction Processing Cycle – Features of TPS – Transaction Document – Transaction Processing Modes – Functional TPS. **(13 Hours)**

Unit III

Decision Support Systems: Types of DSS – Characteristics of DSS – Components of DSS – DSS tools for different level of management – DSS Capabilities – Group Decision Support Systems. Expert Systems: Components of ES – Advantages of ES – Limitation of ES – Planning for MIS. **(13 Hours)**

Unit IV

Systems Development: Systems Development Methodologies – People involved in Systems Development – Tools for System Development – Software Development Process. Systems Analysis: Structured Systems Analysis – Systems Analysts. System Design: Input Design – Procedure Design – File Design – Database Design – Design Documentation.

(13 Hours)

*Unit V

Program Development: Techniques of Program Development – Modular Programming – Structured Programming – Dataflow Diagram – Data Dictionary – Decision Table – Decision Tree – Flowcharts. Systems Implementation: Steps in Systems Implementation – Factors for Successful Implementation – Causes of Implementation Failures – Project Management.

(13 Hours)

Starred Unit is self- learning portion.

Book for Study

1. Management Information System : P.Mohan

Himalaya Publishing House
Mumbai. Edition 2007.

Books for reference

1. Management Information System : Amanjindal

Kalyani Publication, Edition 2012.

2. Management Information System : Rajagopalan SP

Margham Publication, Edition 2014.

Course Designed By : Dr.M.Kalavathi
Course Reviewed By : Dr.N.Lakshmi
Checked By   : Dr.K.Punithavalli

Programme - B.Com
Scheme of Examination - CBCS
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	Credits
			Examination				
115TA1/ 115MY1/ 115HD1/ 115FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
115EN1	Part II – English – I	6	3	25	75	100	4
115B01/ 115R01/ 115N01/	Part III - Core I- Financial Accounting	5	3	25	75	100	4
115 B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I – Office Automation Tools - Practicals	6	3	40	60	100	4
115EVS	Part IV – Environmental Studies	2	2	50	-	50	2
215TA2/ 215MY2/ 215HD2/ 215FR2	**Semester – II** Part I – Language -II	6	3	25	75	100	4
215EN2	Part II – English – I	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III - Core III – Company Law	5	3	25	75	100	4
215 B04/ 215R04/ 215N04/ 215V04	Core IV – Marketing	5	3	25	75	100	4
215AB2	Allied II – Business Economics	6	3	25	75	100	4
215VEC	Part IV – Value Education	2	2	50	-	50	2
315B05/ 315R05/ 315N05	**Semester – III** Part III-Core V– Higher Financial Accounting	5	3	25	75	100	4
315 B06/ 315V06	Core VI - Commercial Law	5	3	25	75	100	4
315 B07	Core VII- Principles of Insurance	5	3	25	75	100	4
315 B08	Core VIII- Entrepreneurial Development	4	3	25	50	75	3
315 AB3/ 315AR3/ 315AN3	Allied III – Mathematics in Business	6	3	25	75	100	4

Code	Course	Hours	Credits	Int	Ext	Total	Grade
315NED	Part IV – Non Major Elective Course I - Entrepreneurial Development	2	2	50	-	50	2
314BS1/ 315 BS1	Part IV Skill Based Course I – Business Application Tools- Image Designing	3	3	75	-	75	3
415B09/ 415R09/ 415N09/ 415V09	**Semester – IV** Part III - Core IX - Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X - Cost Accounting	5	3	25	75	100	4
415B11	Core XI - Banking Law and Practice	5	3	25	75	100	4
415B12	Core XII-Auditing	4	3	25	75	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV – Non Major Elective Course II - General Awareness (online)	-	1	50	-	50	2
414BS2/ 415BS2	Part IV Skill Based Course II – Business Application Tools- Image Editor	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALB	Advanced Learners Course I Subject Viva Voce	-	-	-	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13	**Semester – V** Part III – Core XIII- E Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV- Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV- Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI- Higher Corporate Accounting	5	3	25	75	100	4
515BE1	Elective I – Investment Management	5	3	25	75	100	4
514BS3/ 515BS3/ 515VS3	Part IV– Skill Based Course III – Business Data Analytics using EXCEL	3	3	75	-	75	3
615B17/ 615R17/ 615N17/ 615V17	**Semester – VI** Part III-Core XVII-Management Accounting	6	3	25	75	100	4

615B18/ 615R18/ 615N18	Core XVIII – E Commerce	6	3	25	75	100	4
615B19	Core XIX - Export Import Procedures	3	3	25	50	75	3
615BE2	Elective II – Capital Markets	6	3	25	75	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
614BS4/ 615BS4	Part IV – Skill Based Course IV – Export Import Documentation- Practicals	3	3	75	-	75	3
615ALB	Advanced Learners Course II Subject Viva Voce	-	-	-	100	100	3*
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V – Extension Activities	-	-	50	-	50	2
Total						**3500**	**140**

B.Com/B.Com (CA)/B.Com (e-Commerce)/BBA (CA)
Semester I
Allied I – Office Automation Tools – Practical   115AB1/115AR1/115AN1/115AV1
(For the students admitted from the academic year 2015-2016 onwards)

List of Practicals (75 Hours)

Ms Word
1. Preparation of Curriculum Vitae.
2. Design: Cheque Leaf for a Bank
   - Preparation of Invoice
3. Send an Invitation to various colleges for the workshop using Mail Merge.
4. Preparation of Advertisement Copy.

Ms Access
5. Prepare a Student Database.
6. Create an Employee Database.
7. Prepare a Customer Database.

Ms PowerPoint:
8. Prepare a Slide Show for organising a Seminar.
9. Prepare a Slide show for Paper Presentation.
10. Demonstrate a product using Custom Animation.

    Course Designed By   : Dr.C.Pushpalatha
    Course Reviewed By   : Dr.N.Lakshmi
    Checked By   : Dr.K.Punithavalli

B.Com
Semester III
Part III - Core VIII – Entrepreneurial Development   315B08
(For the students admitted from the academic year 2015-2016 onwards)

Preamble : (50 Hours)

The objectives of this course are:
- To provide exposure to entrepreneurial environment.

- To guide students to setup and manage small units.

Unit I

Entrepreneur: Meaning– Characteristics – skills for Entrepreneur- Functions - Types – Entrepreneurs and managers – Entrepreneur and Economic Development.   **(10 Hours)**

Unit II

Entrepreneurship – Entrepreneur Vs Entrepreneurship – Factors stimulating Entrepreneurship – Environment for Entrepreneurship -Factors affecting Entrepreneurship growth.   **(10 Hours)**

Unit III

Entrepreneurial Development Programmes- need – objectives –phases of EDP - Problems of EDP. Women Entrepreneurs –types-problems-remedial measures.   **(10 Hours)**

Unit IV

Project Identification and project Appraisal   **(10 Hours)**

Unit V

Micro Small and Medium Enterprises - Steps for starting MSME. Institutional support to Entrepreneurs –Small Scale Industries Board-Small Industries Development Organization - Small Industries Service Institute - National Small Industries Corporation - Khadi and Village Industries Commission.   **(10 Hours)**

Book for study

Entrepreneurship development   : E. Gordon and K. Natarajan
                                                            Himalayan Publishing House, New Delhi, Reprint 2013.

Books for Reference

Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
                                                            Sultan Chand and Sons, Delhi, Reprint 2014.

Course Designed By   : Dr. R. Vanamadevi
Course Reviewed By   : Dr. R. Parameswari
Checked By   : Dr. K. Punithavalli

B.Com
Semester III
Part IV Skill Based Course I –Business Application Tools – Image Designing
314BS1/315BS1
(For the students admitted from the academic year 2014-2015 onwards)

List of Practical: **(35 Hours)**

11. Resize an object and modify text.
12. Design a product using drawing tool.
13. Import an image and make alignment.
14. Place graphic in page maker.
15. Design a business card.
16. Design an invitation for inauguration of an organisation.
17. Design a newsletter.
18. Design a banner for a function with pictures.
19. Design a cover page of a magazine.
20. Design an advertisement copy.

Course Designed By   : Mrs.R.Suryapriya
Course Reviewed By   : Mrs.R.Jayalakshi
Checked By   : Dr.K.Punithavalli

B.Com
Semester IV
Part IV Skill Based Course II –Business Application Tools – Image Editor
414BS2/415BS2
(For the students admitted from the academic year 2014-2015 onwards)
List of Practical: (35 Hours)

11. Change an image using Brush.
12. Make colour balance adjustment.
13. Make Curve adjustment on an image.
14. Basic image correction, minor retouches.
15. Apply filter to an image.
16. Create, modify and transform an image.
17. Merge two or more images.
18. Design a logo with 3D effect.
19. Create light effect on an image for web poster.
20. Animate Images.

Course Designed By   : Mrs.R.Suryapriya
Course Reviewed By   : Mrs.R.Jayalakshi
Checked By   : Dr.K.Punithavalli

B.Com/BBA (CA)
Semester V
Part IV Skill Based Course III –Business Data Analytics using EXCEL
514BS3/515BS3/515VS3
(For the students admitted from the academic year 2014-2015 onwards)
List of Practicals: (35 Hours)

1. Sort data in ascending and descending order.
2. Prepare employee payroll.
3. Design Mark Sheet.
4. Prepare chart for analysing students result.
5. Summarise and present data using pivot table.
6. Calculate mean, median and standard deviation.
7. Analyse the data using correlation.
8. Analyse the data using regression.
9. Calculate Time Value of money - NPV, IRR, ROI, using FV, NPER, PMT, PV, TYPE functions.
10. Calculate interest using financial functions.

Course Designed By   : Mrs.R.Suryapriya
Course Reviewed By   : Mrs.R.Jayalakshi
Checked By   : Dr.K.Punithavalli

B.Com
Semester VI
Part IV-Skill Based Course IV-Export and Import Documentation-Practicals
614BS4/ 615BS4
(For the students admitted from the academic year 2014-2015 onwards)
Preamble: (35 Hours)

To give practical exposure to the students by filling up the documents relating to export and import formalities.
1. Application form for Obtaining Importer and Exporter Code Number (IEC)

2. Application form for modification of existing IEC number.
3. Obtaining bank certificate for obtaining of IEC.
4. Application for Registration cum Membership (RCMC) Certificate.
5. Commercial invoice.
6. Packing list.
7. Mates receipt.
8. Bill of Lading.
9. Certificate of Origin.
10. Shipping bill
11. Shipment Advice
12. Guaranteed Remittance (GR) form
13. Export license.
14. Preparing bill of Entry

Course Designed By	: Dr.R.Vanamadevi
Course Reviewed By	: Dr.C.Pushpalatha
Checked By	: Dr.K.Punithavalli

B.Com
Semester wise Distribution with scheme of Examination
(For the candidates admitted during the academic year 2012-2013 & onwards)

Semester	COURSE	Credits	Duration of Exam Hrs (ESE)	Marks		TOTAL
				CIA	ESE	
I	Part I – Language - I	3	3	25	75	100
	Part II – English - I	3	3	25	75	100
	Part III - Core I- Accountancy-I	4	3	25	75	100
	Core II- Business Organisation	4	3	25	75	100
	Allied I - Computer Applications in Business	5	3	25	75	100
	Part IV – Environmental Studies	2	-	50	-	50
II	Part I– Language -II	3	3	25	75	100
	Part II – English - II	3	3	25	75	100
	Part III - Core III –Accountancy - II	4	3	25	75	100
	Core IV - Marketing	4	3	25	75	100
	Allied II – Computer Applications in Business Practical	5	3	40	60	100
	Part IV – Value Education	2	-	50	-	50
	Advanced Learners' Course I Advertisement Management	3*	3	-	100	100
III	Part III-Core V– Principles of Management	4	3	25	75	100
	Core VI -Commercial Law	4	3	25	75	100
	Core VII-Accountancy-III	4	3	25	75	100
	Core VIII- Export Import Procedures and Documentation	3	3	25	75	100
	Allied III – Mathematics in Business	5	3	25	75	100
	Part IV – Non Major Elective	2	-	75	-	75
	Skill Based Course I – Entrepreneurial Development I	3	-	100	-	100

	Part III - Core IX-Business Communication	4	3	25	75	100
	Core X-Company Law	4	3	25	75	100
	Core XI-Accountancy - IV	4	3	25	75	100
	Core XII- Auditing	3	3	25	75	100
	Allied IV-Statistics for Business	5	3	25	75	100
IV	Part IV – General Awareness	2	-	75	-	75
	Skill Based Course II– Entrepreneurial Development II	3	-	100	-	100
	Advanced Learners' Course II					
	Principles of Insurance	3*	3	-	100	100
	Part V – Extension Activities	1	-	-	50	50
	Part III – Core XIII- Cost Accounting	4	3	25	75	100
	Core XIV- Income Tax	4	3	25	75	100
	Core XV- Financial Management	4	3	25	75	100
V	Subject Viva Voce	2	3	25	75	100
	Elective I – Basics of Banking	5	3	100	-	100
	Part IV– Skill Based Course III – Entrepreneurial Development Practical	3	-	100	-	100
	Part III-Core XVI-Management Accounting	4	3	25	75	100
	Core XVII – Accountancy –V	4	3	25	75	100
	Core XVIII - Investment Management	4	3	25	75	100
VI	Elective II- Banking Operations	5	3	100	-	100
	Elective III- Computerised Accounting-Tally	5	3	40	60	100
	Part IV – Skill Based Course IV- Project	3	-	100	-	100
	Advanced Learners' Course III					
	Working Capital Management	3*	3	-	100	100

Total Credits   **140**

Starred Credits are treated as additional credits.

30 percent of the syllabus in each course should be taught using LCD and OHP.

Paper to be handled by Commerce Department :

Allied III: Principles of Accountancy for B.Sc Mathematics in the III Semester.

B.Com.
Semester V   **512BE1**
Part III - Elective I – Basics of Banking
(For students admitted from 2012-2013 and onwards)

Preamble :

The objective of this course are :

- To expose the students to the basics of banking and banking operations.

Module I:

Evolution of Money-Evolution of Banking-Banking in India.

Module II:

Overview of Banking: Definition of Banking-Roles of Banks-Banking, a Business of Trust-Banking Services and Products-Banking Channels.

Module III:

Types of Customers: Introduction-Modes of Operation- Individuals-Proprietorship-Partnership-Joint stock Company-Trusts, Societies, Clubs-Government bodies-others.

Module IV:

Banker Customer relationship: Definition of a customer-Relationship between banker and customer-Rights and obligations of Banker.

Module V:

Types of Deposits: Demand and Term Deposits, Two in one accounts, Recurring deposits.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations : M.Gopinath,

                         Snow White Publishers, Mumbai, First Ed 2008.

B.Com.
Semester VI   **612BE2**
Part III - Elective II- Banking Operations

Preamble :

The objective of this course is:

- To expose the students to the banking operations.

Module I:

Account opening: KYC and AML guidelines,KYC Policy-KYC documents-Opening Accounts of Individuals-Opening accounts of firms, companies, societies, trusts-General precaution.

Module II:

Account Operations: Negotiable Instruments-Payment and collection of cheques-Special Requests-Special Situations-Anti Money Laundering.

Module III:

Cheque Collection Services: Clearing of local cheques-National Clearing-ECS.

Module IV:

Payment and Remittance Services: Payorders, Drafts-Features,issue, payment, cancellation, issue of duplicate, revalidation, legal aspects-Electronic Funds transfer.

Module V:

Finacle: Banking Software-Introduction- Menu options- Basic transactions-cash, remittances, inquiries and account modifications.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations: M.Gopinath,

                     Snow White Publishers, Mumbai, First Ed 2008.

Semester VI   **612BE3**
Part III - Elective III - Computerized Accounting- Tally
(For Students admitted from 2012-2013 and onwards)
                       (75 Hours)

List of Practical

1. Creation of Company in Tally
2. Enabling Accounting Features
3. Group Creation and Alteration (single and multiple)
4. Ledger Creation and Alteration (single and multiple)
5. Display of books, Trial Balance, Profit and Loss Account and Balance Sheet
6. Altering Inventory Features
7. Altering Statutory Features
8. Altering Taxation Features
9. Creation and alteration of measures of units
10. Stock Group creation and alteration
11. Stock Item creation and alteration
12. Display of Stock summary
13. Cost center creation and alteration
14. Creation of Tax Masters
15. Display of Ratios
16. Back up and Restoration

Curriculum Design
SRI G.V.G.VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Commerce
Scheme of Examination – CBCS Pattern
Programme - M.Com
(For the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
Semester I							
15MC01	Core I - Business Environment	5	3	25	75	100	4
15MC02	Core II - Marketing	5	3	25	75	100	4
15MC03	Management	5	3	25	75	100	4
15MC04	Core III - Financial	5	3	40	60	100	4
	Management						
15MC05	Core IV- Computer	5	3	25	75	100	4
15MCE1	Applications in Business	5	3	25	75	100	4
	Core V - Entrepreneurship						
	Elective I - Managerial						
	Economics						
Semester II							
15MC06	Core VI – Research	5	3	25	75	100	4
15MC07	Methodology						
	Core VII – Human Resource	5	3	25	75	100	4
15MC08	Management						
	Core VIII - Working Capital	5	3	25	75	100	4
15MC09	Management	5	3	40	60	100	4
15MGCS	Core IX – Computerised	2	2	50	-	Grade	Grade
15MCIT	Accounting	-	-	50	-	50	2
15MCE2	Cyber Security	5	3	25	75	100	4
	Institutional Training						
15MCL1	Elective II - Services Marketing	-	-	-	100	100	4*
	Advanced Learners' Course – I						
	Subject Viva-Voce						
Semester III							
15MC10	Core X – E Tools and	5	3	40	60	100	4
	Techniques for Research						
15MC11	Core XI - Security Analysis and	5	3	25	75	100	4
	Portfolio Management						
15MC12	Core XII – Applied Costing	5	3	25	75	100	4
15MC13	Core XIII - Information	5	3	25	75	100	4
	Technology in Business						
15MCE3	Elective III - Organisational	5	3	25	75	100	4
	Behaviour						
15MCPV/	Project / Optional paper:	-	-	-	-	-	-
15MCRM	Retail Management	5	3	25	75	100	4

	Semester IV						
15MC14	Core XIV – Strategic	5	3	25	75	100	4
15MC15	Management	5	3	25	75	100	4
15MC16	Core XV- Financial Services	5	3	25	75	100	4
15MCE4	Core XVI – Export	5	3	25	75	100	4
15MCPV/	Management	-	-	100	100	200	8
15MCMI	Elective IV Logistics Management	5	3	25	75	100	4
15MCL2	Project / Optional paper Management Information System Advanced Learners' Course II Subject Viva Voce	-	-	-	100	100	4*
	Total					**2250**	**90**

*Starred Credits are treated as additional credits which are optional.

M.Com
Semester I
Core IV- Computer Applications in Business –Practicals   15MC04
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: (65 Hours)
- To expose the students on the practical applications of computer in business.
- To work efficiently in Word, Excel, Power Point, and Access.

List of Practicals:

Word

1. Type a document and perform the following:
   - alignment and font formatting
   - inserting bullets
   - find and replace
   - insert footnote and head note
   - paragraph formatting
   - column creation
   - inserting page numbers
2. Using mail merge, create and send invitation / notice for the following situations (at least 10 addresses to be entered)
   - Opening a new branch / ATM / scheme / product / special offer / College / department function
3. Create a resume without using wizard and using wizard.
4. Create an advertisement copy / Program sheet preparation / Invitation card designing.

Excel

Prepare a table for:
5. Employees payroll
6. Sales data of 5 products for 5 years
7. Students mark list for one semester and perform the following functions:
(Total, Result, CPA, CGPA and show the results in chart)

PowerPoint

Prepare a PowerPoint presentation ensuring hyperlinks to slides, animation effect, slide transition, timing rehearsals (Minimum 5 slides).
8. Product / Company Advertisement

9. Report of Annual General Meeting / Conference / College Day / Department function.

Access

Creating a database and table (using Wizard view and directly) with one of the fields as Primary Key; apply sort option; create form, query; generate reports by using queries, establish relational database.

10. Student / employee / customers database

Course Designed By   : Dr.N.Lakshmi
Course Reviewed and Checked By   : Dr.K. Punithavalli

M.Com
Semester I
Core V –Entrepreneurship   15MC05
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: (65 Hours)
The objectives of this course are:

- To give exposure to the students about entrepreneurship.
- To impart knowledge to identify the role of various institutions for developing entrepreneurship.

UNIT I

Entrepreneur – characteristics- functions- Entrepreneurship- Entrepreneurship Vs Entrepreneur- Growth of Entrepreneurship in India- Theories of Entrepreneurship - Factors stimulating Entrepreneurship –factors affecting Entrepreneurship growth- qualities of Entrepreneurship - Role of Entrepreneurship in Economic Development.
(13 Hours)
UNIT II

Entrepreneurship Development Programme (EDP)- need for EDP-objective-phases- Institutions for Entrepreneurship Development –Problems of Entrepreneurship Development-Role of the Government in Entrepreneurial growth.   **(13 Hours)**
UNIT III

Micro Small and Medium Enterprises (MSME)-Features-objectives-promotional measures- problems. Starting MSME. Business Idea –business idea generation techniques- Identification of business opportunities and selection – steps for setting up MSME– formulation of business plan. Growth strategies in small scale enterprises – types of growth strategies.   **(13 Hours)**
UNIT IV:

Project appraisal-methods of project appraisal-general guidelines for project appraisal. Institutional Support to Entrepreneurs: Need-NSIC, SIDO, SSIB, SSID, SISI, DIC, industrial estates and TCO.   **(13 Hours)**
*UNIT V:

Intellectual Property Rights (IPR) and MSMEs: Patent: Meaning-types-process. Copyrights: Meaning-objectives.

Trade Marks: Categories-registration of trademark- geographical indications- industrial designs- trade secrets- integrated circuits- significance of IPR.   **(13 Hours)**
Starred Unit is self- learning portion.
Books for Reference:
1. Entrepreneurial Development   : Dr.S.S. Khanka,
                                                                      S. Chand & Company PVT. Ltd.
                                                                      New Delhi, Revised Edition Edition 2012, Reprint,2013.

2. Entrepreneurial Development   : Dr.C.B. Gupta & Dr. N.P. Srinivasan,
Sultan Chand & Sons,
New Delhi Revised Edition Edition 2013, Reprint,2014.
3. Entrepreneurship Development   : E. Gordon & K. Natarajan
Himalaya Publishing House,
New Delhi Fourth Revised Edition 2012, Reprint 2013.
4. Entrepreneurial Development   : Jayshree Suresh,
MarghamPublications, Chennai, Reprint 2015

Course Designed By   : Dr.S.Bhuvaneswari
Course Reviewed By   : Dr.R.Vanamadevi
Checked By   : Dr.K. Punithavalli

M.Com
Semester II
Core IX – Computerised Accounting   15MC09
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

The objectives of this course are:
* To expose the students on the practical applications of computer in accounting.
* To enable students to gain expertise in working with accounting package.

List of Practicals
1. Company , account category creation and alteration.
2. Creating and Display of Ledger accounts.
3. Entering financial transactions in vouchers.
4. Adjustment entries creation.
5. Altering statutory, taxation and inventory features.
6. Creation and alteration: measures of units, stock group, stock item, godown, cost centre, tax masters.
7. Display list of books, Stock Summary, Trial Balance.
8. Creation of payroll masters, pay heads, deductions and processing pay roll.
9. Display of reports: Profit & Loss a/c and Balance Sheet.
10. Display of Ratio, Fund flow and cash flow.

M.Com
Semester II
Institutional Training   15MCIT
(For the students admitted from the academic year 2015 – 2016 onwards)
Institutional Training

The student shall undergo the Institutional Training in any of the following institutions for two weeks
1. Commercial Banks
2. Insurance Companies
3. Joint Stock Companies
4. Logistic Companies
5. Co-operative Societies
6. Share Brokers, Firms of Investment Consultants
7. Professional Firms – like firms of Chartered Accountants / Cost Accounts / Company Secretaries
8. Travel Agencies and Courier Services

A Report submitted by the student on the completion of the training would be subject to Internal Evaluation with 50 marks for Report and viva voce 50 marks.

M.Com
Semester III
Core X – E Tools and Techniques for Research – Practicals   15MC10
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **(65 Hours)**

The objectives of this course are:
- To provide knowledge of the applications of computers in research activities.
- To enlighten on the statistical tools applicable for research in business and management.

1. Preparation of a questionnaire.
2. Coding and Preparation of Master Table.
3. Measures of Central Value: Mean, Quartiles and Percentiles.
4. Measures of Variation: Range, Quartile deviation, Standard deviation, Coefficient of Variation.
5. Correlation Analysis: simple correlation, rank correlation.
6. Regression analysis.
7. Hypothesis Testing for Mean.
8. Hypothesis Testing for Variance
9. Hypothesis Testing: Chi-square test.
10. Diagrammatic and graphic representation.

                Course Designed By   : Dr.N.Lakshmi
                Course Reviewed and Checked By   : Dr.K. Punithavalli

M.Com
Semester III
Core XIII – Information Technology in Business   15MC13
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **(65 Hours)**

- To inculcate the knowledge among the students about information technology and its applications in Business.
- To expose them with the Processing and Management of computer based information.

Unit I:

Information technology: Characteristics- Uses- Flow of information in organisation- Categories of information. Computer Applications in Business: Personal department, Finance department, Marketing department, Production department and Office automation.
                                                                                    (13 Hours)

Unit II:

Data processing: Concepts-Data processing cycle- objectives-steps of data processing- practical data processing applications in business- data processing operations- database- database management system- methods of data processing-transaction processing.
Network: Meaning-types.   **(13Hours)**

Unit III:

E-Commerce and Internet: Meaning- Reasons for the growth- features- importance- objectives- types. Internet: Evolution-services of internet.Intranet: Features-services- advantages. Extranet: Uses.   **(13 Hours)**

Unit IV:

Computer based information system: Need. Transaction processing system: characteristics-models- advantages. Management information system: characteristics-designing of MIS- benefits. Decision support system: Definition- characteristics- difference between MIS and DSS- benefits of DSS. Group decision support system- Expert system: Components-Traditional vs Knowledge based expert system- development of expert system- merits. **(13 Hours)**

*Unit V:

Information Technology Act 2000: definitions-digital signature and electronic signature- electronic governance-attribution, acknowledgement and despatch of electronic records- regulation of certifying authorities- electronic signature certificates- duties of subscribes- penalties, compensation and adjudication- cyber appellate tribunal- offences. **(13 Hours)**

Starred Unit is self- learning portion.
Books for Reference:
A TextBook of Information Technology: R. Sarvana Kumar, R.Parameswaran
and T.Jayalakshmi.
S.Chand & Company ltd.
NewDelhi, Edition 2014

Information Technology and its
Business Applications   : S.Chakraborthy
Books and Allied (P) Ltd,
Kolkata, Edition 2009

Course Designed By   : Dr.M.Kalavathi
Course Reviewed By   : Dr.N.Lakshmi
Checked By   : Dr.K. Punithavalli

M.Com
Semester III
Project Optional Paper I - Retail Management   15MCRM
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

The objectives of this course are:
- To understand the concepts in retail management.
- To promote the practitioners of retail trade.

Unit I

Retail – Meaning- Role of the retailer- Growth of retailer- Challenges of retailers-evolution of retail in India-drivers of retail change in India – Factors influencing retailing. **(13 Hours)**

Unit II

Retail strategy-steps in retail strategy- retail value chain. Retail location- types- steps in choosing retail location. **(13 Hours)**

*Unit III

Retail merchandising- role and responsibilities of merchandiser- role and responsibilities of buyer- methods of buying- principles of merchandising - types of merchandise - Merchandise planning- process of merchandise planning. **(13 Hours)**

Unit IV

Category management- concept- reasons for the emergence of category management – components of category management – process of category management – role of Category Captain - drawbacks of category management.Retail Marketing - Retail marketing mix – STP Approach -Retail communication mix. **(13 Hours)**

Unit-V

Role of technology in retail – need for product identification : UPC – importance of IT in retail – Data Base Management, Data Warehousing, Data Mining – Internet Retailing .

Legal aspects of retail business –People perspective – Operations perspective. Ethical issues in retailing. **(13 Hours)**

Starred Unit is self- learning portion.

Books for Reference

1.Retail Management : Swapna Pradhan
   Text and Cases Tata McGraw-Hill Education Pvt Ltd
                      New Delhi. 4th Ed. 2012.

2. Retail Management : Barry Berman and Joel R Evans
A Strategic Approach – Prentice Hall of India (P) Ltd.
                      New Delhi 2007

Course Designed By	: Dr.C.Pushpalatha
Course Reviewed By	: Dr.K.Umamageswari
Checked By	: Dr.K. Punithavalli

M.Com
Semester IV
Project Optional Paper II - Management Information System   15MCMI
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **(65 Hours)**

The objectives of this course are:
- To impart knowledge on the management information system.
- To know about the structure of various information systems.

Unit I

Management Information System: Evolution of MIS – Growth of MIS – Theories of evolution of MIS – Characteristics of MIS – Subsystems of MIS – Executive Information System – Information Resource Management – Role of MIS – Enterprise Information System. **(13 Hours)**

Unit II

System Concepts – Types of Systems – Structure of MIS: Organizational Function and Information Requirement – Extent of Integration of Information System – Man-Machine Interaction – Information Network.

Transaction Processing System: Transaction Processing Cycle – Features of TPS – Transaction Document – Transaction Processing Modes – Functional TPS. **(13 Hours)**

Unit III

Decision Support Systems: Types of DSS – Characteristics of DSS – Components of DSS – DSS tools for different level of management – DSS Capabilities – Group Decision Support Systems. Expert Systems: Components of ES – Advantages of ES – Limitation of ES – Planning for MIS. **(13 Hours)**

Unit IV

Systems Development: Systems Development Methodologies – People involved in Systems Development – Tools for System Development – Software Development Process. Systems Analysis: Structured Systems Analysis – Systems Analysts. System Design: Input Design – Procedure Design – File Design – Database Design – Design Documentation. **(13 Hours)**

*Unit V

Program Development: Techniques of Program Development – Modular Programming – Structured Programming – Dataflow Diagram – Data Dictionary – Decision Table – Decision Tree – Flowcharts.

Systems Implementation: Steps in Systems Implementation – Factors for Successful Implementation – Causes of Implementation Failures – Project Management. **(13 Hours)**

Starred Unit is self- learning portion.

Book for Study

1. Management Information System : P.Mohan
                                         Himalaya Publishing House
                                          Mumbai. Edition 2007.

Books for reference

1. Management Information System : Amanjindal
                                         Kalyani Publication, Edition 2012.
2. Management Information System : Rajagopalan SP
                                         Margham Publication, Edition 2014.

                Course Designed By : Dr.M.Kalavathi
                Course Reviewed By : Dr.N.Lakshmi
                Checked By   : Dr.K.Punithavalli

Course Code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	
115TA1/ 115MY1/ 115HD1/ 115FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
115EN1	Part II – English – I	6	3	25	75	100	4
115B01/ 115R01/ 115N01/	Part III - Core I- Financial Accounting	5	3	25	75	100	4
115 B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I – Office Automation Tools - Practicals	6	3	40	60	100	4
115EVS	Part IV – Environmental Studies	2	2	50	-	50	2
215TA2/ 215MY2/ 215HD2/ 215FR2	**Semester – II** Part I – Language -II	6	3	25	75	100	4
215EN2	Part II – English – I	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III - Core III – Company Law	5	3	25	75	100	4
215 B04/ 215R04/ 215N04/ 215V04	Core IV – Marketing	5	3	25	75	100	4
215AB2	Allied II – Business Economics	6	3	25	75	100	4
215VEC	Part IV – Value Education	2	2	50	-	50	2
315B05/ 315R05/ 315N05	**Semester – III** Part III-Core V– Higher Financial Accounting	5	3	25	75	100	4
315 B06/ 315V06	Core VI - Commercial Law	5	3	25	75	100	4
315 B07	Core VII- Principles of Insurance	5	3	25	75	100	4
315 B08	Core VIII- Entrepreneurial Development	4	3	25	50	75	3
315 AB3/ 315AR3/ 315AN3	Allied III – Mathematics in Business	6	3	25	75	100	4

Code	Course Title						
315NED	Part IV – Non Major Elective Course I - Entrepreneurial Development	2	2	50	-	50	2
314BS1/ 315 BS1	Part IV Skill Based Course I – Business Application Tools- Pagemaker	3	3	75	-	75	3
415B09/ 415R09/ 415N09/ 415V09	**Semester – IV** Part III - Core IX - Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X - Cost Accounting	5	3	25	75	100	4
415B11	Core XI - Banking Law and Practice	5	3	25	75	100	4
415B12	Core XII-Auditing	4	3	25	75	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV – Non Major Elective Course II - General Awareness (online)	-	1	50	-	50	2
414BS2/ 415BS2	Part IV Skill Based Course II – Business Application Tools- Photoshop	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALB	Advanced Learners Course I Subject Viva Voce	-	-	-	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13	**Semester – V** Part III – Core XIII- E Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV- Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV- Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI- Higher Corporate Accounting	5	3	25	75	100	4
515BE1	Elective I – Investment Management	5	3	25	75	100	4
514BS3/ 515BS3/ 515VS3	Part IV– Skill Based Course III – Business Data Analytics using EXCEL	3	3	75	-	75	3
615B17/ 615R17/ 615N17/ 615V17	**Semester – VI** Part III-Core XVII-Management Accounting	6	3	25	75	100	4

615B18/ 615R18/ 615N18	Core XVIII – E Commerce	6	3	25	75	100	4
615B19	Core XIX - Export Import Procedures	3	3	25	50	75	3
615BE2	Elective II – Capital Markets	6	3	25	75	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
614BS4/ 615BS4	Part IV – Skill Based Course IV – Export Import Documentation-Practicals	3	3	75	-	75	3
615ALB	Advanced Learners Course II Subject Viva Voce	-	-	-	100	100	3*
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V – Extension Activities	-	-	50	-	50	2
Total						**3500**	**140**

B.Com/B.Com (CA)/B.Com (e-Commerce)/BBA (CA)
Semester I
Allied I – Office Automation Tools – Practical   115AB1/115AR1/115AN1/115AV1
(For the students admitted from the academic year 2015-2016 onwards)
List of Practicals (75 Hours)

Ms Word
11. Preparation of Curriculum Vitae.
12. Design: Cheque Leaf for a Bank
    - Preparation of Invoice
13. Send an Invitation to various colleges for the workshop using Mail Merge.
14. Preparation of Advertisement Copy.

Ms Access
15. Prepare a Student Database.
16. Create an Employee Database.
17. Prepare a Customer Database.

Ms PowerPoint:
18. Prepare a Slide Show for organising a Seminar.
19. Prepare a Slide show for Paper Presentation.
20. Demonstrate a product using Custom Animation.

        Course Designed By   : Dr.C.Pushpalatha
        Course Reviewed By   : Dr.N.Lakshmi
        Checked By   : Dr.K.Punithavalli

Semester III
Part IV Skill Based Course I –Business Application Tools – Pagemaker
314BS1/315BS1
(For the students admitted from the academic year 2014-2015 onwards)
List of Practical: (35 Hours)
1. Resize an object and modify text.
2. Design a product using drawing tool.
3. Import an image and make alignment.

4. Place graphic in page maker.
5. Design a business card.
6. Design an invitation for inauguration of an organisation.
7. Design a newsletter.
8. Design a banner for a function with pictures.
9. Design a cover page of a magazine.
10. Design an advertisement copy.

Course Designed By   : Mrs.R.Suryapriya
Course Reviewed By   : Mrs.R.Jayalakshi
Checked By   : Dr.K.Punithavalli

B.Com
Semester IV
Part IV Skill Based Course II –Business Application Tools – Photoshop
414BS2/415BS2
(For the students admitted from the academic year 2014-2015 onwards)
List of Practical: (35
Hours)
1. Change an image using Brush.
2. Make colour balance adjustment.
3. Make Curve adjustment on an image.
4. Basic image correction, minor retouches.
5. Apply filter to an image.
6. Create, modify and transform an image.
7. Merge two or more images.
8. Design a logo with 3D effect.
9. Create light effect on an image for web poster.
10. Animate Images.

Course Designed By   : Mrs.R.Suryapriya
Course Reviewed By   : Mrs.R.Jayalakshi
Checked By   : Dr.K.Punithavalli

B.Com
Semester wise Distribution with scheme of Examination
(For the candidates admitted during the academic year 2012-2013 & onwards)

Semester	COURSE	Credits	Duration of Exam Hrs (ESE)	Marks		TOTAL
				CIA	ESE	
I	Part I – Language - I	3	3	25	75	100
	Part II – English - I	3	3	25	75	100
	Part III - Core I- Accountancy-I	4	3	25	75	100
	Core II- Business Organisation	4	3	25	75	100
	Allied I - Computer Applications in Business	5	3	25	75	100
	Part IV – Environmental Studies	2	-	50	-	50
II	Part I– Language -II	3	3	25	75	100
	Part II – English - II	3	3	25	75	100
	Part III - Core III –Accountancy - II	4	3	25	75	100
	Core IV - Marketing	4	3	25	75	100
	Allied II – Computer Applications in Business Practical	5	3	40	60	100
	Part IV – Value Education	2	-	50	-	50
	Advanced Learners' Course I Advertisement Management	3*	3	-	100	100
III	Part III-Core V– Principles of Management	4	3	25	75	100
	Core VI -Commercial Law	4	3	25	75	100
	Core VII-Accountancy-III	4	3	25	75	100
	Core VIII- Export Import Procedures and Documentation	3	3	25	75	100
	Allied III – Mathematics in Business	5	3	25	75	100
	Part IV – Non Major Elective	2	-	75	-	75
	Skill Based Course I – Entrepreneurial Development I	3	-	100	-	100

	Part III - Core IX-Business Communication	4	3	25	75	100
	Core X-Company Law	4	3	25	75	100
	Core XI-Accountancy - IV	4	3	25	75	100
	Core XII- Auditing	3	3	25	75	100
	Allied IV-Statistics for Business	5	3	25	75	100
IV	Part IV – General Awareness	2	-	75	-	75
	Skill Based Course II– Entrepreneurial Development II	3	-	100	-	100
	Advanced Learners' Course II					
	Principles of Insurance	3*	3	-	100	100
	Part V – Extension Activities	1	-	-	50	50
	Part III – Core XIII- Cost Accounting	4	3	25	75	100
	Core XIV- Income Tax	4	3	25	75	100
	Core XV- Financial Management	4	3	25	75	100
V	Subject Viva Voce	2	3	25	75	100
	Elective I – Basics of Banking	5	3	100	-	100
	Part IV– Skill Based Course III – Entrepreneurial Development Practical	3	-	100	-	100
	Part III-Core XVI-Management Accounting	4	3	25	75	100
	Core XVII – Accountancy –V	4	3	25	75	100
	Core XVIII - Investment Management	4	3	25	75	100
VI	Elective II- Banking Operations	5	3	100	-	100
	Elective III- Computerised Accounting-Tally	5	3	40	60	100
	Part IV – Skill Based Course IV- Project	3	-	100	-	100
	Advanced Learners' Course III					
	Working Capital Management	3*	3	-	100	100

Total Credits   **140**

Starred Credits are treated as additional credits.
30 percent of the syllabus in each course should be taught using LCD and OHP.
Paper to be handled by Commerce Department :
Allied III: Principles of Accountancy for B.Sc Mathematics in the III Semester.

B.Com.
Semester III 312B08
Part III - Core VIII – Export-Import Procedures and Documentation
(For Students admitted from 2012-2013 and onwards)

Preamble :   **(52Hours)**

The objectives of this course are:

- To expose the students with export and import trade.
- To familiarize the students with procedures of export import trade.

Module I :

Export-Import Policy of India- Objectives – Highlights of EXIM Policy 2004-09 - Export Promotion measures in India. Export procedure – Registration stage – pre-shipment stage – post-shipment stage–quality control and pre-shipment inspection.

(11 hours)

Module II :

Procedure for Excise clearance – shipping and Customs formalities – procedure for realization of export proceeds – realization of export incentives.

(11 hours)

Module III:

Proforma invoice – Commercial invoice – Packing list – Mate's Receipt – Bill of Lading – Certificate of Origin – Shipping Bill – Consular invoice – Air way Bill – GR form.

(10 hours)

Module IV:

Import procedure – liberalization of imports – categories of importers – special schemes for imports – pre-import procedure.   (10 hours)

Module V:

Import procedure: legal dimensions of import procedure – retirement of import documents–customs clearance procedure for imported goods– Bill of Entry.   (10hours)

Book for Study:

Export Import Procedures &: Acharya Jain
   Documentation   Himalaya Publishing House, 2nd Edition,2010, Mumbai

Book for REFERENCES:

Export Management   : T.A.S. Balagopal,
                             Himalaya Publishing House, 20^thEdition,2010, Mumbai
Export Management   : D.C.Kapoor,
                             Vikas Publishing House, Edition 2007, New Delhi

Course Designed By   : R.Vanamadevi
Course Reviewed By   : Dr.G.Suguna
Checked By   : Dr.K.Punithavalli

B.Com.
Semester V   512BE1
Part III - Elective I – Basics of Banking
(For students admitted from 2012-2013 and onwards)

Preamble :

The objective of this course are :

- To expose the students to the basics of banking and banking operations.

Module I:

Evolution of Money-Evolution of Banking-Banking in India.

Module II:

Overview of Banking: Definition of Banking-Roles of Banks-Banking, a Business of Trust-Banking Services and Products-Banking Channels.

Module III:

Types of Customers: Introduction-Modes of Operation- Individuals-Proprietorship-Partnership-Joint stock Company-Trusts, Societies, Clubs-Government bodies-others.

Module IV:

Banker Customer relationship: Definition of a customer-Relationship between banker and customer-Rights and obligations of Banker.

Module V:

Types of Deposits: Demand and Term Deposits, Two in one accounts, Recurring deposits.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations : M.Gopinath,

Snow White Publishers, Mumbai, First Ed 2008.

B.Com.   **512BS3**

Semester V

Part IV - Skill Based Course III – Entrepreneurial Development Practical

The course allows students to have experiential learning through hands-on-training to meet the real-world needs and simultaneously serve as a valuable adjunct to traditional instruction provided in Skill Based Course I & II. This helps the learners to develop skills which give scope for initial self employment upon graduation. The students will be provided with practical classes in some of the micro ventures. The performance in the program would be the basis for evaluation.

List of Practical

Artificial Jewellery making

Flower arrangement-Artificial

Flower arrangement-Natural

Sanskar Bharathi Rangoli

Door Decoratives

Function Plate Decorations

Photos with 3D Effects

Bridal Makeup

B.Com.

Semester VI   **612BE2**

Part III - Elective II- Banking Operations

Preamble :

The objective of this course is:

- To expose the students to the banking operations.

Module I:

Account opening: KYC and AML guidelines,KYC Policy-KYC documents-Opening Accounts of Individuals-Opening accounts of firms, companies, societies, trusts-General precaution.

Module II:

Account Operations: Negotiable Instruments-Payment and collection of cheques-Special Requests-Special Situations-Anti Money Laundering.

Module III:

Cheque Collection Services: Clearing of local cheques-National Clearing-ECS.

Module IV:

Payment and Remittance Services: Payorders, Drafts-Features,issue, payment, cancellation, issue of duplicate, revalidation, legal aspects-Electronic Funds transfer.

Module V:

Finacle: Banking Software-Introduction- Menu options- Basic transactions-cash, remittances, inquiries and account modifications.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations: M.Gopinath,

Snow White Publishers, Mumbai, First Ed 2008.

B.Com.

Semester VI   **612BE3**

Part III - Elective III - Computerized Accounting- Tally

(For Students admitted from 2012-2013 and onwards)

(75 Hours)

List of Practical

1. Creation of Company in Tally
2. Enabling Accounting Features
3. Group Creation and Alteration (single and multiple)
4. Ledger Creation and Alteration (single and multiple)
5. Display of books, Trial Balance, Profit and Loss Account and Balance Sheet
6. Altering Inventory Features
7. Altering Statutory Features
8. Altering Taxation Features
9. Creation and alteration of measures of units
10. Stock Group creation and alteration
11. Stock Item creation and alteration
12. Display of Stock summary
13. Cost center creation and alteration
14. Creation of Tax Masters
15. Display of Ratios
16. Back up and Restoration

B.Com.

Semester VI

Part IV - Skill Based Course IV - Project   **612BS4**

(For students admitted from 2012-2013 and onwards)

A project report is to be submitted by each candidate covering any one of the entrepreneurial ventures or issues. The report carries 75 marks and viva voce carries 25 marks.

B.Com.
Semester V   512BE1
Part III - Elective I – Basics of Banking
(For students admitted from 2012-2013 and onwards)

Preamble :

The objective of this course are :
- To expose the students to the basics of banking and banking operations.

Module I:

Evolution of Money-Evolution of Banking-Banking in India.

Module II:

Overview of Banking: Definition of Banking-Roles of Banks-Banking, a Business of Trust-Banking Services and Products-Banking Channels.

Module III:

Types of Customers: Introduction-Modes of Operation- Individuals-Proprietorship-Partnership-Joint stock Company-Trusts, Societies, Clubs-Government bodies-others.

Module IV:

Banker Customer relationship: Definition of a customer-Relationship between banker and customer-Rights and obligations of Banker.

Module V:

Types of Deposits: Demand and Term Deposits, Two in one accounts, Recurring deposits.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations : M.Gopinath,

Snow White Publishers, Mumbai, First Ed 2008.

B.Com.
Semester VI   612BE2
Part III - Elective II- Banking Operations

Preamble :

The objective of this course is:
- To expose the students to the banking operations.

Module I:

Account opening: KYC and AML guidelines,KYC Policy-KYC documents-Opening Accounts of Individuals-Opening accounts of firms, companies, societies, trusts-General precaution.

Module II:

Account Operations: Negotiable Instruments-Payment and collection of cheques-Special Requests-Special Situations-Anti Money Laundering.

Module III:

Cheque Collection Services: Clearing of local cheques-National Clearing-ECS.

Module IV:

Payment and Remittance Services: Payorders, Drafts-Features,issue, payment, cancellation, issue of duplicate, revalidation, legal aspects-Electronic Funds transfer.

Module V:

Finacle: Banking Software-Introduction- Menu options- Basic transactions-cash, remittances, inquiries and account modifications.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:
Banking Principles & Operations: M.Gopinath,
                                          Snow White Publishers, Mumbai, First Ed 2008.

B.Com.
Semester VI   **612BE3**
Part III - Elective III - Computerized Accounting- Tally
(For Students admitted from 2012-2013 and onwards)
                                                    (75 Hours)
List of Practical

1.   Creation of Company in Tally
2.   Enabling Accounting Features
3.   Group Creation and Alteration (single and multiple)
4.   Ledger Creation and Alteration (single and multiple)
5.   Display of books, Trial Balance, Profit and Loss Account and Balance Sheet
6.   Altering Inventory Features
7.   Altering Statutory Features
8.   Altering Taxation Features
9.   Creation and alteration of measures of units
10.   Stock Group creation and alteration
11.   Stock Item creation and alteration
12.   Display of Stock summary
13.   Cost center creation and alteration
14.   Creation of Tax Masters
15.   Display of Ratios
16.   Back up and Restoration

Department of Commerce
Scheme of Examination – CBCS Pattern
Programme - M.Com
(For the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
Semester I							
15MC01	Core I - Business Environment	5	3	25	75	100	4
15MC02	Core II - Marketing Management	5	3	25	75	100	4
15MC03	Core III - Financial Management	5	3	25	75	100	4
15MC04	Core IV- Computer Applications in Business	5	3	40	60	100	4
15MC05	Core V - Entrepreneurship	5	3	25	75	100	4
15MCE1	Elective I - Managerial Economics	5	3	25	75	100	4
Semester II							
15MC06	Core VI – Research Methodology	5	3	25	75	100	4
15MC07	Core VII – Human Resource Management	5	3	25	75	100	4
15MC08	Core VIII - Working Capital Management	5	3	25	75	100	4
15MC09	Core IX – Computerised Accounting	5	3	40	60	100	4
15MGCS	Cyber Security	2	2	50	-	Grade	Grade
15MCIT	Institutional Training	-	-	50	-	50	2
15MCE2	Elective II - Services Marketing	5	3	25	75	100	4
15MCL1	Advanced Learners' Course – I Subject Viva-Voce	-	-	-	100	100	4*
Semester III							
15MC10	Core X – E Tools and Techniques for Research	5	3	40	60	100	4
15MC11	Core XI - Security Analysis and Portfolio Management	5	3	25	75	100	4
15MC12	Core XII – Applied Costing	5	3	25	75	100	4
15MC13	Core XIII - Information Technology in Business	5	3	25	75	100	4
15MCE3	Elective III - Organisational Behaviour	5	3	25	75	100	4
15MCPV / 15MCRM	Project / Optional paper: Retail Management	- 5	- 3	- 25	- 75	- 100	- 4

	Semester IV						
15MC14	Core XIV – Strategic	5	3	25	75	100	4
15MC15	Management	5	3	25	75	100	4
15MC16	Core XV- Financial Services	5	3	25	75	100	4
15MCE4	Core XVI – Export Management	5	3	25	75	100	4
15MCPV	Elective IV Logistics	-	-	100	100	200	8
/	Management	5	3	25	75	100	4
15MCMI	Project / Optional paper						
	Management Information System	-	-	-	100	100	4*
15MCL2	Advanced Learners' Course II						
	Subject Viva Voce						
	Total					**2250**	**90**

*Starred Credits are treated as additional credits which are optional.

M.Com
Semester I
Core IV- Computer Applications in Business –Practicals   15MC04
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**
- To expose the students on the practical applications of computer in business.
- To work efficiently in Word, Excel, Power Point, and Access.

List of Practicals:

Word

1. Type a document and perform the following:
   - alignment and font formatting
   - inserting bullets
   - find and replace
   - insert footnote and head note
   - paragraph formatting
   - column creation
   - inserting page numbers
2. Using mail merge, create and send invitation / notice for the following situations (at least 10 addresses to be entered)
   - Opening a new branch / ATM / scheme / product / special offer / College / department function
3. Create a resume without using wizard and using wizard.
4. Create an advertisement copy / Program sheet preparation / Invitation card designing.

Excel

Prepare a table for:
5. Employees payroll
6. Sales data of 5 products for 5 years
7. Students mark list for one semester and perform the following functions:
(Total, Result, CPA, CGPA and show the results in chart)

PowerPoint

Prepare a PowerPoint presentation ensuring hyperlinks to slides, animation effect, slide transition, timing rehearsals (Minimum 5 slides).
8. Product / Company Advertisement
9. Report of Annual General Meeting / Conference / College Day / Department function.

Access

Creating a database and table (using Wizard view and directly) with one of the fields as Primary Key; apply sort option; create form, query; generate reports by using queries, establish relational database.

10. Student / employee / customers database

Course Designed By : Dr.N.Lakshmi
Course Reviewed and Checked By : Dr.K. Punithavalli

M.Com
Semester I
Core V –Entrepreneurship   15MC05
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: (65 Hours)
The objectives of this course are:
- To give exposure to the students about entrepreneurship.
- To impart knowledge to identify the role of various institutions for developing entrepreneurship.

UNIT I

Entrepreneur – characteristics- functions- Entrepreneurship- Entrepreneurship Vs Entrepreneur- Growth of Entrepreneurship in India- Theories of Entrepreneurship - Factors stimulating Entrepreneurship –factors affecting Entrepreneurship growth- qualities of Entrepreneurship - Role of Entrepreneurship in Economic Development.   **(13 Hours)**

UNIT II

Entrepreneurship Development Programme (EDP)- need for EDP-objective-phases-Institutions for Entrepreneurship Development –Problems of Entrepreneurship Development-Role of the Government in Entrepreneurial growth.   **(13 Hours)**

UNIT III

Micro Small and Medium Enterprises (MSME)-Features-objectives-promotional measures-problems. Starting MSME. Business Idea –business idea generation techniques- Identification of business opportunities and selection – steps for setting up MSME– formulation of business plan. Growth strategies in small scale enterprises – types of growth strategies.   **(13 Hours)**

UNIT IV:

Project appraisal-methods of project appraisal-general guidelines for project appraisal. Institutional Support to Entrepreneurs: Need-NSIC, SIDO, SSIB, SSID, SISI, DIC, industrial estates and TCO.   **(13 Hours)**

*UNIT V:

Intellectual Property Rights (IPR) and MSMEs: Patent: Meaning-types-process. Copyrights: Meaning-objectives. Trade Marks: Categories-registration of trademark- geographical indications-industrial designs- trade secrets- integrated circuits- significance of IPR.   **(13 Hours)**

Starred Unit is self- learning portion.

Books for Reference:
1. Entrepreneurial Development   : Dr.S.S. Khanka,
                                                          S. Chand & Company PVT. Ltd.
                                                          New Delhi, Revised Edition Edition 2012, Reprint,2013.
2. Entrepreneurial Development   : Dr.C.B. Gupta & Dr. N.P. Srinivasan,
                                                          Sultan Chand & Sons,
                                                          New Delhi Revised Edition Edition 2013, Reprint,2014.
3. Entrepreneurship Development   : E. Gordon & K. Natarajan
                                                          Himalaya Publishing House,
                                                          New Delhi Fourth Revised Edition 2012, Reprint 2013.
4. Entrepreneurial Development   : Jayshree Suresh,
                                                          MarghamPublications, Chennai, Reprint 2015

Course Designed By   : Dr.S.Bhuvaneswari
Course Reviewed By   : Dr.R.Vanamadevi
Checked By   : Dr.K. Punithavalli

M.Com
Semester II
Core IX – Computerised Accounting   15MC09
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble: **(65 Hours)**

The objectives of this course are:
- To expose the students on the practical applications of computer in accounting.
- To enable students to gain expertise in working with accounting package.

List of Practicals

1. Company , account category creation and alteration.
2. Creating and Display of Ledger accounts.
3. Entering financial transactions in vouchers.
4. Adjustment entries creation.
5. Altering statutory, taxation and inventory features.
6. Creation and alteration: measures of units, stock group, stock item, godown, cost centre, tax masters.
7. Display list of books, Stock Summary, Trial Balance.
8. Creation of payroll masters, pay heads, deductions and processing pay roll.
9. Display of reports: Profit & Loss a/c and Balance Sheet.
10. Display of Ratio, Fund flow and cash flow.

M.Com
Semester II
Institutional Training   15MCIT
(For the students admitted from the academic year 2015 – 2016 onwards)
Institutional Training

The student shall undergo the Institutional Training in any of the following institutions for two weeks
1. Commercial Banks
2. Insurance Companies
3. Joint Stock Companies
4. Logistic Companies
5. Co-operative Societies
6. Share Brokers, Firms of Investment Consultants
7. Professional Firms – like firms of Chartered Accountants / Cost Accounts / Company Secretaries
8. Travel Agencies and Courier Services

A Report submitted by the student on the completion of the training would be subject to Internal Evaluation with 50 marks for Report and viva voce 50 marks.

Curriculum Design
SRI G.V.G.VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Commerce
Scheme of Examination – CBCS Pattern
Programme - M.Com
(For the students admitted from the academic year 2014 – 2015 only)

Semester	COURSE	Inst Hrs / week	Dur Hrs	CIA Marks	ESE Marks	Total Marks	Credits
I	Core I- Business Environment	5	3	25	75	100	5
	Core II- Managerial Economics	5	3	25	75	100	5
	Core III- Financial Management	5	3	25	75	100	5
	Elective I - Marketing Management	5	3	25	75	100	3
	Diploma Paper I - Ms Office - Practicals	4	3	100	-	100	3
II	Core IV - Research Methodology	5	3	25	75	100	5
	Core V- Managerial Accounting	5	3	25	75	100	5
	Core VI - Human Resource Management	5	3	25	75	100	5
	Institutional Training	-	-	100	-	100	3
	Elective II- Retail Management	5	3	25	75	100	3
	Diploma Paper II – HTML & DHTML	4	3	100	-	100	3
	Advanced Learners' Course - I						
	Services Marketing			-	100	100	4*
III	Core VII – Statistical Methods	5	3	25	75	100	5
	Core VIII Security Analysis and Portfolio Management	5	3	25	75	100	5
	Core IX- Export Management	5	3	25	75	100	5
	Elective III- Organisational Behaviour	5	3	25	75	100	3
	Project / Optional Paper:	5	-	-	-	-	-
	Internet & E Commerce	5	3	25	75	100	4
	Diploma Paper III – Data Analysis using Ms Excel	4	3	100	-	100	3
IV	Core X– Strategic Management	5	3	25	75	100	5
	Core XI- Financial Services	5	3	25	75	100	5
	Elective IV Logistics Management	5	3	25	75	100	3
	Project / Optional Paper:	5	-	100	100	200	8
	Management Information System	5	3	25	75	100	4
	Diploma Paper IV - Photoshop	4	3	100	-	100	3
	Advanced Learners' Course II						
	Income Tax		3	-	100	100	4*

*Starred Credits are treated as Additional Credits which are optional.

M.Com
Semester III
Optional Paper I - Internet and E-Commerce   14MCIE
(For students admitted from the academic year 2014 – 2015 only)

Preamble: (65 Hours)

The objectives of this course are:

- To impart knowledge on various aspects of e-Commerce and internet

- To provide knowledge about applications of e-Commerce and internet

Unit I:

E-Commerce: Meaning-Definition -Features-Need-Elements-Levels of e-commerce - e-commerce procedures-Critical factors for e-commerce success- e-commerce system-Launching an online store- Advantages and disadvantages of e-commerce. **(13 Hours)**

Unit II:

Electronic Data Interchange: Types of Business Data Transfer System-Definition of EDI- Features and importance of EDI- Objectives of EDI-EDI services – Uses and applications of EDI-Advantages and Limitations of EDI. **(13 Hours)**

Unit III:

Internet and World Wide Web: Meaning of Networking –Elements of network infrastructure- Software Tools-Network infrastructure installation. Security Concepts- Risk in usage of internet-Firewalls-benefits- components-cryptography. **(13 Hours)**

Unit IV:

E-Commerce process and payment solutions: Need for solutions –Essentials of good solutions – advantages of e-commerce solutions – Technology standards for e-commerce – e-business solutions matrix- shopping cart- types of merchant account- classifications of payment system – payment methods – processing of financial transactions . **(13 Hours)**

Unit V:

E- Banking: Meaning- Electronic Fund Transfers- E-cheque-Steps for online banking- Advantages and disadvantages of online banking -Security of internet banking. Mobile Computing Framework-Applications of Mobile computing- Advantages and disadvantages of mobile computing. **(13 Hours)**

Books for Reference:

E-Commerce E-Business	:	Dr.C.S. Rayudu
		Himalaya Publishing House, Delhi.Ed.2012
E-commerce	:	Puja Walia Mann and Nidhi
		MJP Publishers, Chennai. Ed.2009Electronic Commerce-
A Manager's Guide	:	Ravi Kalakota and Andrew B. Whinston
		Addison Wesley. Ed. 2009.

Course Designed By : Dr.C.Pushpalatha
Course Reviewed By : Dr.N.Lakshmi
Checked By   :   Dr.K.Punithavalli

M.Com
Semester III
(For students admitted from the academic year 2014 – 2015 only)
Diploma Paper III- Data Analysis using Ms Excel

List of programs

- Presentation of Budget - Fixed,Flexible
- Presentation of Budget - Sales, Production &Cash
- Preparation of Employee Payroll
- Computation of Simple Interest, Compound Interest
- Computation of Present value, Annuity
- Calculation of Simple Correlation co-efficient
- Calculation of Linear Regression Analysis
- Analysis of Variance
- Chi-square test
- Drawing of Graphs and Charts(52 Hours)

M.Com
Semester IV
Optional Paper II -Management Information System 14MCMI
(For students admitted from the academic year 2014 – 2015 only)

Preamble: **(65 Hours)**

The objectives of this course are:
- To impart knowledge on the management information system.
- To know about the structure of various information systems.

Unit I

Management Information System: Evolution of MIS – Growth of MIS – Theories of evolution of MIS – Characteristics of MIS – Subsystems of MIS – Executive Information System – Information Resource Management – Role of MIS – Enterprise Information System.
(13 Hours)

Unit II

System Concepts – Types of Systems – Structure of MIS: Organizational Function and Information Requirement – Extent of Integration of Information System – Man-Machine Interaction – Information Network. Transaction Processing System: Transaction Processing Cycle – Features of TPS – Transaction Document – Transaction Processing Modes – Functional TPS. **(13 Hours)**

Unit III

Decision Support Systems: Types of DSS – Characteristics of DSS – Components of DSS – DSS tools for different level of management – DSS Capabilities – Group Decision Support Systems. Expert Systems: Components of ES – Advantages of ES – Limitation of ES – Planning for MIS. **(13 Hours)**

Unit IV

Systems Development: Systems Development Methodologies – People involved in Systems Development – Tools for System Development – Software Development Process. Systems Analysis: Structured Systems Analysis – Systems Analysts. System Design: Input Design – Procedure Design – File Design – Database Design – Design Documentation.
(13 Hours)

Unit V

Program Development: Techniques of Program Development – Modular Programming – Structured Programming – Dataflow Diagram – Data Dictionary – Decision Table – Decision Tree – Flowcharts.Systems Implementation: Steps in Systems Implementation – Factors for Successful Implementation – Causes of Implementation Failures – Project Management.
(13 Hours)

Book for Study
1. Management Information System : P.Mohan
                                         Himalaya Publishing House
                                         Mumbai. Edition 2007.

Book for reference
1. Management Information System : Amanjindal
                                         Kalyani Publication, Edition 2012.
2. Management Information System :   Rajagopalan SP
                                         Margham Publication, Edition 2014.
                     Course Designed By : Dr.M.Kalavathi
                     Course Reviewed By : Dr.N.Lakshmi
                     Checked By   :   Dr.K.Punithavalli

Diploma Paper IV- Photoshop

List of programs
- Create a ZIF transparency.
- Design a 3D text.
- Create a typographical style sheet.
- Use the heal brush and make change in an image.
- Build a glow effect with stroke path.
- Show/hide a layer.
- Merge two or more layers.
- Create different layer effect.
- Build lighting effects and difference clouds.
- Annotate files with text and audio.
- Create type masking.
- Build a filter based ZIF animation.
- Create an advertisement.
- Design a student ID card.

Create a news letter.   **(52 Hours)**

B.Com
Semester wise Distribution with scheme of Examination
(For the candidates admitted during the academic year 2012-2013 & onwards)

Semester	COURSE	Credits	Duration of Exam Hrs (ESE)	Marks CIA	Marks ESE	TOTAL
I	Part I – Language - I	3	3	25	75	100
	Part II – English - I	3	3	25	75	100
	Part III - Core I- Accountancy-I	4	3	25	75	100
	Core II- Business Organisation	4	3	25	75	100
	Allied I - Computer Applications in Business	5	3	25	75	100
	Part IV – Environmental Studies	2	-	50	-	50
II	Part I– Language -II	3	3	25	75	100
	Part II – English - II	3	3	25	75	100
	Part III - Core III –Accountancy - II	4	3	25	75	100
	Core IV - Marketing	4	3	25	75	100
	Allied II – Computer Applications in Business Practical	5	3	40	60	100
	Part IV – Value Education	2	-	50	-	50
	Advanced Learners' Course I Advertisement Management	3*	3	-	100	100
III	Part III-Core V– Principles of Management	4	3	25	75	100
	Core VI -Commercial Law	4	3	25	75	100
	Core VII-Accountancy-III	4	3	25	75	100
	Core VIII- Export Import Procedures and Documentation	3	3	25	75	100
	Allied III – Mathematics in Business	5	3	25	75	100
	Part IV – Non Major Elective	2	-	75	-	75
	Skill Based Course I – Entrepreneurial Development I	3	-	100	-	100

	Part III - Core IX-Business Communication	4	3	25	75	100
	Core X-Company Law	4	3	25	75	100
	Core XI-Accountancy - IV	4	3	25	75	100
	Core XII- Auditing	3	3	25	75	100
	Allied IV-Statistics for Business	5	3	25	75	100
IV	Part IV – General Awareness	2	-	75	-	75
	Skill Based Course II– Entrepreneurial Development II	3	-	100	-	100
	Advanced Learners' Course II					
	Principles of Insurance	3*	3	-	100	100
	Part V – Extension Activities	1	-	-	50	50
	Part III – Core XIII- Cost Accounting	4	3	25	75	100
	Core XIV- Income Tax	4	3	25	75	100
	Core XV- Financial Management	4	3	25	75	100
V	Subject Viva Voce	2	3	25	75	100
	Elective I – Basics of Banking	5	3	100	-	100
	Part IV– Skill Based Course III – Entrepreneurial Development Practical	3	-	100	-	100
	Part III-Core XVI-Management Accounting	4	3	25	75	100
	Core XVII – Accountancy –V	4	3	25	75	100
	Core XVIII - Investment Management	4	3	25	75	100
VI	Elective II- Banking Operations	5	3	100	-	100
	Elective III- Computerised Accounting- Tally	5	3	40	60	100
	Part IV – Skill Based Course IV- Project	3	-	100	-	100
	Advanced Learners' Course III					
	Working Capital Management	3*	3	-	100	100

Total Credits   **140**

Starred Credits are treated as additional credits.

30 percent of the syllabus in each course should be taught using LCD and OHP.

Paper to be handled by Commerce Department :

Allied III: Principles of Accountancy for B.Sc Mathematics in the III Semester.

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B.Com.
Semester I
Allied I - Computer Applications in Business   112AB1
(For students admitted from 2012-2013 and onwards)

</div>

Preamble: (75Hours)

The objectives of this course are:
- To provide awareness on computer applications.
- To impart students with basic knowledge of computer applications in business.

Module I:

Definition of Computer – characteristics of computer – importance of computer – computer applications – classification of computer – Computer system – *Development of computer and computer generation.* (15 Hours)

Module II:

Data processing: concepts – kinds of data processing – objectives of data processing – steps in data processing – data processing operations – Data Bank – Data Base – Data Base Management System – Methods of data processing. (15 Hours)

Module III:

Data base – characteristics of data base – types of data base – data base structure – problems with manual data base – advantages of using computers for data base – objectives and benefits of DBMS – classification of DBMS. (15 Hours)

Module IV:

Programming: problem solving and programming – problem definition – concept of programming – programming tools. Computer network: Local Area Network – Wide Area Network – Metropolitan Area- Network – Wireless Local Area Network. Intranet: Features and working – Extranet. (15 Hours)

Module V:

Internet – definition –Uses of internet – Internet connection – Modem: uses, types. Internet Service Provider – Internet Explorer. E-mail: creating E-mail address- Types – advantages.
(15 Hours)

Book for Study:

Computer applications in Business : R. Parameswaran,
S.Chand and Co, New Delhi Edition 2010
Computer application in Business : Dr. S.V. Srinivasa Vallabhan,
Sultan Chand and Sons, New Delhi Edition2002

Starred and Underlined Portion   : Self Study.
Course Designed By   : R. Parameswari, M. Kalavathi
Course Reviewed By   : N. Lakshmi
Checked By   : K. Punithavalli

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B.Com.
Semester II
Allied II – Computer Applications in Business Practical   212AB2
(For students admitted from 2012-2013 and onwards)
List of Practical (75Hours)

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Ms Word:
1. Create a Document and perform the following
   a. Insert Header and Footer
   b. Find and Replace Text
   c. Use Column Form
2. Formatting of a Text document

3. Preparation of a Time Table
4. Preparation of a Curriculum Vita
5. Design a Cheque Leaf for a Bank
6. Prepare an Invoice
7. Send an Invitation to various colleges for the workshop using Mail Merge
8. Advertisement Copy

Ms Excel:
9. Prepare a Payroll for an employee using MS-Excel
10. Design a Mark Sheet
11. Calculate Annuity, Simple Interest, Compound Interest, Depreciation and Average
12. Create a chart for Sales, Purchase for a period of ten years

Ms Access:
13. Prepare a Product Database
14. Prepare a Student Database
15. Create an Employee Database
16. Prepare a Customer Database
17. Ms PowerPoint:
18. Prepare a Slide Show for organising a Seminar
19. Design a Slide Show for College Day Event
20. Prepare a Slide show for Paper Presentation
21. Demonstrate a product using Custom Animation

B.Com.
Semester III   312B08
Part III - Core VIII – Export-Import Procedures and Documentation
(For Students admitted from 2012-2013 and onwards)
Preamble :   (52Hours)

The objectives of this course are:
- To expose the students with export and import trade.
- To familiarize the students with procedures of export import trade.

Module I :

Export-Import Policy of India- Objectives – Highlights of EXIM Policy 2004-09 - Export Promotion measures in India. Export procedure – Registration stage – pre-shipment stage – post-shipment stage–quality control and pre-shipment inspection.
(11 hours)

Module II :

Procedure for Excise clearance – shipping and Customs formalities – procedure for realization of export proceeds – realization of export incentives.   (11 hours)

Module III:

Proforma invoice – Commercial invoice – Packing list – Mate's Receipt – Bill of Lading – Certificate of Origin – Shipping Bill – Consular invoice – Air way Bill – GR form.
(10 hours)

Module IV:

Import procedure – liberalization of imports – categories of importers – special schemes for imports – pre-import procedure.   (10 hours)

Module V:

Import procedure: legal dimensions of import procedure – retirement of import documents–customs clearance procedure for imported goods– Bill of Entry.   (10hours)

Book for Study:
Export Import Procedures &: Acharya Jain
    Documentation   Himalaya Publishing House, 2ⁿᵈ Edition,2010, Mumbai

Book for REFERENCES:

Export Management   : T.A.S. Balagopal,
                            Himalaya Publishing House, 20thEdition,2010, Mumbai
Export Management   : D.C.Kapoor,
                            Vikas Publishing House, Edition 2007, New Delhi

Course Designed By   : R.Vanamadevi
Course Reviewed By   : Dr.G.Suguna
Checked By   : Dr.K.Punithavalli

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B.Com.

Semester III   **312BS1**

Skill Based Course I – Entrepreneurial Development I
(For Students admitted from 2012-2013 and onwards)
</div>

Preamble :   **(38Hours)**

The Objectives of this course are:

- To give exposure to the students to entrepreneurial culture.
- To guide the students to setup and manage small units.

Module I:

Entrepreneur: Meaning– Characteristics – Functions - Types – Entrepreneurs and managers – Entrepreneur and Economic Development.   (8 Hours)

Module II:

Entrepreneurship– Characteristics – Factors stimulating Entrepreneurship – Environment for Entrepreneurship-Factors affecting Entrepreneurship growth.   (8Hours)

Module III:

Entrepreneurial Development Programmes: Need – objectives – phases of EDP
                                                               (7 Hours)

Module IV:

Women Entrepreneurs –types-problems-remedial measures.   (8 Hours)

Module V:

Micro Small and Medium Enterprises (MSME) - Steps for starting   Micro Small and Medium Enterprises   (7 Hours)

Book for study:

Entrepreneurship development   : E. Gordon and K. Natarajan
                                  Himalayan Publishing House, Delhi, Ed, 2009.

Books for Reference:

Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
                                   Sultan Chand and Sons, Delhi. Edition, 2005.
Fundamentals of entrepreneurship : Renu arora and S.K. Sood
and small business   Kalyani Publishers, New Delhi. Edition, 2004.

Course Designed By   : R. Vanamadevi
Course Reviewed By   : R. Parameswari
Checked By   : K. Punithavalli

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B.Com.

Semester IV

Skill Based Course II –Entrepreneurial Development II 412BS2

(For students admitted from 2012-2013 and onwards)

(38 Hours)

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Preamble:

The Objectives of this course are:
- To familiarize the students with the preparation of feasibility report
- To give exposure to the students about financial support

Module I

Project Identification: Meaning – Definition- Project classification- Project life cycle-Steps in project identification. (8 hours)

Module II

Project Report: Contents – Importance- Guidelines in preparing a project report-Reasons for the failure of a project report (7 hours)

Module III

Project Appraisal: Meaning – Definition – Kinds of analysis. (7hours)

Module IV

Institutional Support to Entrepreneurs: SIDO- SISI-NSIC-NRDC-SIDC-TCO-DIC.
(8 hours)

Module V

Institutional Finance to Entrepreneurs: SFC-TIIC-SIDBI- Commercial banks.
(8 hours)

Book for study:

Entrepreneurship development   : E. Gordon and K. Natarajan
              Himalayan Publishing House, Delhi, Ed 2009.

Books for Reference:

Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
              Sultan Chand and Sons, Delhi. Ed 2005.

Fundamentals of entrepreneurship : Renu arora and S.K. Sood
and small business   Kalyani Publishers, New Delhi. Ed 2004.

Course Designed By   :   R. Vanamadevi
Course Reviewed By   :   R. Parameswari
Checked By   :   K. Punithavalli

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B.Com.

Semester V   **512BE1**

Part III - Elective I – Basics of Banking

(For students admitted from 2012-2013 and onwards)

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Preamble :

The objective of this course are :
- To expose the students to the basics of banking and banking operations.

Module I:

Evolution of Money-Evolution of Banking-Banking in India.

Module II:

Overview of Banking: Definition of Banking-Roles of Banks-Banking, a Business of Trust-Banking Services and Products-Banking Channels.

Module III:
Types of Customers: Introduction-Modes of Operation- Individuals-Proprietorship-Partnership-Joint stock Company-Trusts, Societies, Clubs-Government bodies-others.
Module IV:
Banker Customer relationship: Definition of a customer-Relationship between banker and customer-Rights and obligations of Banker.
Module V:
Types of Deposits: Demand and Term Deposits, Two in one accounts, Recurring deposits.
Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.
Book for Reference:
Banking Principles & Operations : M.Gopinath,
Snow White Publishers, Mumbai, First Ed 2008.

B.Com.   512BS3
Semester V
Part IV - Skill Based Course III – Entrepreneurial Development Practical
The course allows students to have   experiential learning through hands-on-training to meet the real-world needs and simultaneously serve as a valuable adjunct to traditional instruction provided in Skill Based Course I & II. This helps the learners to develop skills which give scope for initial self employment upon graduation. The students will be provided with practical classes in some of the micro ventures. The performance in the program would be the basis for evaluation.

List of Practical
Artificial Jewellery making
Flower arrangement-Artificial
Flower arrangement-Natural
Sanskar Bharathi Rangoli
Door Decoratives
Function Plate Decorations
Photos with 3D Effects
Bridal Makeup

B.Com.
Semester VI   612BE2
Part III - Elective II- Banking Operations
Preamble :
The objective of this course is:
- To expose the students to the banking operations.
Module I:
Account opening: KYC and AML guidelines,KYC Policy-KYC documents-Opening Accounts of Individuals-Opening accounts of firms, companies, societies, trusts-General precaution.
Module II:
Account Operations: Negotiable Instruments-Payment and collection of cheques-Special Requests-Special Situations-Anti Money Laundering.
Module III:
Cheque Collection Services: Clearing of local cheques-National Clearing-ECS.

Module IV:

Payment and Remittance Services: Payorders, Drafts-Features,issue, payment, cancellation, issue of duplicate, revalidation, legal aspects-Electronic Funds transfer.

Module V:

Finacle: Banking Software-Introduction- Menu options- Basic transactions-cash, remittances, inquiries and account modifications.

Courseware: e learning platform offered by ICICI Bank under the title Fundamentals of Banking. An Online Practical Test offered by ICICI Bank will be completed by the students.

Book for Reference:

Banking Principles & Operations: M.Gopinath,
Snow White Publishers, Mumbai, First Ed 2008.

B.Com.
Semester VI   **612BE3**
Part III - Elective III - Computerized Accounting- Tally
(For Students admitted from 2012-2013 and onwards)
                                                   (75 Hours)
List of Practical

1. Creation of Company in Tally
2. Enabling Accounting Features
3. Group Creation and Alteration (single and multiple)
4. Ledger Creation and Alteration (single and multiple)
5. Display of books, Trial Balance, Profit and Loss Account and Balance Sheet
6. Altering Inventory Features
7. Altering Statutory Features
8. Altering Taxation Features
9. Creation and alteration of measures of units
10. Stock Group creation and alteration
11. Stock Item creation and alteration
12. Display of Stock summary
13. Cost center creation and alteration
14. Creation of Tax Masters
15. Display of Ratios
16. Back up and Restoration

B.Com.
Semester VI
Part IV - Skill Based Course IV - Project   612BS4
(For students admitted from 2012-2013 and onwards)

A project report is to be submitted by each candidate covering any one of the entrepreneurial ventures or issues. The report carries 75 marks and viva voce carries 25 marks.

M.Com
Semesterwise Distribution with Scheme of Examination
(For students admitted from 2014 – 2015 onwards)

Semester	COURSE	Duration of Exam Hrs (ESE)	Marks CIA	Marks ESE	Total	Credits
I	Core I - Business Environment	3	25	75	100	5
	Core II - Managerial Economics	3	25	75	100	5
	Core III - Financial Management	3	25	75	100	5
	Elective I - Marketing Management	3	25	75	100	3
	Diploma Paper I - Ms Office - Practicals	3	100	-	100	3
II	Core IV - Research Methodology	3	25	75	100	5
	Core V- Managerial Accounting	3	25	75	100	5
	Core VI - Human Resource Management	3	25	75	100	5
	Institutional Training	3	100	-	100	3
	Elective II - Retail Management	3	25	75	100	3
	Diploma Paper II – HTML & DHTML	3	100	-	100	3
	Advanced Learners' Course - I Services Marketing	3	-	100	100	4*
III	Core VII – Statistical Methods	3	25	75	100	5
	Core VIII Security Analysis and Portfolio Management	3	25	75	100	5
	Core IX- Export Management	3	25	75	100	5
	Project	-	-	-	-	-
	Elective III - Organisational Behaviour	3	25	75	100	3
	Diploma Paper III – Data Analysis using Ms Excel	3	100	-	100	3
IV	Core X– Strategic Management	3	25	75	100	5
	Core XI- Financial Services	3	25	75	100	5
	Project	-	100	100	200	8
	Elective IV Logistics Management	3	25	75	100	3
	Diploma Paper IV - Photoshop	3	100	-	100	3
	Advanced Learners' Course II Income Tax	3	-	100	100	4*
	Total Credits					**90**

*Starred Credits are treated as additional credits.

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Diploma Paper I - Ms Office –Practicals
(For students admitted from 2014 – 2015 onwards)

</div>

List of Practicals:

Ms Word:
- Create an advertisement copy.
- Create a mail merge and draft a letter.
- Program sheet preparation.
- Invitation card.
- Resume preparation

Ms Power Point:
- Presentation of power point presentation.
  - Picture insertion
  - Chart creation
  - Animation
  - Hyperlink
- Preparation of meeting presentation

Ms-Access:
  - Customer
  - Supplier
  - Employee
  - Shareholder   (52 Hours)

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M.Com
Semester II
Institutional Training
(For students admitted from 2014– 2015 onwards)

</div>

Institutional Training

   The student shall undergo the Institutional Training in any of the following institutions for two weeks
 1. Commercial Banks
2. Insurance Companies
3. Joint Stock Companies
4. Logistic Companies
5. Co-operative Societies
6. Share Brokers, Firms of Investment Consultants
7. Professional Firms – like firms of Chartered Accountants / Cost Accounts / Company Secretaries
8. Travel Agencies and Courier Services
 A Report submitted by the student on the completion of the training would be subject to Internal Evaluation with 50 marks for Report and viva voce 50 marks

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M.Com
Semester II
Elective II - Retail Management   **14MCE02**
(For students admitted from 2014-2015 onwards)

</div>

Preamble: (65 Hours)
The objectives of this course are:
- To understand the concepts in retail management
- To promote the practitioners of retail trade

Module I

Retailing- Characteristics - Drivers of retailing in India-Functional activities- Steps in Retail Management-Trends in retail Formats.   (13 Hours)

Module II

Retail Location- Selecting the right location- steps: Regional Analysis- Trading area analysis - Actual Site Analysis- Features of the site – Retail location opportunities – Location and Retail strategy.   (13 Hours)

Module III

Retail Pricing- Concept of pricing- Pricing strategies – factors affecting retail pricing strategies- Classification of potential Pricing objectives – Determining Pricing strategy and policies.   (13 Hours)

Module IV

Retail Sales Promotion- Advertising – Types of Advertising – Selecting specific media vehicles- Sales Promotion- Objectives- Personal Selling – Process in Personal Selling. (13 Hours)

Module V

Retail Customer Service - Service objectives – Customer service process – Customer service activities – customer retention – Approaches – Customer Response Management – Implementing CRM programmes – GAPS model.   (13 Hours)

Books for Reference:

1.Modern Retail Management,   J.N.Jain P.P. Singh
  Principles and Techniques   Regal Publications ,New Delhi, 2012

2. Retail Management in New Dimension   Kuldeep Singh
                    Global Vision Publishing House, 2011
3. Retailing Management,Text &Cases   Swapna Pradhan
                    Tata Mc-Graw Hill Publishing Company
                    New Delhi, Edition 2010.

Diploma Paper II - HTML & DHTML

List of Programmes

- Design webpage with display text in physical & logical tags.
- Create a webpage with internal links.
- Construct a webpage and display a table using HTML.
- Construct a webpage and display various course offered by college using list tags in HTML.
- Create a webpage with two horizontal frames.
- Create a webpage with links between two vertical frames.
- Design a webpage for hospital.
- Design a webpage with list.
- Create a webpage using cascading style sheet.
- Create a student admission application form.
- Design a registration form for online exam.
- Design a login form.
- Create a simple webpage for a company.
- Design a website for a Bank.   (52 Hours)

M.Com
Semester wise Distribution with Scheme of Examination
(For students admitted from 2012– 2013 and onwards)

Semester	COURSE	Duration of Exam Hrs (ESE)	CIA	ESE	Total	Credits
I	Core I- Business Environment	3	25	75	100	5
	Core II- Managerial Economics	3	25	75	100	5
	Core III- Financial Management	3	25	75	100	5
	Elective I- Marketing Management	3	25	75	100	4
	Diploma Course Paper I	3				2
II	Core IV –Research Methodology	3	25	75	100	5
	Core V- Managerial Accounting	3	25	75	100	5
	Core VI- MS Office- Practical	3	40	60	100	5
	Institutional Training	3	40	60	100	3
	Elective II- Organisational Behaviour	3	25	75	100	4
	Diploma Course Paper II	3				3
	Advanced Learners' Course I Services Marketing	3	-	100	100	4*
III	Core VII – Statistical Methods	3	25	75	100	5
	Core VIII Security Analysis and Portfolio Management	3	25	75	100	5
	Core IX- Export Management	3	25	75	100	5
	Project	-	-	-	-	-
	Elective III- Human Resource Management	3	25	75	100	4
	Diploma Course Paper III	3				2
IV	Core X– Strategic Management	3	25	75	100	5
	Core XI- Financial Services	3	25	75	100	5
	Project	-	100	100	200	6
	Elective IV Internet & e-Commerce	3	25	75	100	4
	Diploma Course Paper IV	3				3
	Advanced Learners' Course II Direct Taxes	3	-	100	100	4*

Total Credits   **90**

*Starred Credits are treated as additional credits

M.Com
Semester IV
Elective IV – Internet and E-Commerce   11MCE4
(For Students admitted from 2011 – 2012 and onwards)

Preamble: **(75 Hours)**

The objectives of this course are:

- To Provide an overview of e-commerce techniques.
- To impart knowledge about applications of e-commerce in business.

Module I :

Introduction to e-commerce – Definition - *History - *Forces fueling e-commerce – e-commerce industry framework – Business Models of e-commerce.   (15 Hours)

Module II :

Internet and Access provider Industry – Internet Service Providers – Companies providing internet access – Internet Vs On-line service. World Wide Web applications – meaning – web and e-com - web and intra business commerce.   (15 Hours)

Module III :

Fire walls and transaction security – firewalls and network security – transaction security – encryption and transaction security – www and security.   (15 Hours)

Module IV :

Electronic payment system – emergence of electronic payment technology - *Limitations and problems of traditional payment methods – e-cheques – on-line credit card based system – other emerging financial instruments.   (15 Hours)

Module V :

Electronic Commerce and Banking – Changing dynamics in the banking industry – Home banking – open Vs closed model – Management issues in on-line banking – Pricing issues in on-line banking – Marketing issues on-line banking.   (15 Hours)

Self study: Starred and Underlined Portions

Books For Reference:

Electronic Commerce - A Manager's Guide	:	Ravi Kalakota and Andrew B.Whinston, Addison Wesley, Edition 2009.
Electronic Commerce	:	S.V. Murthy, Himalaya Publishing House, New Delhi, Edition - 2002.
E-Commerce-A Managerial Perspective	:	P.T. Joseph, Prentice Hall Of India, New Delhi, Edition-2002.
E-Commerce New Vistas For Business	:	T.N. Chhabra, R.K. Suri and Sanjiv Verma, Dhanpat Rai and Co Delhi Ed, 2005

Course Designed By   : M. Kalavathi
Course Reviewed By   : G. Suguna
Checked By   : K. Punithavalli

B.Com.
Semester wise Distribution with scheme of Examination
(For the candidates admitted during the academic year 2012-2013 & onwards)

Semester	COURSE	Credits	Duration of Exam Hrs (ESE)	Marks CIA	Marks ESE	TOTAL
I	Part I – Language - I	3	3	25	75	100
	Part II – English - I	3	3	25	75	100
	Part III - Core I- Accountancy-I	4	3	25	75	100
	Core II- Business Organisation	4	3	25	75	100
	Allied I - Computer Applications in Business	5	3	25	75	100
	Part IV – Environmental Studies	2	-	50	-	50
II	Part I– Language -II	3	3	25	75	100
	Part II – English - II	3	3	25	75	100
	Part III - Core III –Accountancy - II	4	3	25	75	100
	Core IV - Marketing	4	3	25	75	100
	Allied II – Computer Applications in Business Practical	5	3	40	60	100
	Part IV – Value Education	2	-	50	-	50
	Advanced Learners' Course I Advertisement Management	3*	3	-	100	100
III	Part III-Core V– Principles of Management	4	3	25	75	100
	Core VI -Commercial Law	4	3	25	75	100
	Core VII-Accountancy-III	4	3	25	75	100
	Core VIII- Export Import Procedures and Documentation	3	3	25	75	100
	Allied III – Mathematics in Business	5	3	25	75	100
	Part IV – Non Major Elective	2	-	75	-	75
	Skill Based Course I – Entrepreneurial Development I	3	-	100	-	100

	Part III - Core IX-Business Communication	4	3	25	75	100
	Core X-Company Law	4	3	25	75	100
	Core XI-Accountancy - IV	4	3	25	75	100
	Core XII- Auditing	3	3	25	75	100
	Allied IV-Statistics for Business	5	3	25	75	100
IV	Part IV – General Awareness	2	-	75	-	75
	Skill Based Course II– Entrepreneurial Development II	3	-	100	-	100
	Advanced Learners' Course II					
	Principles of Insurance	3*	3	-	100	100
	Part V – Extension Activities	1	-	-	50	50
	Part III – Core XIII- Cost Accounting	4	3	25	75	100
	Core XIV- Income Tax	4	3	25	75	100
	Core XV- Financial Management	4	3	25	75	100
V	Subject Viva Voce	2	3	25	75	100
	Elective I – Basics of Banking	5	3	100	-	100
	Part IV– Skill Based Course III – Entrepreneurial Development Practical	3	-	100	-	100
	Part III-Core XVI-Management Accounting	4	3	25	75	100
	Core XVII – Accountancy –V	4	3	25	75	100
	Core XVIII - Investment Management	4	3	25	75	100
VI	Elective II- Banking Operations	5	3	100	-	100
	Elective III- Computerised Accounting-Tally	5	3	40	60	100
	Part IV – Skill Based Course IV- Project	3	-	100	-	100
	Advanced Learners' Course III					
	Working Capital Management	3*	3	-	100	100

Total Credits   **140**

Starred Credits are treated as additional credits.

30 percent of the syllabus in each course should be taught using LCD and OHP.

Paper to be handled by Commerce Department :

Allied III: Principles of Accountancy for B.Sc Mathematics in the III Semester.

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B.Com.
Semester I
Allied I - Computer Applications in Business   112AB1
(For students admitted from 2012-2013 and onwards)

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Preamble: **(75Hours)**

The objectives of this course are:

- To provide awareness on computer applications.
- To impart students with basic knowledge of computer applications in business.

Module I:

Definition of Computer – characteristics of computer – importance of computer – computer applications – classification of computer – Computer system – *Development of computer and computer generation.*   (15 Hours)

Module II:

Data processing: concepts – kinds of data processing – objectives of data processing – steps in data processing – data processing operations – Data Bank – Data Base – Data Base Management System – Methods of data processing.   (15 Hours)

Module III:

Data base – characteristics of data base – types of data base – data base structure – problems with manual data base – advantages of using computers for data base – objectives and benefits of DBMS – classification of DBMS.   (15 Hours)

Module IV:

Programming: problem solving and programming – problem definition – concept of programming – programming tools. Computer network: Local Area Network – Wide Area Network – Metropolitan Area- Network – Wireless Local Area Network. Intranet: Features and working – Extranet.   (15 Hours)

Module V:

Internet – definition –Uses of internet – Internet connection – Modem: uses, types. Internet Service Provider – Internet Explorer. E-mail: creating E-mail address- Types – advantages.
                                                                             (15 Hours)

Book for Study:

Computer applications in Business :   R. Parameswaran,
                                      S.Chand and Co, New Delhi Edition 2010
Computer application in Business   : Dr. S.V. Srinivasa Vallabhan,
                                       Sultan Chand and Sons, New Delhi Edition2002

Starred and Underlined Portion   : Self Study.
Course Designed By   : R. Parameswari, M. Kalavathi
Course Reviewed By   : N. Lakshmi
Checked By   : K. Punithavalli

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B.Com.
Semester II
Allied II – Computer Applications in Business Practical   212AB2
(For students admitted from 2012-2013 and onwards)
List of Practical   (75Hours)

</div>

Ms Word:

1. Create a Document and perform the following
   d.Insert Header and Footer

    e.Find and Replace Text
    f. Use Column Form
2. Formatting of a Text document
3. Preparation of a Time Table
4. Preparation of a Curriculum Vita
5. Design a Cheque Leaf for a Bank
6. Prepare an Invoice
7. Send an Invitation to various colleges for the workshop using Mail Merge
8. Advertisement Copy

Ms Excel:
9. Prepare a Payroll for an employee using MS-Excel
10. Design a Mark Sheet
11. Calculate Annuity, Simple Interest, Compound Interest, Depreciation and Average
12. Create a chart for Sales, Purchase for a period of ten years

Ms Access:
13. Prepare a Product Database
14. Prepare a Student Database
15. Create an Employee Database
16. Prepare a Customer Database
17. Ms PowerPoint:
18. Prepare a Slide Show for organising a Seminar
19. Design a Slide Show for College Day Event
20. Prepare a Slide show for Paper Presentation
21. Demonstrate a product using Custom Animation

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B.Com.

Semester III   **312B08**

Part III - Core VIII – Export-Import Procedures and Documentation
(For Students admitted from 2012-2013 and onwards)

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Preamble :   **(52Hours)**

        The objectives of this course are:
- To expose the students with export and import trade.
- To familiarize the students with procedures of export import trade.

Module I :
        Export-Import Policy of India- Objectives – Highlights of EXIM Policy 2004-09 - Export Promotion measures in India. Export procedure – Registration stage – pre-shipment stage – post-shipment stage–quality control and pre-shipment inspection.
                                                    (11 hours)

Module II :
        Procedure for Excise clearance – shipping and Customs formalities – procedure for realization of export proceeds – realization of export incentives.   (11 hours)

Module III:
        Proforma invoice – Commercial invoice – Packing list – Mate's Receipt – Bill of Lading – Certificate of Origin – Shipping Bill – Consular invoice – Air way Bill – GR form.
                                                    (10 hours)

Module IV:
        Import procedure – liberalization of imports – categories of importers – special schemes for imports – pre-import procedure.   (10 hours)

Module V:
        Import procedure: legal dimensions of import procedure – retirement of import documents–customs clearance procedure for imported goods– Bill of Entry.   (10hours)

Book for Study:
Export Import Procedures &: Acharya Jain
   Documentation   Himalaya Publishing House, 2nd Edition,2010, Mumbai

Book for REFERENCES:
Export Management   : T.A.S. Balagopal,
                          Himalaya Publishing House, 20thEdition,2010, Mumbai
Export Management   : D.C.Kapoor,
                          Vikas Publishing House, Edition 2007, New Delhi

Course Designed By   : R.Vanamadevi
Course Reviewed By   : Dr.G.Suguna
Checked By   : Dr.K.Punithavalli

B.Com.

Semester III   **312BS1**
Skill Based Course I – Entrepreneurial Development I
(For Students admitted from 2012-2013 and onwards)
Preamble :   **(38Hours)**
       The Objectives of this course are:
- To give exposure to the students to entrepreneurial culture.
- To guide the students to setup and manage small units.

Module I:
        Entrepreneur: Meaning– Characteristics – Functions - Types – Entrepreneurs and managers – Entrepreneur and Economic Development.   (8 Hours)

Module II:
        Entrepreneurship– Characteristics – Factors stimulating Entrepreneurship – Environment for Entrepreneurship-Factors affecting Entrepreneurship growth.   (8Hours)
Module III:
        Entrepreneurial Development Programmes: Need – objectives – phases of EDP
                                                                  (7 Hours)
Module IV:
        Women Entrepreneurs –types-problems-remedial measures.   (8 Hours)
Module V:
       Micro Small and Medium Enterprises(MSME) - Steps for starting   Micro Small and Medium Enterprises   (7 Hours)

Book for study:
Entrepreneurship development   : E. Gordon and K. Natarajan
                                    Himalayan Publishing House, Delhi, Ed, 2009.
Books for Reference:
Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
                                     Sultan Chand and Sons, Delhi. Edition, 2005.
Fundamentals of entrepreneurship : Renu arora and S.K. Sood
and small business   Kalyani Publishers, New Delhi. Edition, 2004.

Course Designed By   : R. Vanamadevi
Course Reviewed By   : R. Parameswari
Checked By   : K. Punithavalli

Semester IV

Skill Based Course II –Entrepreneurial Development II   412BS2

(For students admitted from 2012-2013 and onwards)

(38 Hours)

Preamble:

The Objectives of this course are:

- To familiarize the students with the preparation of feasibility report
- To give exposure to the students about financial support

Module I

Project Identification: Meaning – Definition- Project classification- Project life cycle-
Steps in project identification   (8 hours)

Module II

Project Report: Contents – Importance- Guidelines in preparing a project report-
Reasons for the failure of a project report   (7 hours)

Module III

Project Appraisal: Meaning – Definition – Kinds of analysis.   (7hours)

Module IV

Institutional Support to Entrepreneurs: SIDO- SISI-NSIC-NRDC-SIDC-TCO-DIC.
                                                                                    (8 hours)

Module V

Institutional   Finance   to   Entrepreneurs: SFC-TIIC-SIDBI-   Commercial   banks.
                                                                                    (8 hours)

Book for study:

Entrepreneurship development   : E. Gordon and K. Natarajan
                                         Himalayan Publishing House, Delhi, Ed 2009.

Books for Reference:

Entrepreneurial development   : C.B. Gupta and N.P. Srinivasan
                                         Sultan Chand and Sons, Delhi. Ed 2005.

Fundamentals of entrepreneurship   : Renu arora and S.K. Sood
and small business   Kalyani Publishers, New Delhi. Ed 2004.

Course Designed By   :   R. Vanamadevi
Course Reviewed By   :   R. Parameswari
Checked By   :   K. Punithavalli

Department of Commerce

B.Com. Syllabus – 2011-2012 Batch

Semester	COURSE	Credits	Duration of Exam Hrs (ESE)	Marks CIA	Marks ESE	TOTAL
I	Part I – Tamil / Hindi / French / Malayalam Course - I	3	3	25	75	100
	Part II – English Course - I	3	3	25	75	100
	Part III Core Course I- Accountancy-I	4	3	25	75	100
	Core Course II- Business Organisation	4	3	25	75	100
	Allied Course I – Computer Applications in Business - I	5	3	25	75	100
	Part IV – Environmental Studies	2	3	-	50	50
II	Part I – Tamil / Hindi / French / Malayalam - Course II	3	3	25	75	100
	Part II – English - Course II	3	3	25	75	100
	Part III Core Course III –Accountancy - II	4	3	25	75	100
	Core Course IV - Marketing	4	3	25	75	100
	Allied Course II – Computer Applications in Business II - Practicals	5	3	40	60	100
	Part IV – Value Education	2	3	-	50	50
	Advanced Learners' Course –I Advertisement Management	3*	3	-	100	100
III	Part III Core Course -V – Principles of Management	4	3	25	75	100
	Core Course VI -Commercial Law	4	3	25	75	100
	Core Course VII-Accountancy-III	4	3	25	75	100
	Core Course VIII- Export Import Procedures and Documentation	3	3	25	75	100
	Allied Course III – Mathematics in Business	5	3	25	75	100
	Part IV – Non Major Elective Course I	2	3	-	75	75
	Skill based Course I – Principles of Banking	3	3	25	75	100
IV	Part III Core Course IX- Business Communication	4	3	25	75	100
	Core Course X-Company Law	4	3	25	75	100
	Core Course XI-Accountancy IV	4	3	25	75	100
	Core Course XII- Entrepreneurial Development	3	3	25	75	100
	Allied IV-Statistics for Business	5	3	25	75	100
	Part IV - Non Major Elective Course II	2	3	-	75	75

Sem	Course	Credits	Hours	Int	Ext	Total
	Skill based Course II – Basic Banking Operations	3	3	25	75	100
	<u>Advanced Learners' Course-II</u> Principles of Insurance	3*	3	-	100	100
V	Part III – Core Course XIII- Cost Accounting	4	3	25	75	100
	Core Course XIV- Income Tax	4	3	25	75	100
	<mark>Core Course XV- Computerised Accounting – Tally</mark>	4	3	40	60	100
	<mark>Core Course XVI – Entrepreneurial Development - Practicals</mark>	2	3	-	-	100
	Elective Course I – Financial Management	5	3	25	75	100
	<mark>Part IV Skill Based Course III – e Banking</mark>	3	3	25	75	100
VI	Part III- Core Course XVII- Management Accounting	4	3	25	75	100
	Core Course XVIII - Auditing	4	3	25	75	100
	Core Course XIX - Accountancy –V	4	3	25	75	100
	Elective Course II- Investment Management	5	3	25	75	100
	Elective Course III - Financial Services	5	3	25	75	100
	<mark>Part IV – Skill Based Course IV - On-line Banking Course</mark>	3	-	-	100	100
	<u>Advanced Learners' Course – III</u> Working Capital Management	3*	3	-	100	100
	Part V Extension Activities	1	-	-	50	50

Total Credits   140   Starred Credits are treated as additional credits.

B.Com.
Part III –Core Course XV - Computerized Accounting- Tally
(For Students admitted from 2010 – 2011 and onwards)
List of Practicals

1. Creation of Company in Tally
2. Enabling Accounting Features
3. Group Creation and Alteration (single and multiple)
4. Ledger Creation and Alteration (single and multiple)
5. Display of books
6. Display of Trial Balance
7. Display of Profit and Loss Account
8. Display of Balance Sheet
9. Altering Inventory Features

10. Altering Statutory Features
11. Altering Taxation Features
12. Creation and alteration of measures of units
13. Stock Group creation and alteration
14. Stock Item creation and alteration
15. Display of Stock summary
16. Cost center creation and alteration
17. Creation of Tax Masters
18. Display of Ratios
19. Creation of Payroll Masters
20. Back up and Restoration   (72 Hours)

B.Com. / B.Com(CA)/ B.Com(e Com). /B.B.M(CA)
Semester – V
Skill based course III – e-Banking
(For candidates admitted during the academic year 2010 – 2011 and onwards)
Preamble

   To equip the students with the operational aspects of e-banking products and services.
Module I:
       e-Banking – Meaning – Services of e-Banking - e-Banking
and financial services – Benefits – Initiatives and Opportunities – Risk Management for e-Banking – Types of risks – Meaning risks.   (8 Hours)
Module II:
       Internet Banking Vs Traditional Banking – Mechanics of Internet Banking – Major issues of Internet Banking –Drawbacks – Indian scenario – Future Outlook.   (7 Hours)
Module III:
       Mobile Banking: Meaning – Definition – Features – Registration Services – Security issues. Telephone Banking: Meaning – Definition – Features – Mechanism – Banking facilities - Telephone Banking System – Drawbacks – Call centers.   (7 Hours)
Module IV:
       ATM –Concept – Features – ATM Types – Mechanism – ATM functions. (7 Hours)
Module V:
       Electronic Fund Transfer System: Steps – Benefits. Electronic Payment System – Methods of payment.
 INFINET – Factors responsible for launch – Benefits - Application of INFINET. (7 Hours)
Book for Study:
Banking Theory Law & Practice – Dr.S.Gurusamy
                                First Reprint – 2006
                                Vijay Nicole Imprints Private Ltd, Chennai.

Books for Reference:
1. Indian Banking   - S.Natarajan & R.Parameswaran
                                 S.Chand & Co Ltd, New Delhi
                                 Reprint – 2007
2. Banking Principles and Operations- M.N.Gopinath
                                First Edition August 2008
                                Snow White Publication Private Ltd, Mumbai.

M.Com
Semester wise Distribution with Scheme of Examination
(For students admitted from 2012– 2013 and onwards)

Semester	COURSE	Duration of Exam Hrs (ESE)	Marks		Total	Credits
			CIA	ESE		
I	Core I- Business Environment	3	25	75	100	5
	Core II- Managerial Economics	3	25	75	100	5
	Core III- Financial Management	3	25	75	100	5
	Elective I- Marketing Management	3	25	75	100	4
	Diploma Course Paper I	3				2
II	Core IV –Research Methodology	3	25	75	100	5
	Core V- Managerial Accounting	3	25	75	100	5
	Core VI- MS Office- Practical	3	40	60	100	5
	Institutional Training	3	40	60	100	3
	Elective II- Organisational Behaviour	3	25	75	100	4
	Diploma Course Paper II	3				3
	Advanced Learners' Course I Services Marketing	3	-	100	100	4*
III	Core VII – Statistical Methods	3	25	75	100	5
	Core VIII Security Analysis and Portfolio Management	3	25	75	100	5
	Core IX- Export Management	3	25	75	100	5
	Project	-	-	-	-	-
	Elective III- Human Resource Management	3	25	75	100	4
	Diploma Course Paper III	3				2
IV	Core X– Strategic Management	3	25	75	100	5
	Core XI- Financial Services	3	25	75	100	5
	Project	-	100	100	200	6
	Elective IV Internet & e-Commerce	3	25	75	100	4
	Diploma Course Paper IV	3				3
	Advanced Learners' Course II Direct Taxes	3	-	100	100	4*

Total Credits   90

*Starred Credits are treated as additional credits

M.Com
Semester II
Core VI - MS Office –Practical   12MC06
(For students admitted from 2012 – 2013 and onwards)
Preamble: **(75 Hours)**
         The objective of this paper is to provide practical skill for using Ms Office.
List of Practicals:
     Ms Word:
* Create an advertisement copy.
* Create a mail merge and draft a letter.
* Program sheet preparation.
* Invitation card.
* Resume preparation
     Ms Excel:
* **Presentation of Budget.**

-      Flexible
-      Sales
-      Production
-      Cash
- **Preparation of Chart**
- **Preparation of Employee Payroll**
- **Compute mathematics of Finance**
-      Simple Interest
-      Compound Interest
-      Present value
-      Annuity

Ms Power Point:
- **Presentation of power point presentation.**
-      Picture insertion
-      Chart creation
-      Animation
-      Hyperlink
- **Preparation of meeting presentation**
-      Ms-Access:
-      Customer
-      Supplier
-      Employee
-      Shareholder

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M.Com
Semester II
Institutional Training
(For students admitted from 2012– 2013 and onwards)

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Institutional Training

       The student shall undergo the Institutional Training in any of the following institutions for two weeks

 1. Commercial Banks
2. Insurance Companies
3. Joint Stock Companies
4. Logistic Companies
5. Co-operative Societies
6. Share Brokers, Firms of Investment Consultants
7. Professional Firms – like firms of Chartered Accountants / Cost Accounts / Company Secretaries
8. Travel Agencies and Courier Services

 A Report submitted by the student on the completion of the training would be subject to Internal Evaluation with 50 marks for Report and viva voce 50 marks

M.Com
Semester wise distribution with Scheme of Examination
(For students admitted from 2011– 2012 Batch Only)

Semester	COURSE	Duration of Exam Hrs (ESE)	CIA	ESE	Total	Credits
III	Core VIII – Statistical Methods	3	25	75	100	5
	Core IX - Security Analysis and Portfolio Management	3	25	75	100	5
	Core X- Export Management	3	25	75	100	5
	Project	-	-	-	-	-
	Elective III- Human Resource Management	3	25	75	100	4
	Diploma Course Paper III	3				2
IV	Core XI – Strategic Management	3	25	75	100	5
	Core XII - Financial Services	3	25	75	100	5
	Project	-	50	150	200	7
	Elective IV - Internet & e-Commerce	3	25	75	100	4
	Diploma Course Paper IV	3				3
	Advanced Learners' Course II					
	Direct Taxes	3	-	100	100	4*

Total Credits   90

*Starred Credits are treated as additional credits

M.Com
Semester IV
Elective IV – Internet and E-Commerce   11MCE4
(For Students admitted from 2011 – 2012 and onwards)
Preamble: **(75 Hours)**
The objectives of this course are:
- To Provide an overview of e-commerce techniques.
- To impart knowledge about applications of e-commerce in business.

Module I :
          Introduction to e-commerce – Definition - *History - *Forces fueling e-commerce – e-commerce industry framework – Business Models of e-commerce.   (15 Hours)

Module II :
          Internet and Access provider Industry – Internet Service Providers – Companies providing internet access – Internet Vs On-line service. World Wide Web applications – meaning – web and e-com - web and intra business commerce.   (15 Hours)

Module III :
           Fire walls and transaction security – firewalls and network security – transaction security – encryption and transaction security – www and security.   (15 Hours)

Module IV :
          Electronic payment system – emergence of electronic payment technology - *Limitations and problems of traditional payment methods – e-cheques – on-line credit card based system – other emerging financial instruments.   (15 Hours)

Module V :
          Electronic Commerce and Banking – Changing dynamics in the banking industry – Home banking – open Vs closed model – Management issues in on-line banking – Pricing issues in on-line banking – Marketing issues on-line banking.   (15 Hours)

Self study: Starred and Underlined Portions

Books For Reference:

Electronic Commerce - A Manager's Guide	:	Ravi Kalakota and Andrew B.Whinston, Addison Wesley, Edition 2009.
Electronic Commerce	:	S.V. Murthy, Himalaya Publishing House, New Delhi, Edition - 2002.
E-Commerce-A Managerial Perspective	:	P.T. Joseph, Prentice Hall Of India, New Delhi, Edition-2002.
E-Commerce New Vistas For Business	:	T.N. Chhabra, R.K. Suri and Sanjiv Verma, Dhanpat Rai and Co Delhi Ed, 2005
Course Designed By	:	M. Kalavathi
Course Reviewed By	:	G. Suguna
Checked By	:	K. Punithavalli

DEPARTMENT OF COMPUTER SCIENCE
LIST OF VALUE ADDED COURSES

2017-2018:

Program Code	Course Code	Name of the Course
BS	315SS1	SBC I - Web Designing
BS	415SS2	SBC II - Image Designing and Graphics tools
BS	515SS3	SBC III - Image Editor
BS	615SS4	SBC IV -Animation
BS	217VEC	Value Education
BS	117EVS	Environmental Studies
BS	315NDT	Non Major Elective

2016-2017:

Program Code	Course Code	Name of the Course
BS	315SS1	SBC I - Web Designing
BS	415SS2	SBC II - Image Designing and Graphics tools
BS	514SS3	SBC III - Image Editor
BS	614SS4	SBC IV -Animation
BS	216VEC	Value Education
BS	116EVS	Environmental Studies
BS	315NDT	Non Major Elective

2015-2016:

Program Code	Course Code	Name of the Course
BS	314SS1	SBC I -HTML, DHTML & Dream weaver
BS	414SS2	SBC II -PageMaker and Corel Draw
BS	512SS3	SBC III - Photoshop
BS	612SS4	SBC IV - Flash
BS	215VEC	Value Education
BS	115EVS	Environmental Studies
BS	314NDT	Non Major Elective

2014-2015:

Program Code	Course Code	Name of the Course
BS	312SS1	SBC I -HTML, DHTML & Dream weaver
BS	412SS2	SBC II -PageMaker and Corel Draw
BS	512SS3	SBC III - Photoshop
BS	612SS4	SBC IV - Flash
BS	214VEC	Value Education
BS	114EVS	Environmental Studies
BS	313NDT	Non Major Elective

2013-2014:

Program Code	Course Code	Name of the Course
BS	312SS1	SBC I -HTML, DHTML & Dream weaver
BS	412SS2	SBC II -PageMaker and Corel Draw
BS	512SS3	SBC III - Photoshop
BS	612SS4	SBC IV - Flash
BS	213VEC	Value Education
BS	113EVS	Environmental Studies
BS	312NDT	Non Major Elective

DEPARTMENT OF COMPUTER APPLICATIONS

LIST OF VALUE ADDED COURSES-WITH EXPLANATION

Program Code	Year	Course Code	Course	Explanation	No. of courses per year
BK	2017-18	117EVS	Environmental Studies	To promote the core skills and citizenship values.	8
BK	2017-18	217VEC	Value Education	To incorporate the moral values of life.	
BK	2017-18	417NGA	General Awareness	To enlighten the knowledge in various competitive examination	
BK	2017-18	417GIS	Information Security	To make available the digitalized data in the most secured manner, this follows the professional ethics.	
BK	2017-18	415K09	Software Engineering	To get acquainted with the systematic process of software development.	
BK	2017-18	515K11	Computer Networks	Creates awarness about different communication media and different security measures that provided to networks.	
BK	2017-18	515KE1	Data Mining	To develop skills for solving practical problems using data mining algorithms	
BK	2017-18	615KE2	Information Storage and Management	To improve the knowledge in storage and management of corporate information	
BK	2016-17	116EVS	Environmental Studies	To promote the core skills and citizenship values.	7
BK	2016-17	216VES	Value Education	To incorporate the moral values of life.	
BK	2016-17	416NGA	General Awareness	To enlighten the knowledge in various competitive examination	
BK	2016-17	416GIS	Information Security	To make available the digitalized data in the most secured manner, this follows the professional ethics.	
BK	2016-17	412K09	Software Engineering and Testing	To get acquainted with the systematic process of software development.	
BK	2016-17	512K11	Computer Networks	Creates awarness about different communication media and different	

				security measures that provided to networks.	
BK	2016-17	612K13	Data Mining	To develop skills for solving practical problems using data mining algorithms	
BK	2015-16	115EVS	Environmental Studies	To promote the core skills and citizenship values	6
BK	2015-16	215VEC	Value Education	To incorporate the moral values of life.	
BK	2015-16		General Awareness	To enlighten the knowledge in various competitive examination	
BK	2015-16	412K09	Software Engineering and Testing	To get acquainted with the systematic process of software development.	
BK	2015-16	512K11	Computer Networks	Creates awarness about different communication media and different security measures that provided to networks.	
BK	2015-16	612K13	Data Mining	To develop skills for solving practical problems using data mining algorithms	
BK	2014-15	114EVS	Environmental Studies	To promote the core skills and citizenship values.	6
BK	2014-15	214VEC	Value Education	To incorporate the moral values of life.	
BK	2014-15		General Awareness	To enlighten the knowledge in various competitive examination	
BK	2014-15	412K09	Software Engineering and Testing	To get acquainted with the systematic process of software development.	
BK	2014-15	512K11	Computer Networks	Creates awarness about different communication media and different security measures that provided to networks.	
BK	2014-15	612K13	Data Mining	To develop skills for solving practical problems using data mining algorithms	
BK	2013-14	113EVS	Environmental Studies	To promote the core skills and citizenship values.	6
BK	2013-14	213VEC	Value Education	To incorporate the moral values of life.	
BK	2013-14		General Awareness	To enlighten the knowledge in various competitive examination	

BK	2013-14	412K09	Software Engineering and Testing	To get acquainted with the systematic process of software development.	
BK	2013-14	512K11	Computer Networks	Creates awarness about different communication media and different security measures that provided to networks.	
BK	2013-14	612K13	Data Mining	To develop skills for solving practical problems using data mining algorithms	

2017 – 2018

Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiyar University
Department of Computer Applications
Scheme of Examination-CBCS Pattern
Programme : B.C.A
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
115BT1/ 115MY1/ 115HD1/ 115FR1	**Part I:** Language-I	6	3	25	75	100	4
115EN1	**Part II:** English I	6	3	25	75	100	4
	Part III						
115K01	Core I – Programming in C with Data Structure	5	3	25	75	100	4
115KP1	Core Practical I – Programming in C with Data Structure	5	3	40	60	100	4
115AK1	Allied I–Basic Mathematics	6	3	25	75	100	4
115EVS	**Part IV:** Environmental Studies	2	2	50	-	50	2
	Semester II						
215BT2/ 215MY2/ 215HD2/ 215FR2	**Part I:** Language - II	6	3	25	75	100	4
215EN2	**Part II:** English II	6	3	25	75	100	4
	Part III						
215K02	Core II – Programming in C++	3	3	25	75	100	4
215K03	Core III – Digital Fundamentals and Computer Architecture	3	3	25	50	75	3
215KP2	Core Practical II – Programming in C++	4	3	40	60	100	4
215AK2	Allied II – Discrete Mathematics	6	3	25	75	100	4
215VEC	**Part IV:** Value Education	2	2	50	-	50	2

Semester III							
	Part III						
315K04	Core IV– Programming in Java	4	3	25	75	100	4
315K05	Core V – Operating System	5	3	25	50	75	3
315K06	Core VI – Computer Graphics and Multimedia	5	3	25	50	75	3
315KP3	Core Practical III– Programming in Java	5	3	40	60	100	4
315AK3	Allied III–Operations Research	6	3	25	75	100	4
	Part IV						
315KS1	Skill Based Course I : Interactive Media - Working Principles of Internet	3	3	75	-	75	3
315NFM	Non Major Elective Course I : Front Office Management	2	2	50	-	50	2
	Semester IV						
	Part III						
415K07	Core VII – Visual Basic	4	3	25	75	100	4
415K08	Core VIII –Relational Database Management System	4	3	25	75	100	4
415K09	Core IX– Software Engineering	5	3	25	50	75	3
415KP4	Core Practical IV– Visual Basic and RDBMS	6	3	40	60	100	4
415AK4	Allied IV –Accounting for Management	6	3	25	75	100	4
	Part IV						
415KS2	Skill Based Course II : Interactive Media - Web Designing	3	3	75	-	75	3
415NGA	Non Major Elective Course II : General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALK	Advanced Learners Course I – Cloud Computing	-	3	-	100	100	4*
	Semester V						
	Part III						
515K10	Core X – VB.Net	5	3	25	75	100	4
515K11	Core XI – Computer Networks	5	3	25	75	100	4
515K12	Core XII – Enterprise Resource Planning	5	3	25	50	75	3
515KP5	Core Practical V – VB.Net	6	3	40	60	100	4
515KE1	Elective I – Data Mining	6	3	25	75	100	4
	Part IV						
515KS3	Skill Based Course III : Interactive Media - Animation Techniques	3	3	75	-	75	3

	Semester VI						
	Part III						
615K13	Core XIII – ASP.Net	5	3	25	75	100	4
615K14	Core XIV - Client/Server Technology	5	3	25	50	75	3
615KP6	Core Practical VI - ASP.Net	5	3	40	60	100	4
615KE2	<mark>Elective II - Information Storage and Management</mark>	6	3	25	75	100	4
615KPV	Project and Viva Voce	6	3	25	75	100	4
615KS4	**Part IV:** Skill Based Course IV : Interactive Media - Multimedia Systems	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	**Part V:** Extension	-	-	50	-	50	2
615ALK	Advanced Learners Course II - Big Data Analytics with R and Hadoop	-	3	25	75	100	4*
	Total					3500	140

- Starred Credits are treated as additional credits, which are optional.

Bachelor of Computer Applications
Semester IV
Part III - Core IX – Software Engineering   415K09
(For the students admitted from the academic year 2015 - 2016 onwards)

Preamble   **Total Hours: 65**
➢ To get acquainted with the systematic process of Software development.
➢ To get introduced to various Life Cycle Model.
➢ To ensure Quality Assurance.

Unit I   **[13 Hrs]**
Introduction to Software Engineering: Software – The Changing Nature of Software – Software Myths. A Generic View of Process: Software Engineering-A layered Technology – A Process Framework. Process Model: The Waterfall Model – Incremental Process Models – Evolutionary Process Models.

Unit II   **[13 Hrs]**
System Engineering: The System Engineering Hierarchy. Requirements Engineering: Requirements Engineering Tasks – Initiating the Requirement Engineering Process – Negotiating Requirements – Validating Requirements. Building the Analysis Model: Data Modeling Concepts – Flow-Oriented Modeling.

Unit III   **[13 Hrs]**
Design Engineering: Design Concepts – Pattern-Based Software Design. Creating an Architectural Design: Data Design – Architectural Design – Mapping Data Flow into a Software Architecture.

Unit IV [13 Hrs]

Testing Strategies: A Strategic Approach to Software Testing – Strategic Issues – System Testing – The Art of Debugging. Testing Tactics: Software Testing Fundamentals – White-Box Testing – Control Structure Testing – Black-Box Testing.

Unit V [13 Hrs]

Risk Management: Software Risks – Risk Identification – Risk Refinement. Quality Management: Quality Concepts – Software Quality Assurance. Reengineering: Software Reengineering – Reverse Engineering – Restructuring.

Book for Study

Roger S. Pressman, "Software Engineering A Practitioner's Approach", McGraw Hill, Sixth Edition 2005.

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Bachelor of Computer Applications
Semester V
Part III – Core XI – Computer Networks   515K11
(For the students admitted from the academic year 2015 - 2016 onwards)

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Preamble   **Total Hours: 65**

- To understand the concepts of Data Communications.
- To study the functions of different Layers.
- To make the students to get familiarized with different protocols and network components.
- Create awareness about different communication media and different security measures that provided to networks.

Unit I [13 Hrs]

Introduction: Data Communication – Networks – Protocols and Standards. Basic Concepts: Line Configuration – Topology – Transmission Mode – Categories of Networks – Internetworks. The OSI Model: The Model – Functions of the Layers – TCP/IP Protocol Suite. Encoding and Modulating: Digital –To-Digital Conversion - Analog-To-Digital Conversion – Digital –To–Analog Conversion – Analog – To – Analog Conversion – Key Terms and Concepts.

Unit II [13 Hrs]

Transmission Media: Guided Media – Unguided Media – Transmission Impairment – Performance – Wavelength. Multiplexing: Many To One/One To Many – Frequency-Division Multiplexing (FDM) – Wave-Division Multiplexing (WDM) - Time-Division Multiplexing (TDM) – Multiplexing Application: The Telephone System – Digital Subscriber Line (DSL) – FTTC.

Unit III [13 hrs]

Error Detection and Correction: Types of Errors – Detection – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cyclic Redundancy Check (CRC) – Checksum – Error Correction. Data Link Control: Flow Control – Error Control. Data Link Protocols – Asynchronous Protocols – Synchronous Protocols – Character - Oriented Protocols – Bit-Oriented Protocols.

Unit IV [13 Hrs]

Switching: Circuit Switching – Packet Switching – Message Switching. Point-to-Point Protocol (PPP): Transition States – PPP Layers – Link Control Protocol (LCP) – Authentication – Network Control Protocol (NCP). Frame Relay: Introduction – Frame Relay Operation –

Frame Relay Layers – Congestion Control – Leaky Bucket Algorithm – Traffic Control. Transport Layer: Duties of the Transport Layer – Connection – The OSI Transport Protocol.

Unit V [13 Hrs]

TCP/IP Protocol Suite: Part 2 Application Layer: Client-Server Model – Bootstrap Protocol (BOOTP) and Dynamic Host Configuration Protocol (DHCP) – Domain Name System (DNS) – TELNET – File Transfer Protocol (FTP) – Simple Mail Transfer Protocol – Simple Network Management Protocol (SNMP) – Hypertext Transfer Protocol (HTTP) – World Wide Web (WWW). VLANs and VPNs: VLAN – VPN – Key Terms and Concepts. Network Security – Four Aspects of Security – Privacy – Digital Signature – PGP – Access Authorization.

Book for Study

1. Behrouz A. Forouzan,"Data Communications and Networking", Published by Tata McGraw-Hill Education Private Limited New Delhi, 2003 Second Edition, 30th Reprint 2011.

Bachelor of Computer Applications
Semester VI
Part III – Elective I –Data Mining 515KE1
(For the students admitted from the academic year 2015 - 2016 onwards)

Preamble **Total Hours: 75**

➤ To introduce the fundamental concepts in Data Mining
➤ To understand the application of data mining techniques for real world problem.
➤ To develop skills for solving practical problems using Data Mining algorithms.

Unit I [15 Hrs]

Introduction – Data Mining – Functionalities – Classification of data mining systems – Major issues.

Unit II [15 Hrs]

Data preprocessing: Data cleaning – Data integration and transformation – Data reduction – Discretization and concept hierarchy generation. Data Mining Primitives & Tasks.

Unit III [15 Hrs]

Mining Rules: Association rule mining – Mining single dimensional Boolean association rule from transactional databases Mining Multidimensional association rules from relational databases and data warehouses.

Unit IV [15 Hrs]

Classification and prediction: What is classification - Issues regarding classification – Classification Methods and types.

Unit V [15 Hrs]

Cluster Analysis: Types of data in cluster analysis – Categorization of major methods in clustering & Partitioning.

Book for Study

Jiawei Han, Micheline Kamber, "Data Mining – Concepts and Techniques", Morgan Kaufmann Publishers, Second Edition, 2006.

Bachelor of Computer Applications
Semester VI
Part III - Elective II- Information Storage and Management   615KE2
(For the students admitted from the academic year 2015 - 2016 onwards)

Total Hours: 75

Preamble
- ➢ To improve the knowledge in Storage and Management of Corporate Information.
- ➢ Provides an overview of virtualization.

Unit I   **[15 Hrs]**

Introduction to Information Storage and Management: Information Storage – Evolution of Storage Technology and Architecture – Data Center Infrastructure. Data Center Environment: Storage - Disk Drive Components – Disk Drive Performance – Host Access to Data – Storage Design Based on Application Requirements and Disk Performance.

Unit II   **[15 Hrs]**

Data Protection: RAID: RAID Implementation Methods – RAID Array Components – RAID Levels – RAID Comparison. Intelligent Storage System: Components of an Intelligent Storage System – Types of Intelligent Storage Systems.

Unit III   **[15 Hrs]**

Fiber Channel Storage Area Networks: Fiber Channel: Overview – The SAN and Its Evolution – Components of SAN – FC Connectivity – Switched Fabric Ports – Fiber Channel Architecture – FC SAN Topologies.

Unit IV   **[15 Hrs]**

Network-Attached Storage: General-Purpose Servers vs. NAS Devices – Benefits of NAS – File Systems and Network File Sharing – Components of NAS – NAS File-Sharing Protocols – Factors Affecting NAS Performance. Object-Based and Unified Storage: Content-Addressed Storage.

Unit V   **[15 Hrs]**

Securing the Storage Infrastructure: Information Security Framework – Risk Triad – Storage Security Domains – Security Implementations in Storage Networking.

Book for Study

Wiley, "Information Storage and Management", EMC Education Services, Second Edition.

Department of Computer Applications
(For Candidates admitted during the academic year 2012 – 2013 and onwards)
Semester wise Distribution with Scheme of Examinations

Sem	Courses	Credits	ESE Exam Duration	Marks		Total
				CIA	ESE	
I	Part I – Language I	3	3	25	75	100
	Part II – English I	3	3	25	75	100
	Part III: Core I – Programming in C	4	3	25	75	100
	Core Practical I – Programming in C	2	3	40	60	100
	Allied I – Basic Mathematics	5	3	25	75	100
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I – Language II	3	3	25	75	100
	Part II – English II	3	3	25	75	100
	Part III: Core II – Digital Fundamentals & Computer Architecture	4	3	25	75	100
	Core III – Object Oriented Programming with C++	4	3	25	75	100
	Core Practical II – Object Oriented Programming with C++	2	3	40	60	100
	Allied II – Discrete Mathematics	5	3	25	75	100
	Part IV: Value Education	2	-	50	-	50
	Advanced Learners Course I – Software Industry Domains	3*	3	-	100	100
III	Part III: Core IV – Programming in Java	4	3	25	75	100
	Core V – Fundamentals of Data Structures	4	3	25	75	100
	Core VI – Operating System & its concepts	4	3	25	75	100
	Core Practical III – Programming in Java	2	3	40	60	100

	Allied III – Operations Research	5	3	25	75	100
	Part IV: Skill Based Course: I – HTML, DHTML & Dream Weaver	3	3	100	-	100
	Non Major Elective	2	-	75	-	75
IV	Part III: Core VII – Visual Basic	4	3	25	75	100
	Core VIII – RDBMS and Oracle	5	3	25	75	100
	Core IX – Software Engineering and Testing	4	3	25	75	100
	Core Practical IV – Visual Basic and RDBMS	2	3	40	60	100
	Allied IV – Financial and Management Accounting	5	3	25	75	100
	Part IV: Skill Based Course: II – Page maker and CorelDraw	3	3	100	-	100
	General Awareness	2	-	75	-	75
	Advanced Learners Course II – Distributed Operating System	3*	3	-	100	100
	Part V: Extension	1	-	50	-	50
V	Part III: Core X - .Net Programming	4	3	25	75	100
	Core XI – Computer Networks	5	3	25	75	100
	Core XII – Computer Graphics and Multimedia	4	3	25	75	100
	Core Practical V-.Net Programming and XML	2	3	40	60	100
	Elective I – WAP & XML	5	3	25	75	100
	Part IV: Skill Based Course: III – Photoshop	3	-	100	-	100
VI	Part III: Core XIII – Data Mining	4	3	25	75	100
	Core XIV – Mobile Computing	4	3	25	75	100
	Core XV – Cyber Security	4	3	25	75	100
	Elective II–Enterprise Resource Planning	5	3	25	75	100
	Project and Viva voce	5	3	25	75	100

Part IV: Skill Based Course: IV- Flash	3	-	100	-	100
Advanced Learners Course III – Client/Server Technology	3*	3	-	100	100

Total Credits **140**

Starred credits are trated as additional credits.
30% of the syllabus in each course should be taught using OHP, LCD & Seminars.
Note: Underlined portions are for Self Study.

Bachelor of Computer Applications
(For Candidates admitted from 2012 - 2013 Batch Only)
Semester IV
Part III - Core IX – Software Engineering & Testing   412K09

Preamble: **Total Hours: 52 Hours**

> ➢ To improve the quality of software products and to increase the productivity and job satisfaction of software engineers.
> ➢ It is a systematic approach for development, operation and maintenance of software.
> ➢ To explain the basics of software testing.
> ➢ To highlight the strategies for software testing.

Module I   **[10 Hrs]**

Introduction to Software Engineering – A Generic view of Process – Process Models-The Waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models-The Unified Process.

Module II   **[11 Hrs]**

System Engineering: System Engineering Hierarchy- System Modeling – Requirements Engineering: Requirements Engineering Tasks, Initiating the Requirements Engineering Process, Eliciting Requirements- Developing Use Cases, Negotiating Requirements-Validating Requirements-Building the Analysis Model: Data Modeling Concepts, Flow Oriented Modeling.

Module III   **[10 Hrs]**

Design Engineering: Design concepts, The Design model, Pattern based software design-Creating an Architectural Design: Data Design-Architectural Design-Mapping data Flow into a Software Architecture.

Module IV   **[10 Hrs]**

Testing Strategies: A Strategic Approach to Software Testing, Strategic Issues- Testing Tactics: Software Testing Fundamentals, Black Box Testing and White Box Testing-White Box Testing- Basis Path Testing – Control Structure Testing- Black Box Testing- Testing for Specialized Environments, Architectures and Applications – Testing Patterns.

Module V   **[11 Hrs]**

Flow/Graphs and Path Testing: Path Testing Basics: Path Testing – Loops- Predicate, Paths Predicates and Achievable paths – Path Instrumentation – Implement and Application of Path Testing – Transaction Flow Testing – Data Flow Testing: Data Flow Testing Strategies.

Book for Study:

1. Roger S.Pressman "Software Engineering: A Practitioner's Approach", Sixth Edition, McGraw-Hill International Edition-2005. [Module I,II,III,IV]
2. B. Beizer , 2009, "Software Testing Techniques", Second Edition, DreamTech India, New Delhi. [Module V]

Semester V
Part III – Core XI – Computer Networks   **512K11**

Preamble   **Total Hours: 65 Hours**

- ➢ To understand the concepts of data communications.
- ➢ To study the functions of different layers.
- ➢ To make the students to get familiarized with different protocols and network components.
- ➢ Create awareness about different communication media and different security measures that provided to networks.

Module I   **[13 Hrs]**

Introduction: Uses of Computer Networks- Network Hardware – Network Software: Protocol Hierarchies- Design Issues for the Layers – Connection Oriented and Connectionless Services - Reference Models: The OSI Reference Model- The TCP/IP Reference Model.

Module II   **[13 Hrs]**

Transmission media: Guided media. Transmission of Digital data: Interfaces and modems: Digital data transmission-DTE-DCE-interface-Modems. Multiplexing: Many to One/One to Many-FDM-WDM-TDM-multiplexing application: the telephone system.

Module III: **[13 Hrs]**

Error detection and correction: Types of errors-detection-CRC-checksum-Error correction. Data link protocols: asynchronous protocols-synchronous protocols-Character oriented protocols. Local area networks: project – Ethernet. Frame relay: Congestion control-leaky bucket algorithm-Traffic control.

Module IV   **[13 Hrs]**

Switching: Circuit Switching – <u>packet Switching</u> – message Switching. Networking and internetworking devices: Routing algorithms- Distance vector routing-Link state routing.TCP/IP protocol suite: network layer-addressing-Subnetting.

Module V   **[13Hrs]**

Transport Layer: Duties of Transport Layer-connection. TCP/IP protocol suite: Transport layer. Presentation layer. <u>Application layer: DNS.</u> N/W security: digital signature. Access authorization..

Book for Study:

1. Andrew S. Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, Fourth Edition, Sixth Impression, 2009. [Unit I]
2. "Data Communication and Networking", Behrouz A. Forouzan, Tata McGraw-Hill edition 2003, Second edition update. [Unit II, III,IV,V]

Semester-VI
Part III – Core XIII – Data Mining   **612K13**

Preamble   **Total Hours: 65 Hours**

- ➢ Data mining is the analysis of data for relationships that have not previously been discovered.
- ➢ It automatically analyzes and extracts knowledge from data.
- ➢ It develops highly detailed model of some large data set.
- ➢ A type of database application that looks for hidden patterns in large groups of data.

Module I   **[13 Hrs]**

Introduction: An expanding universe of data – Information as a production factor – Computer systems that can learn – Data mining – Data mining versus query tools – Data mining in marketing – Practical applications of data mining. What is learning? – Data mining and the data warehouse.

Module II [13 Hrs]

The knowledge discovery process – Setting up a KDD Environment.

Module III [13 Hrs]

Classification and Prediction: What is Classification? What is Prediction? – Issues regarding classification and prediction – Classification by decision tree Induction – Bayesian Classification – Rule Based Classification – Other classification methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Selection.

Module IV [13 Hrs]

Cluster Analysis: What is cluster analysis? – Types of Data in Cluster analysis – A Categorization of major clustering methods – Partitioning methods – hierarchical methods – Density Based Methods – Model based clustering methods – Clustering high dimensional data – Constraint based Cluster Analysis.

Module V [13 Hrs]

Graph Mining, Social network Analysis and Multirelational data mining: Graph mining – Social network analysis – Multirelational Data mining. Application and trends in Data mining: Data mining Applications – Additional themes of Data mining – Social impacts of data mining – Trends in data mining.

Book for Study:

1. Pieter Adriaans, Dolf Zantinge, "Data Mining", Pearson Education, 1998. [Module-I,II].

2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, Second Edition, 2006. [Module-III, IV, V].

2015 – 2016

Department of Computer Applications
(For Candidates admitted during the academic year 2012 – 2013 and onwards)
Semester wise Distribution with Scheme of Examinations

Sem	Courses	Credits	ESE Exam Duration	Marks		Total
				CIA	ESE	
I	Part I – Language I	3	3	25	75	100
	Part II – English I	3	3	25	75	100
	Part III: Core I – Programming in C	4	3	25	75	100
	Core Practical I – Programming in C	2	3	40	60	100
	Allied I – Basic Mathematics	5	3	25	75	100
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I – Language II	3	3	25	75	100
	Part II – English II	3	3	25	75	100
	Part III: Core II – Digital Fundamentals & Computer Architecture	4	3	25	75	100
	Core III – Object Oriented Programming with C++	4	3	25	75	100
	Core Practical II – Object Oriented Programming with C++	2	3	40	60	100
	Allied II – Discrete Mathematics	5	3	25	75	100
	Part IV: Value Education	2	-	50	-	50
	Advanced Learners Course I – Software Industry Domains	3*	3	-	100	100
III	Part III: Core IV – Programming in Java	4	3	25	75	100
	Core V – Fundamentals of Data Structures	4	3	25	75	100
	Core VI – Operating System & its concepts	4	3	25	75	100
	Core Practical III – Programming in Java	2	3	40	60	100

	Allied III – Operations Research	5	3	25	75	100
	Part IV: Skill Based Course: I – HTML, DHTML & Dream Weaver	3	3	100	-	100
	Non Major Elective	2	-	75	-	75
IV	Part III: Core VII – Visual Basic	4	3	25	75	100
	Core VIII – RDBMS and Oracle	5	3	25	75	100
	Core IX – Software Engineering and Testing	4	3	25	75	100
	Core Practical IV – Visual Basic and RDBMS	2	3	40	60	100
	Allied IV – Financial and Management Accounting	5	3	25	75	100
	Part IV: Skill Based Course: II – Page maker and CorelDraw	3	3	100	-	100
	General Awareness	2	-	75	-	75
	Advanced Learners Course II – Distributed Operating System	3*	3	-	100	100
	Part V: Extension	1	-	50	-	50
V	Part III: Core X - .Net Programming	4	3	25	75	100
	Core XI – Computer Networks	5	3	25	75	100
	Core XII – Computer Graphics and Multimedia	4	3	25	75	100
	Core Practical V-.Net Programming and XML	2	3	40	60	100
	Elective I – WAP & XML	5	3	25	75	100
	Part IV: Skill Based Course: III – Photoshop	3	-	100	-	100
VI	Part III: Core XIII – Data Mining	4	3	25	75	100
	Core XIV – Mobile Computing	4	3	25	75	100
	Core XV – Cyber Security	4	3	25	75	100
	Elective II–Enterprise Resource Planning	5	3	25	75	100
	Project and Viva voce	5	3	25	75	100

Part IV: Skill Based Course: IV-Flash	3	-	100	-	100
Advanced Learners Course III – Client/Server Technology	3*	3	-	100	100
Total Credits	**140**				

Starred credits are trated as additional credits.
30% of the syllabus in each course should be taught using OHP, LCD & Seminars.
Note: Underlined portions are for Self Study.

<div align="center">

Bachelor of Computer Applications
(For Candidates admitted from 2012 - 2013 Batch Only)
Semester IV
Part III - Core IX – Software Engineering & Testing   412K09

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Preamble: **Total Hours: 52 Hours**

➢ To improve the quality of software products and to increase the productivity and job satisfaction of software engineers.
➢ It is a systematic approach for development, operation and maintenance of software.
➢ To explain the basics of software testing.
➢ To highlight the strategies for software testing.

Module I   **[10 Hrs]**

Introduction to Software Engineering – A Generic view of Process – Process Models-The Waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models-The Unified Process.

Module II   **[11 Hrs]**

System Engineering: System Engineering Hierarchy- System Modeling – Requirements Engineering: Requirements Engineering Tasks, Initiating the Requirements Engineering Process, Eliciting Requirements- Developing Use Cases, Negotiating Requirements-Validating Requirements-Building the Analysis Model: Data Modeling Concepts, Flow Oriented Modeling.

Module III   **[10 Hrs]**

Design Engineering: Design concepts, The Design model, Pattern based software design-Creating an Architectural Design: Data Design-Architectural Design-Mapping data Flow into a Software Architecture.

Module IV   **[10 Hrs]**

Testing Strategies: A Strategic Approach to Software Testing, Strategic Issues- Testing Tactics: Software Testing Fundamentals, Black Box Testing and White Box Testing-White Box Testing- Basis Path Testing – Control Structure Testing- Black Box Testing- Testing for Specialized Environments, Architectures and Applications – Testing Patterns.

Module V   **[11 Hrs]**

Flow/Graphs and Path Testing: Path Testing Basics: Path Testing – Loops- Predicate, Paths Predicates and Achievable paths – Path Instrumentation – Implement and Application of Path Testing – Transaction Flow Testing – Data Flow Testing: Data Flow Testing Strategies.

Book for Study:

3. Roger S.Pressman "Software Engineering: A Practitioner's Approach", Sixth Edition, McGraw-Hill International Edition-2005. [Module I,II,III,IV]
4. B. Beizer , 2009, "Software Testing Techniques", Second Edition, DreamTech India, New Delhi. [Module V]

Part III – Core XI – Computer Networks   512K11

Preamble   **Total Hours: 65 Hours**

- ➢ To understand the concepts of data communications.
- ➢ To study the functions of different layers.
- ➢ To make the students to get familiarized with different protocols and network components.
- ➢ Create awareness about different communication media and different security measures that provided to networks.

Module I   **[13 Hrs]**

Introduction: Uses of Computer Networks- Network Hardware – Network Software: Protocol Hierarchies- Design Issues for the Layers – Connection Oriented and Connectionless Services - Reference Models: The OSI Reference Model- The TCP/IP Reference Model.

Module II   **[13 Hrs]**

Transmission media: Guided media. Transmission of Digital data: Interfaces and modems: Digital data transmission-DTE-DCE-interface-Modems. Multiplexing: Many to One/One to Many-FDM-WDM-TDM-multiplexing application: the telephone system.

Module III: **[13 Hrs]**

Error detection and correction: Types of errors-detection-CRC-checksum-Error correction. Data link protocols: asynchronous protocols-synchronous protocols-Character oriented protocols. Local area networks: project – Ethernet. Frame relay: Congestion control-leaky bucket algorithm-Traffic control.

Module IV   **[13 Hrs]**

Switching: Circuit Switching – <u>packet Switching</u> – message Switching. Networking and internetworking devices: Routing algorithms- Distance vector routing-Link state routing.TCP/IP protocol suite: network layer-addressing-Subnetting.

Module V   **[13Hrs]**

Transport Layer: Duties of Transport Layer-connection. TCP/IP protocol suite: Transport layer. Presentation layer. <u>Application layer: DNS.</u> N/W security: digital signature. Access authorization..

Book for Study:

1. Andrew S. Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, Fourth Edition, Sixth Impression, 2009. [Unit I]

2. "Data Communication and Networking", Behrouz A. Forouzan, Tata McGraw-Hill edition 2003, Second edition update. [Unit II, III,IV,V]

Bachelor of Computer Applications
(For Candidates admitted from 2012 - 2013 Batch Only)
Semester-VI

Part III – Core XIII – Data Mining   612K13

Preamble   **Total Hours: 65 Hours**

- ➢ Data mining is the analysis of data for relationships that have not previously been discovered.
- ➢ It automatically analyzes and extracts knowledge from data.
- ➢ It develops highly detailed model of some large data set.
- ➢ A type of database application that looks for hidden patterns in large groups of data.

Module I   **[13 Hrs]**

Introduction: An expanding universe of data – Information as a production factor – Computer systems that can learn – Data mining – Data mining versus query tools – Data mining in marketing – Practical applications of data mining. What is learning? – Data mining and the data warehouse.

Module II   **[13 Hrs]**

The knowledge discovery process – Setting up a KDD Environment.

Module III   **[13 Hrs]**

Classification and Prediction: What is Classification? What is Prediction? – Issues regarding classification and prediction – Classification by decision tree Induction – Bayesian Classification – Rule Based Classification – Other classification methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Selection.

Module IV   **[13 Hrs]**

Cluster Analysis: What is cluster analysis? – Types of Data in Cluster analysis – A Categorization of major clustering methods – Partitioning methods – hierarchical methods – Density Based Methods – Model based clustering methods – Clustering high dimensional data – Constraint based Cluster Analysis.

Module V   **[13 Hrs]**

Graph Mining, Social network Analysis and Multirelational data mining: Graph mining – Social network analysis – Multirelational Data mining. Application and trends in Data mining: Data mining Applications – Additional themes of Data mining – Social impacts of data mining – Trends in data mining.

Book for Study:

1. Pieter Adriaans, Dolf Zantinge, "Data Mining", Pearson Education, 1998.
   [Module-I,II].
2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques",
   Morgan Kaufmann Publishers, Second Edition, 2006. [Module-III, IV, V].

2014 – 2015

Department of Computer Applications
(For Candidates admitted during the academic year 2012 – 2013 and onwards)
Semester wise Distribution with Scheme of Examinations

Sem	Courses	Credits	ESE Exam Duration	CIA	ESE	Total
I	Part I – Language I	3	3	25	75	100
	Part II – English I	3	3	25	75	100
	Part III: Core I – Programming in C	4	3	25	75	100
	Core Practical I – Programming in C	2	3	40	60	100
	Allied I – Basic Mathematics	5	3	25	75	100
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I – Language II	3	3	25	75	100
	Part II – English II	3	3	25	75	100
	Part III: Core II – Digital Fundamentals & Computer Architecture	4	3	25	75	100
	Core III – Object Oriented Programming with C++	4	3	25	75	100
	Core Practical II – Object Oriented Programming with C++	2	3	40	60	100
	Allied II – Discrete Mathematics	5	3	25	75	100
	Part IV: Value Education	2	-	50	-	50
	Advanced Learners Course I – Software Industry Domains	3*	3	-	100	100
III	Part III: Core IV – Programming in Java	4	3	25	75	100
	Core V – Fundamentals of Data Structures	4	3	25	75	100
	Core VI – Operating System & its concepts	4	3	25	75	100
	Core Practical III – Programming in Java	2	3	40	60	100

	Allied III – Operations Research	5	3	25	75	100
	Part IV: Skill Based Course: I – HTML, DHTML & Dream Weaver	3	3	100	-	100
	Non Major Elective	2	-	75	-	75
IV	Part III: Core VII – Visual Basic	4	3	25	75	100
	Core VIII – RDBMS and Oracle	5	3	25	75	100
	Core IX – Software Engineering and Testing	4	3	25	75	100
	Core Practical IV – Visual Basic and RDBMS	2	3	40	60	100
	Allied IV – Financial and Management Accounting	5	3	25	75	100
	Part IV: Skill Based Course: II – Page maker and CorelDraw	3	3	100	-	100
	General Awareness	2	-	75	-	75
	Advanced Learners Course II – Distributed Operating System	3*	3	-	100	100
	Part V: Extension	1	-	50	-	50
V	Part III: Core X - .Net Programming	4	3	25	75	100
	Core XI – Computer Networks	5	3	25	75	100
	Core XII – Computer Graphics and Multimedia	4	3	25	75	100
	Core Practical V-.Net Programming and XML	2	3	40	60	100
	Elective I – WAP & XML	5	3	25	75	100
	Part IV: Skill Based Course: III – Photoshop	3	-	100	-	100
VI	Part III: Core XIII – Data Mining	4	3	25	75	100
	Core XIV – Mobile Computing	4	3	25	75	100
	Core XV – Cyber Security	4	3	25	75	100
	Elective II–Enterprise Resource Planning	5	3	25	75	100
	Project and Viva voce	5	3	25	75	100

Part IV: Skill Based Course: IV-Flash	3	-	100	-	100
Advanced Learners Course III – Client/Server Technology	3*	3	-	100	100
Total Credits	**140**				

Starred credits are trated as additional credits.

30% of the syllabus in each course should be taught using OHP, LCD & Seminars.

Note: Underlined portions are for Self Study.

<div align="center">

Bachelor of Computer Applications
(For Candidates admitted from 2012 - 2013 Batch Only)
Semester IV

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Part III - Core IX – Software Engineering & Testing   **412K09**

Preamble: **Total Hours: 52 Hours**

- ➤ To improve the quality of software products and to increase the productivity and job satisfaction of software engineers.
- ➤ It is a systematic approach for development, operation and maintenance of software.
- ➤ To explain the basics of software testing.
- ➤ To highlight the strategies for software testing.

Module I   **[10 Hrs]**

Introduction to Software Engineering – A Generic view of Process – Process Models-The Waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models-The Unified Process.

Module II   **[11 Hrs]**

System Engineering: System Engineering Hierarchy- System Modeling – Requirements Engineering: Requirements Engineering Tasks, Initiating the Requirements Engineering Process, Eliciting Requirements- Developing Use Cases, Negotiating Requirements-Validating Requirements-Building the Analysis Model: Data Modeling Concepts, Flow Oriented Modeling.

Module III   **[10 Hrs]**

Design Engineering: Design concepts, The Design model, Pattern based software design-Creating an Architectural Design: Data Design-Architectural Design-Mapping data Flow into a Software Architecture.

Module IV   **[10 Hrs]**

Testing Strategies: A Strategic Approach to Software Testing, Strategic Issues- Testing Tactics: Software Testing Fundamentals, Black Box Testing and White Box Testing-White Box Testing- Basis Path Testing – Control Structure Testing- Black Box Testing- Testing for Specialized Environments, Architectures and Applications – Testing Patterns.

Module V   **[11 Hrs]**

Flow/Graphs and Path Testing: Path Testing Basics: Path Testing – Loops- Predicate, Paths Predicates and Achievable paths – Path Instrumentation – Implement and Application of Path Testing – Transaction Flow Testing – Data Flow Testing: Data Flow Testing Strategies.

Book for Study:

5. Roger S.Pressman "Software Engineering: A Practitioner's Approach", Sixth Edition, McGraw-Hill International Edition-2005. [Module I,II,III,IV]
6. B. Beizer , 2009, "Software Testing Techniques", Second Edition, DreamTech India, New Delhi. [Module V]

Semester V
Part III – Core XI – Computer Networks   512K11

Preamble   **Total Hours: 65 Hours**

- ➢ To understand the concepts of data communications.
- ➢ To study the functions of different layers.
- ➢ To make the students to get familiarized with different protocols and network components.
- ➢ Create awareness about different communication media and different security measures that provided to networks.

Module I   **[13 Hrs]**

Introduction: Uses of Computer Networks- Network Hardware – Network Software: Protocol Hierarchies- Design Issues for the Layers – Connection Oriented and Connectionless Services - Reference Models: The OSI Reference Model- The TCP/IP Reference Model.

Module II   **[13 Hrs]**

Transmission media: Guided media. Transmission of Digital data: Interfaces and modems: Digital data transmission-DTE-DCE-interface-Modems. Multiplexing: Many to One/One to Many-FDM-WDM-TDM-multiplexing application: the telephone system.

Module III: **[13 Hrs]**

Error detection and correction: Types of errors-detection-CRC-checksum-Error correction. Data link protocols: asynchronous protocols-synchronous protocols-Character oriented protocols. Local area networks: project – Ethernet. Frame relay: Congestion control-leaky bucket algorithm-Traffic control.

Module IV   **[13 Hrs]**

Switching: Circuit Switching – packet Switching – message Switching. Networking and internetworking devices: Routing algorithms- Distance vector routing-Link state routing.TCP/IP protocol suite: network layer-addressing-Subnetting.

Module V   **[13Hrs]**

Transport Layer: Duties of Transport Layer-connection. TCP/IP protocol suite: Transport layer. Presentation layer. Application layer: DNS. N/W security: digital signature. Access authorization..

Book for Study:

1. Andrew S. Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, Fourth Edition, Sixth Impression, 2009. [Unit I]
2. "Data Communication and Networking", Behrouz A. Forouzan, Tata McGraw-Hill edition 2003, Second edition update. [Unit II, III,IV,V]

Semester-VI
Part III – Core XIII – Data Mining   612K13

Preamble   **Total Hours: 65 Hours**

- ➢ Data mining is the analysis of data for relationships that have not previously been discovered.
- ➢ It automatically analyzes and extracts knowledge from data.
- ➢ It develops highly detailed model of some large data set.
- ➢ A type of database application that looks for hidden patterns in large groups of data.

Module I   **[13 Hrs]**

Introduction: An expanding universe of data – Information as a production factor – Computer systems that can learn – Data mining – Data mining versus query tools – Data mining in marketing – Practical applications of data mining. What is learning? – Data mining and the data warehouse.

Module II   **[13 Hrs]**

The knowledge discovery process – Setting up a KDD Environment.

Module III   **[13 Hrs]**

Classification and Prediction: What is Classification? What is Prediction? – Issues regarding classification and prediction – Classification by decision tree Induction – Bayesian Classification – Rule Based Classification – Other classification methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Selection.

Module IV   **[13 Hrs]**

Cluster Analysis: What is cluster analysis? – Types of Data in Cluster analysis – A Categorization of major clustering methods – Partitioning methods – hierarchical methods – Density Based Methods – Model based clustering methods – Clustering high dimensional data – Constraint based Cluster Analysis.

Module V   **[13 Hrs]**

Graph Mining, Social network Analysis and Multirelational data mining: Graph mining – Social network analysis – Multirelational Data mining. Application and trends in Data mining: Data mining Applications – Additional themes of Data mining – Social impacts of data mining – Trends in data mining.

Book for Study:

1. Pieter Adriaans, Dolf Zantinge, "Data Mining", Pearson Education, 1998. [Module-I,II].
2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, Second Edition, 2006. [Module-III, IV, V].

Department of Computer Applications

(For the Candidates admitted during the academic year 2011-2012 and Onwards)
Semester wise Distribution with Scheme of Examination

Sem	Courses	Credits	ESE Exam Duration	Marks		Total
				CIA	ESE	
I	Part I – Tamil Course I	3	3	25	75	100
	Part II – English Course I	3	3	25	75	100
	Part III:					
	Core Course I–Digital Fundamentals & Computer Architecture	4	3	25	75	100
	Core Course Practical I – Office Automation Tools	3	3	40	60	100
	Allied Course I–Basic Mathematics	5	3	25	75	100
	Part IV : Environmental Studies	2	2½	-	50	50
II	Part I – Tamil Course II	3	3	25	75	100
	Part II – English Course II	3	3	25	75	100
	Part III :					
	Core Course II – C Programming	4	3	25	75	100
	Core Course Practical II – C Programming	2	3	40	60	100
	Allied Course II – Discrete Mathematics	5	3	25	75	100
	Part IV : Value Education	2	2½	-	50	50
	Advanced Learners Course I – UNIX	3*	3	-	100	100
III	Part III:					
	Core Course III–Object Oriented Programming with C++	4	3	25	75	100
	Core Course IV–Data Structures and Algorithms	5	3	25	75	100
	Core Course V–Operating Systems	4	3	25	75	100
	Core Course Practical III–Object Oriented Programming with C++	2	3	40	60	100
	Allied Course III–Operations Research	5	3	25	75	100
	Part IV :					
	Skill Based Course -Multimedia and Animation: Paper I–PageMaker and CorelDraw	3	3	25	75	100
	Non Major Elective Course I	2	3	-	75	75
IV	Part III :					
	Core Course VI – Visual Basic and Oracle	4	3	25	75	100
	Core Course VII–Relational Data Base Management System	5	3	25	75	100
	Core Course VIII–Software Engineering	4	3	25	75	100
	Core Course Practical IV–Visual Basic and RDBMS Programming	3	3	40	60	100
	Allied Course IV – Financial and Management Accounting	5	3	25	75	100
	Part IV :					

	Skill Based Course -Multimedia and Animation: Paper II–Photoshop	3	3	25	75	100
	Non Major Elective Course II	2	3	-	75	75
	Advanced Learners Course II–Distributed Operating System	3*	3	-	100	100
V	Part III : Core Course IX – Java Programming	4	3	25	75	100
	Core Course X–Computer Networks	5	3	25	75	100
	Core Course XI–Computer Graphics	4	3	25	75	100
	Core Course Practical V – Java Programming and Computer Graphics	3	3	40	60	100
	Elective Course I–Client/Server Technology	5	3	25	75	100
	Part IV: Skill Based Course -Multimedia and Animation: Paper III–Flash	3	3	25	75	100
VI	Part III : Core Course XII – Network Security	4	3	25	75	100
	Core Course XIII–Mobile Computing	4	3	25	75	100
	Core Course XIV–Software Testing	4	3	25	75	100
	Elective Course II–Data Mining	5	3	25	75	100
	Elective Course III – Project and Viva Voce	5	3	25	75	100
	Part IV: Skill Based Course - Multimedia and Animation: Paper IV-HTML, DHTML & Dream Weaver	3	3	25	75	100
	Part V: Extension	1	-	50	-	50
	Advanced Learners Course III–Cryptography	3*	3	-	100	100

<div align="center">140</div>

Starred credits are treated as additional credits.

Non-Major Elective Course offered by the department–Desktop Publishing.
30% of the syllabus in each course should be taught using OHP, LCD & Seminars.
Note: Underlined portions are for Self Study.

<div align="center">

Bachelor of Computer Applications
(For Candidates admitted from 2011-2012 & Onwards)
Semester IV
Part III - Core Course VIII-Software Engineering

</div>

Preamble
> ➢ To improve the quality of software products and to increase the productivity and job satisfaction of software engineers.
> ➢ It is a systematic approach for development, operation and maintenance of software.

Unit I   **[12 Hrs]**

      Introduction to Software Engineering – A Generic view of Process – Process Models-The Waterfall Model – Incremental Process Models – Evolutionary Process Models – Specialized Process Models-The Unified Process – An Agile View of Process: What is an Agile Process?- Agile Process Models.

Unit II   **[12 Hrs]**

      System Engineering: System Engineering Hierarchy- System Modeling – Requirements Engineering: Requirements Engineering Tasks, Initiating the Requirements Engineering Process, Eliciting

Requirements- Developing Use Cases, Negotiating Requirements-Validating Requirements-Building the Analysis Model: Data Modeling Concepts, Flow Oriented Modeling.

Unit III   [12 Hrs]

Design Engineering: Design concepts, The Design model, Pattern based software design-Creating an Architectural Design: Data Design-Architectural Design-Mapping data Flow into a Software Architecture-Modeling Component - Level design: What is a Component, Designing Class Based Components, Designing Conventional Components.

Unit IV   [12 Hrs]

Testing Strategies: A Strategic Approach to Software Testing, Strategic Issues- Testing Tactics: Software Testing Fundamentals, Black Box Testing and White Box Testing-White Box Testing- Basis Path Testing – Control Structure Testing- Black Box Testing- Testing for Specialized Environments, Architectures and Applications – Testing Patterns.

Unit V   [12 Hrs]

Estimation: Observation on Estimation- The Project Planning Process- Software Scope and Feasibility- Resources- Software Project Estimation- Decomposition Techniques- Empirical Estimation Models- Specialized Estimation Techniques- Quality Management-Change Management: Software Configuration Management- The SCM Repository- The SCM Process.

Book for Study:
7. Roger S.Pressman "Software Engineering: A Practitioner's Approach", Fourth Edition, McGraw-Hill International Edition-2005.

Books for Reference:
1. Ian Sommerville, "Software Engineering", Fifth Edition, 1996.
2. P.Fleeger, "Software Engineering". Prentice Hall, 1999.

Bachelor of Computer Applications
(For Candidates admitted from 2011 - 2012 & Onwards)
Semester V
Part III – Core Course X - Computer Networks

Preamble
- ➢ To understand the concepts of data communications.
- ➢ To study the functions of different layers.
- ➢ To make the students to get familiarized with different protocols and network components.
- ➢ Create awareness about different communication media and different security measures that provided to networks.

Unit I   [12 Hrs]

Introduction: Uses of Computer Networks- Network Hardware – Network Software: Protocol Hierarchies- Design Issues for the Layers – Connection Oriented and Connectionless Services - Reference Models: The OSI Reference Model- The TCP/IP Reference Model.

Unit II   [12 Hrs]

The Physical Layer: Guided Transmission Media-Wireless Transmission – The Public Switched Telephone Network: Structure of the Telephone System –Trunks and Multiplexing – Switching – The Mobile Telephone System – Cable Television.

Unit III   [12 Hrs]

The Data Link Layer: The Data Link Layer Design Issues - Error Detection and Correction – Elementary Data Link Protocols- Example Data Link Protocols - The Medium Access Control Sublayer:The Channel Allocation Problem - The Multiple Access Protocols: ALOHA, Collision –Free Protocols, Bluetooth.

Unit IV [12 Hrs]

The Network Layer: Network Layer Design Issues : Store-and-Forward Packet Switching, Services Provided to the Transport Layer - <u>Routing Algorithms: Shortest Path Routing – Flooding - Distance Vector Routing - Link State Routing</u> - Hierarchical Routing - Broadcast Routing-Congestion Control Algorithms: General Principles of Congestion Control - Congestion Prevention Policies-Quality of Service : Requirements – Techniques for Achieving Good Quality of Service.

Unit V [12 Hrs]

The Transport Layer: The Transport Service - Elements of Transport Protocols: Addressing - Connection Establishment - Connection Release-Flow Control and Buffering. The Application Layer: DNS –The Domain Name System, Electronic Mail.

Book for Study:

1. Andrew S. Tanenbaum, "Computer Networks", Prentice Hall of India, New Delhi, Fourth Edition, Sixth Impression, 2009.

Books for Reference:

1. Larry L.Peterson and Peter S. Davie, "Computer Networks", Harcourt Asia Pvt. Ltd., Second Edition.
2. William Stallings, "Data and Computer Communication", Sixth Edition, Pearson Education, 2000.
3. Behrouz A. Forouzan, "Data Communications and Networking", Fourth Edition Tata McGraw-Hill, Special Indian Edition 2006, Twelfth reprint 2009.

Bachelor of Computer Applications
(For Candidates admitted from 2011 - 2012 & onwards)
Semester-VI
Part III – Elective Course II – Data Mining

Preamble

 ➢ Data mining is the analysis of data for relationships that have not previously been discovered.
 ➢ It automatically analyzes and extracts knowledge from data.
 ➢ It develops highly detailed model of some large data set.
 ➢ A type of database application that looks for hidden patterns in large groups of data.

Unit I [15 Hrs]

Introduction: An expanding universe of data – Information as a production factor – Computer systems that can learn – Data mining – Data mining versus query tools – Data mining in marketing – Practical applications of data mining. What is learning? – Data mining and the data warehouse.

Unit II [15 Hrs]

The knowledge discovery process – Setting up a KDD Environment.

Unit III [15 Hrs]

Classification and Prediction: What is Classification? What is Prediction? – Issues regarding classification and prediction – Classification by decision tree Induction – Bayesian Classification – Rule Based Classification – Other classification methods – Prediction – Accuracy and Error Measures – Evaluating the Accuracy of a Classifier or Predictor – Ensemble Methods – Model Selection.

Unit IV [15 Hrs]

Cluster Analysis: What is cluster analysis? – Types of Data in Cluster analysis – A Categorization of major clustering methods – Partitioning methods – hierarchical methods – Density Based Methods – Model based clustering methods – Clustering high dimensional data – Constraint based Cluster Analysis.

Unit V [15 Hrs]

Graph Mining, Social network Analysis and Multirelational data mining: Graph mining – Social network analysis – Multirelational Data mining. Application and trends in Data mining: Data mining Applications – Additional themes of Data mining – Social impacts of data mining – Trends in data mining.

Book for Study:

1. Pieter Adriaans, Dolf Zantinge, "Data Mining", Pearson Education, 1998. [Unit-I,II].
2. Jiawei Han and Micheline Kamber, "Data Mining Concepts and Techniques", Morgan Kaufmann Publishers, Second Edition, 2006. [Unit-III, IV, V].

Book for Reference:

1. "Data Mining - Introductory and Advanced Topics", Margaret H.Dunham, S.Sridhar, Dorling Kindersley (India) Pvt Ltd, 2006.

LIST OF VALUE ADDED COURSES-WITH EXPLANATION

2017-2018

Program Code	Course Code	UG BBA(CA)	Explanation
BV	117V02	Part III - Managerial Skills	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
BV	117EVS	Part IV - Environmental Studies	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
BV	217VEC	Part IV - Value Education	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
BV	315VS1	SBC I-Principles of banking	Develop a clear understanding and knowledge about the functioning of a Central bank and Commercial bank.
BV	415VS2	SBC II- Banking operations	Able to understand the differentiation between paying banker and collecting banker with respect to negotiable instruments
BV	315NAD	NME-Advertising	To impart knowledge of visualization ad agency and ad budget.
BV	415GIS	Part IV - Information Security	Appreciate the value of information to the modern organization and difficulties that arise when valuable information needs to be shared.

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Business Administration (Computer Application)
BBA (CA)
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2017-18 onwards)

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
117BT1/ 117MY1/ 117HD1/ 117FR1	**Semester I** Part I-Language I	6	3	25	75	100	4
117EN1	Part II- English I	6	3	25	75	100	4
117V01	Part III Core I - Principles of Management	5	3	25	75	100	4
117V02	Core II- Managerial Skills	5	3	25	50	75	3

117AV1	Allied I - Office Automation Tools- Practical	6	3	40	60	100	4
		2	2	50	--	50	2
217BT2	**Semester II** Part I-Language II	6	3	25	75	100	4
217EN2	Part II- English II	6	3	25	75	100	4
217V03	Part III Core III - Programming in C	3	3	25	50	75	3
217VP1	Core Practical I- Programming in C	2	3	20	30	50	2
217 B04/ 217R04/ 217V04	Core IV- Principles of Marketing	5	3	25	75	100	4
217AV2	Allied II –Principles of Accountancy	6	3	25	75	100	4
217VEC	Part IV-Value Education	2	2	50	--	50	2
317V05	**Semester III** Part III Core V- Business Organisation and Production Management	5	3	25	50	75	3
317 B06/ 317V06	Core VI– Commercial Law	5	3	25	75	100	4
317V07	Core VII- Programming in C++	3	3	25	50	75	3
317VP2	Core Practical II- Programming in C++	2	3	20	30	50	2
317V08	Core VIII – Human Resource Management	4	3	25	50	75	3
317AV3	Allied III - Business Environment	6	3	25	75	100	4
317NAD	Part IV-Non Major Elective - Principles of Advertising	2	2	50	--	50	3
317VS1	Skill Enhancement Course I-Principles of Banking	3	3	75	--	75	3
417V09	**Semester IV** Part III Core IX – Cost and Management Accounting	6	3	25	75	100	4
417V10	Core X– Organisational Behaviour	4	3	25	75	100	3
417V11	Core XI- Visual Programming	3	3	25	50	75	3

417VP3	Core Practical III- Visual Programming	2	3	20	30	50	2
417V12	Core XII - Advertising and Marketing Research	4	3	25	50	75	3
417AV4	Allied IV – Mathematical Techniques	6	3	25	75	100	4
417NGA	Part IV General Awareness	--	1	50	--	50	2
417VS2	Skill Enhancement Course II-Basic Banking Operations	3	3	75	--	75	3
417GIS	Information Security	2	2	50	--	Grade	Grade
417ALV	Advanced Learners Course I- Management thoughts in Thirukkural	--	3	--	100	100	4*

BBA (CA)
SEMESTER – I
Part III – Core II – Managerial Skills 117V02
(For the students admitted from the academic year 2017-18 onwards)

Course Objectives   **(65 Hours)**

- To develop communication competence in prospective executives.
- To inculcate critical thinking process.
- To prepare the students on facing changes and challenges.

Unit I

Managing Self: Introduction – Genders and self – Importance – Process – SWOT Analysis. Self Esteem – Factors – High self-esteem - Low self-esteem - Ways to improve self-esteem. Managing Time: The 80:20 rule – Secrets of time management - *Time management tips*.   (13 Hours)

Unit II

Interpersonal skills: Introduction – Stages – Transactional analysis - Ways to improve – Johari Window – Life Positions – Characteristics. Boss-subordinate Relationship: Introduction – Steps in building relationship.   (13 Hours)

Unit III

Strategic thinking: Stages – Scope – Importance – Characteristics of strategic thinkers. Lateral thinking: Introduction – uses – Needs – Benefits – Techniques.   (13 Hours)

Unit IV

Facing changes: Adapting and understanding change – changes related to people, organisation and system – change and business development – Principles of change management – Models. Facing challenges: Introduction – Benefits – facing challenges in life.   (13 Hours)

Unit V

Developing human network: Introduction – Relationship building – benefits – guidelines – Effective networking. Balancing work and life: Introduction – Importance - *Tips for balancing work and life*- Elements.   (13 Hours)

Note: starred and underlined portions are for self study.

Book for Study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
Dr.K.Alex	Managerial Skills	S.Chand & Co, 2016 Edition

Book for Reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
VSP.Rao	Management text and cases	Excel books, 2nd edition,2010

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BBA (CA)
SEMESTER – III
Part IV-Non Major Elective – Principles of Advertising   317NAD
(For the students admitted from the academic year 2017-18 onwards)

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Course Objectives   (25 Hours)

- To educate on the basic principles and forms of advertising.
- To illuminate on the different job functions and responsibilities of those employed in advertising.

Unit I

Advertising – Introduction –Attributes of Advertising – Structure of Ad Industry – Role of Adverting – Drawbacks of Advertising – Advertising Planning.   (5 Hours)

Unit II

Forms of Advertising – Indoor Media: Newspaper – Merits – Demerits – Criteria For Newspaper Selection - Magazine: Merits – Demerits – Distinction between Newspaper and Magazine. Radio Advertising – Types – Merits and Demerits.   (5 Hours)

Unit III

Television Merits and Demerits – Film Advertising – Merits and Demerits – Video Advertising - Merits and Demerits. Outdoor Media – Poster – Painted Display – Electrical Sign- Travelling Display – Sky Writing – Sandwich Men - Merits And Demerits Of Outdoor Media.
(5 Hours)

Unit IV

Direct Advertising – Postcards – Envelop – Enclosures – Broad-Sides - Booklets Catalogue – Sales Letter - Gift – Novelties – Store Publications – Package Inserts – Sampling - Merits and Demerits Of Direct Advertising.   (5 Hours)

Unit V

Display Advertising – Window Display – Counter Display – Merits And Problems of Display- Showroom and Show Cases – Exhibitions and Trade Fairs – Choice of Media – Non Media Advertising.   (5 Hours)

Book for study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
C.N. Sontakki	Advertising	Kalyani Publishers, New Delhi 2012.

Book for reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
S.A Chunawalla	Advertising theory &practice	Himalaya publishing house, Mumbai 2013.

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BBA (CA)
SEMESTER – III
Part IV- Skill Enhancement Course I – Principles of Banking
317VS1
(For the students admitted from the academic year 2017-18 onwards)

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Course Objectives (38 Hours)

- To acquaint the conceptual knowledge of central banking and commercial banking.
- To educate on types of negotiable instruments.
- To inculcate knowledge on crossing of cheques and endorsement.

Unit I

Commercial banking: An Overview – introduction to banking – classification of banks - banking system – commercial banking – functions – role of banks in economic development.

(8 Hours)

Unit II

RBI –Objectives-legal framework-external relations-internal organization and structure – functions of RBI-*Similarities and Dissimilarities of RBI & Commercial bank.* (8 Hours)

Unit III

Negotiable instruments: introduction – characteristics – nature – features – types. (7 Hours)

Unit IV

Crossing – need for crossing – types of crossing – Consequences of crossing – marking of cheque. (8 Hours)

Unit V

Endorsement – types of endorsement – effect of endorsement – rules regarding endorsement. (7 Hours)

Note: starred and underlined portions are for self study

Book for study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
Dr.S.Gurusamy	Banking Theory Law and practice	Vijay Nicole Imprints Private Ltd, Chennai. reprint – 2014

Book for reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
S.Natarajan & R.Parameswaran	Indian banking	S.Chand & Co Ltd, New Delhi Revised Edition 2013

BBA (CA)
SEMESTER – IV
Part IV- Skill Enhancement Course II-Basic Banking Operations
417VS2
(For the students admitted from the academic year 2017-18 onwards)

Course Objectives (38 Hours)
- To acquaint about the types of bank customers.
- To familiarize about opening of bank accounts.
- To educate about paying banker, collecting banker and bank lending.

Unit I
Bank customer – relationship – special types of customer. (8 Hours)

Unit II
Opening bank accounts – types of account – steps in opening accounts – disclosure of information. (7 Hours)

Unit III
Paying banker – introduction - banker's duty – precautions by a paying banker – Dishonoring customer's cheque – discourage of paying banker – material alteration – statutory protection – refusal of cheque payment. (8 Hours)

Unit IV
Collecting banker – collecting banker's role – statutory protection – payment in due course – collecting banker's duty. (7 Hours)

Unit V
Bank lending – significance of bank lending – lending sources – bank lending principles – forms of lending – securities for lending – factors influence bank lending.0 (8 Hours)

Book for study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
Dr.S.Gurusamy	Banking Theory Law and practice	Vijay Nicole Imprints Private Ltd, Chennai. reprint – 2014

Book for reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
S.Natarajan & R.Parameswaran	Indian banking	S.Chand & Co Ltd, New Delhi Revised Edition 2013

Part IV – ENVIRONMETNAL STUDIES

Unit I: Natural Resources

Scope and importance of environmental studies- types of resources- forest resources- water resources- mineral resources- food resources- energy resources- land resources. Role of individual in conservation of natural resources.   (6 hours)

Unit II: Eco system

Concept of eco system- structure and functions of a eco system- food chain- food web- ecological pyramids- types of eco system: forest eco system- grassland eco system- desert eco system- aquatic eco system.   (6 hours)

Unit III: Bio diversity

Functions- value of bio diversity- bio diversity in India- threats to bio diversity- endangered and endemic species of India- conservation of bio diversity.   (6 hours)

Unit IV: Pollution and disaster management

Causes, effects and control measures of: air pollution- water pollution- soil pollution – marine pollution- noise pollution- thermal pollution- role of an individual in the prevention of pollution- solid waste management- disaster management.   (6 hours)

Unit V: Social issues and the environment

Environmental issues: water conservation- rain water harvesting- water shed management- climate change- global warming, acid rain, ozone layer depletion- consumerism and waste products- environmental laws- environmental ethics- public awareness. (6 hours)

Book for study:

 Environmental science, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

Part IV- Value Education

Unit I:

Value Education: meaning, concept- purpose and significance in the present world- components. Human values: concept and types

Unit II:

Family values: family, brotherhood- pride of womanhood- duties and responsibilities – respect to elders- flexibility- importance of joint family- dependability- accomplishment- family ethics.

Unit III:

Social values: society- social sense and commitment- social awareness – consumer awareness- consumer rights and responsibility.

Unit IV:

National values: citizenship- salient features of the Indian constitution- fundamental rights and duties- franchise- unity in diversity- role of youth towards national integration and development.

Unit V:

Life skills: self awareness- health- self esteem- self management- relationship management- cognitive skills- yoga and meditation for healthy life.

Book for study:

Value Education, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

2016-2017

Program Code	Course Code	UG BBA(CA)	Explanation
BV	315VS1	SBC I-Principles of banking	Develop a clear understanding and knowledge about the functioning of a Central bank and Commercial bank.
BV	415VS2	SBC II- Banking operations	Able to understand the differentiation between paying banker and collecting banker with respect to negotiable instruments
BV	515VS3	SBC III – E-Banking	To equip the students with the operational aspects of E-banking products and services.
BV	615VS4	SBC IV – Banking practical's	To have basic practical knowledge supported by text books including up-to-date information in the field of Banking sector.
BV	315NAD	NME-Advertising	To impart knowledge of visualization ad agency and ad budget.
BV	515V14	Core XIV – Income Tax	To provide an in-depth knowledge of Income Tax Provisions and calculations.
BV	415GIS	Part IV - Information Security	Appreciate the value of information to the modern organization and difficulties that arise when valuable information needs to be shared.
BV	115EVS	Part IV - Environmental Studies	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
BV	215VEC	Part IV - Value Education	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.

Curriculum Design
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Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
115BT1/ 115MY1/ 115HD1/ 115FR1	**Semester I** Part I-Language I	6	3	25	75	100	4
115EN1	Part II- English I	6	3	25	75	100	4
115V01	Part III Core I- Business Organisation	5	3	25	50	75	3
115B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1/	Allied I –.Office Automation Tools-Practical	6	3	40	60	100	4
115EVS	Part IV-Environmental Studies	2	2	50	--	50	2
215BT2/ 215MY2/ 215HD2/ 215FR2	**Semester II** Part I-Language II	6	3	25	75	100	4
215EN2	Part II- English II	6	3	25	75	100	4
215V03	Part III Core III - Programming in C	3	3	25	50	75	3
215VP1	Core Practical I- Programming in C	2	3	20	30	50	2
215B04/ 215R04/ 215N04/ 215V04	Core IV- Marketing	5	3	25	75	100	4
215AV2	Allied II –Principles of Accountancy	6	3	25	75	100	4

215VEC	Part IV-Value Education	2	2	50	--	50	2
315V05	**Semester III** Part III Core V- Production and Materials Management	4	3	25	50	75	3
315B06/ 315V06	Core VI– Commercial Law	5	3	25	75	100	4
315V07	Core VII- Programming in C++	4	3	25	50	75	3
315VP2	Core Practical II- Programming in C++	2	3	20	30	50	2
315V08	Core VIII – Human Resource Management	4	3	25	50	75	3
315AV3	Allied III- Mathematical Techniques	6	3	25	75	100	4
315NAD	Part IV-Non Major Elective Course I-Advertising	2	2	50	--	50	3
315VS1	Skill Based Course I-Principles of Banking	3	3	75	--	75	3
415B09/ 415R09/ 415N09/ 415V09	**Semester IV** Part III Core IX – Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10/	Core X– Cost Accounting	5	3	25	75	100	4
415V11	Core XI- Visual Basic	3	3	25	50	75	3
415VP3	Core Practical III- Visual Basic	2	3	20	30	50	2
415V12	Core XII - Advertising and Marketing Research	4	3	25	50	75	3
415AV4	Allied IV –Business Environment	6	3	25	75	100	4
415NGA	Part IV Non Major Elective Course II - General Awareness (Online)	--	1	50	--	50	2

415VS2	Skill Based Course II-Banking Operations	3	3	75	--	75	3
415GIS	Information Security	2	2	50	--	Grade	Grade
415ALV	Advanced Learners Course I-Management thoughts in Thirukkural	--	3	--	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13/	**Semester V** Part III Core XIII- E-Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14/	Core XIV –Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15/	Core XV – Business Finance	5	3	25	75	100	4
515V16	Core XVI- Organizational Behaviour	4	3	25	50	75	3
515VE1	Elective I- Services Marketing	6	3	25	75	100	4
515BS3/ 515VS3	Part IV- Skill Based Course III- Business Data Analytics using EXCEL	3	3	75	--	75	3
615B17/ 615R17/ 615N17/ 615V17/	**Semester VI** Part III Core XVII-Management Accounting	6	3	25	75	100	4
615V18	Core XVIII –Strategic Management	4	3	25	50	75	3
615V19	Core XIX- RDBMS and Oracle Programming	3	3	25	50	75	3
615VP4	Core Practical IV - RDBMS and Oracle Programming	2	3	20	30	50	2
615VE2	Elective II- Entrepreneurship and Project Management	6	3	25	75	100	3
615VE3	Elective III- Global Business Management	6	3	25	75	100	4

615VS4	Part IV Skill Based Course IV- Principles of Insurance	3	3	75	--	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V-Extension Activity	--	--	50	--	50	2
615ALV	Advanced Learners Course II- ISO 9000 and TQM	--	3	--	100	100	3*
	TOTAL					3500	140

*Starred credits are to be treated as additional credits which are optional**

II UG Course
SEMESTER-III
Part IV-Non Major Elective Course I– Advertising   315NAD
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **25 hours**
- This paper enables the students to learn about advertising.
- To make the students know about the role of advertising in business
- To impart knowledge of visualization ad agency and ad budget.

Unit I
   Advertising-meaning-attributes of advertising - Structure of ad industry-role of advertising-draw backs of advertising. Forms of advertising.   (5Hours)
Unit II
   Ad budget – meaning - ad appropriations – Printer guide to allocation – Factors influencing the size – Methods of preparation.   (5Hours)
Unit III
   Visualisation: process-qualities-ad theme –ad copy: objectives - attributes-types. Ad layout: functions – types - principles of good layout.   (5Hours)
Unit IV
    Ad agency – meaning – Features – Elements of agency service – functions – agency relations. Advertising appeals – meaning-essentials of good appeal – ad appeal and buying motives.   (5Hours)

Unit V
         Advertising planning-steps- Media of advertising: indoor, outdoor, direct advertising, display advertising – e-advertising - choice of media. Ad testing – Need – advertising In India.
                                                                               (5Hours)
Book for study :
1. Advertising   - C.N. Sontakki, 3 rd edition reprint 2008 Kalyani Publishers, new delhi.

Book for reference:
1. Advertising theory &practice-S.A Chunawalla, 2004 Himalaya publishing house, Mumbai
 2. Advertising management-Sherlekar, victor and Nirmala prasad.

Part IV- Skill Based Course I – Principles of Banking   315VS1
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **38 hours**
  • To acquaint the students with the banking concepts and principles.
Unit I
        Commercial banking – definition – bank – banking system – commercial banking – functions – role of banks in economic development.   (8 Hours)
Unit II
        Central banking - need – principles – functions of RBI.   (8 Hours)
Unit III
        Negotiable instruments: meaning – characteristics – nature – features – types.
                                                                                    (8 Hours)
Unit IV
        Crossing – definition – need for crossing – types of crossing – Consequences of crossing – marking of a cheque.   (7 Hours)
Unit V
        Endorsement – definition – types of endorsement – effect of endorsement – rules regarding endorsement.   (7 Hours)

Books for study:
1. Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:
 1. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi,
              Reprint – 2013

 2. Banking principles and operations – M.N.Gopinath, First Edition August 2008,
                                          Snow White Publications Private Ltd, Mum

Part IV- Skill Based Course II – Banking Operations   415VS2
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **38 hours**
        To familiarise the students with banking operations and e-banking.
Unit I
        Bank customer – relationship – special types of customer. - Opening bank accounts – types of account – steps in opening accounts – disclosure of information.   (8 Hours)

Unit II
        Paying banker – meaning – banker's duty – precautions by a paying banker – Dishonoring customer's cheque – discourage of paying banker. Collecting banker – meaning – collecting banker's role – collecting banker's duty.   (8Hours)
Unit III
        Bank lending – significance of bank lending – lending sources – bank lending principles – forms of lending. E-banking – meaning – services of E-banking - benefits – initiatives and opportunities.   (8 Hours)

Unit IV

       Internet banking Vs traditional banking – mechanics of internet banking – major issues of internet banking – drawbacks. Mobile banking: meaning – definition – features – registration services – security issues.   (7 Hours)

Unit V

ATM – concept – features – ATM types – mechanism. Electronic fund transfer system: steps – benefits. INFINET – factors responsible for launch – benefits.   (7 Hours)

Books for study:

1. Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009,
                                    Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:

1. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi,
        Reprint – 2007
2. Banking principles and operations – M.N.Gopinath, First Edition August 2008,
                              Snow White Publications Private Ltd, Mumbai

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B.Com/B.Com(CA)/B.Com(e-Commerce)/BBA(CA)
SEMESTER - V
Part III - Core XIV – Income Tax
515B14/515R14/515N14/515V14
(For the students admitted from the academic year 2015-2016 onwards)

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Preamble   (75 Hours)

The objectives of this course are:

- To provide an in-depth knowledge of Income Tax Provisions.
- To impart practical knowledge about Income Tax calculation.

Unit I

       Income Tax Act – Definition of Income – Assessment year – Previous Year – Assessee – Scope of Income – Residential Status – Exempted Income.   (15 Hours)

Unit II

       Income from Salaries.   (15 Hours)

Unit III

       Income from House Property – Income from Other Sources.   (15 Hours)

Unit IV

       Profit and Gains of Business or Profession.   (15 Hours)

Unit V

       Capital Gains – Deductions from Gross Total Income with respect to payments only.
                                           (15 Hours)

Note: Distribution of Marks between theory and problem shall be 40% and 60% respectively.

Book for Study

Income Tax Law and Practice   : V.P. Gaur and D.B. Narang,
                                  Kalyani Publishers, Ludhiana.
                                  B.Com/BBA(CA)
                                  SEMESTER - V

<p style="text-align:center">

Part IV- Skill Based Course III –Business Data Analytics using EXCEL
515BS3/515VS3
(For the students admitted from the academic year 2015-2016 onwards)

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List of Practicals   **(35 Hours)**

1. Sort data in ascending and descending order.
2. Prepare employee payroll.
3. Design Mark Sheet.

4. Prepare chart for analysing students result.
5. Summarise and present data using pivot table.
6. Calculate mean, median and standard deviation.
7. Analyse the data using correlation.
8. Analyse the data using regression.
9. Calculate Time Value of money - NPV, IRR, ROI, using FV, NPER, PMT, PV, TYPE functions.
10. Calculate interest using financial functions.

BBA (CA)
SEMESTER – VI
Part IV- Skill Based Course IV - Principles of Insurance

615VS4

(For the students admitted from the academic year 2015-16 onwards)
Course Objectives: (38 Hours)
- To provide basic knowledge of insurance business.
- To enhance employability of students in insurance sector.

Unit I
Risk: Classification of Risks – Methods of Handling Risks. Risk insurance management – Introduction – Scope – Principles. (7 Hours)
Unit II
Insurance –Characteristics of insurance contract- Functions – Benefits of insurance. Insurance Contract: Essential elements of Insurance Contract – Insurance Documents.
(8 Hours)
Unit III
Life Insurance - Essential Features of life assurance – Classification of Policies – Assignment of life policy - Nomination-Surrender value - payment of claims. (8 Hours)
Unit IV
Marine Insurance – Characteristics – essential elements – Double Insurance - Kinds of marine policies –Marine losses and abandonment. (8 Hours)
Unit V
Fire Insurance – principles – types of fire policies. Property insurance - Motor Vehicle Insurance – Health Insurance. (7 Hours)

Book for Study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
Dr. P. Periasamy	Principles and Practice of Insurance	Himalaya Publishing House, New Delhi, 2015 Edition

Book for Reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
M.N. Mishra and Dr. S.B. Mishra	Insurance Principles and Practice	S.chand and Company Ltd, New Delhi 10thEdition

Part IV – ENVIRONMETNAL STUDIES

Unit I: Natural Resources

    Scope and importance of environmental studies- types of resources- forest resources- water resources- mineral resources- food resources- energy resources- land resources. Role of individual in conservation of natural resources.   (6 hours)

Unit II: Eco system

    Concept of eco system- structure and functions of a eco system- food chain- food web- ecological pyramids- types of eco system: forest eco system- grassland eco system- desert eco system- aquatic eco system.   (6 hours)

Unit III: Bio diversity

    Functions- value of bio diversity- bio diversity in India- threats to bio diversity- endangered and endemic species of India- conservation of bio diversity.   (6 hours)

Unit IV: Pollution and disaster management

    Causes, effects and control measures of: air pollution- water pollution- soil pollution – marine pollution- noise pollution- thermal pollution- role of an individual in the prevention of pollution- solid waste management- disaster management.   (6 hours)

Unit V: Social issues and the environment

    Environmental issues: water conservation- rain water harvesting- water shed management- climate change- global warming, acid rain, ozone layer depletion- consumerism and waste products- environmental laws- environmental ethics- public awareness. (6 hours)

Book for study:

Environmental science, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

Part IV- Value Education

Unit I:

Value Education: meaning, concept- purpose and significance in the present world- components. Human values: concept and types

Unit II:

Family values: family, brotherhood- pride of womanhood- duties and responsibilities – respect to elders- flexibility- importance of joint family- dependability- accomplishment- family ethics.

Unit III:

Social values: society- social sense and commitment- social awareness – consumer awareness- consumer rights and responsibility.

Unit IV:

National values: citizenship- salient features of the Indian constitution- fundamental rights and duties- franchise- unity in diversity- role of youth towards national integration and development.

Unit V:

Life skills: self awareness- health- self esteem- self management- relationship management- cognitive skills- yoga and meditation for healthy life.

Book for study:

Value Education, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

2015 – 2016

Program Code	Course Code	UG BBA(CA)	Explanation
BV	315VS1	SBC I-Principles of banking	Develop a clear understanding and knowledge about the functioning of a Central bank and Commercial bank.
BV	415VS2	SBC II- Banking operations	Able to understand the differentiation between paying banker and collecting banker with respect to negotiable instruments
BU	514US3	SBC III – E-Banking	To equip the students with the operational aspects of E-banking products and services.
BU	614US4	SBC IV – Banking practical's	To have basic practical knowledge supported by text books including up-to-date information in the field of Banking sector.
BV	415GIS	Part IV - Information Security	Appreciate the value of information to the modern organization and difficulties that arise when valuable information needs to be shared.
BV	315NAD	NME-Advertising	To impart knowledge of visualization ad agency and ad budget.
BV	515V14	Core XIV – Income Tax	To provide an in-depth knowledge of Income Tax Provisions and calculations.
BV	115EVS	Part IV - Environmental Studies	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
BV	215VEC	Part IV - Value Education	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Business Administration (Computer Application)
BBA (CA)
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
115BT1/ 115MY1/ 115HD1/ 115FR1	**Semester I** Part I-Language I	6	3	25	75	100	4
115EN1	Part II- English I	6	3	25	75	100	4
115V01	Part III Core I- Business Organisation	5	3	25	50	75	3
115B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1/	Allied I –.Office Automation Tools-Practical	6	3	40	60	100	4
115EVS	Part IV-Environmental Studies	2	2	50	--	50	2
215BT2/ 215MY2/ 215HD2/ 215FR2	**Semester II** Part I-Language II	6	3	25	75	100	4
215EN2	Part II- English II	6	3	25	75	100	4
215V03	Part III Core III - Programming in C	3	3	25	50	75	3
215VP1	Core Practical I- Programming in C	2	3	20	30	50	2
215B04/ 215R04/ 215N04/ 215V04	Core IV- Marketing	5	3	25	75	100	4
215AV2	Allied II –Principles of Accountancy	6	3	25	75	100	4

215VEC	Part IV-Value Education	2	2	50	--	50	2
315V05	**Semester III** Part III Core V- Production and Materials Management	4	3	25	50	75	3
315B06/ 315V06	Core VI– Commercial Law	5	3	25	75	100	4
315V07	Core VII- Programming in C++	4	3	25	50	75	3
315VP2	Core Practical II- Programming in C++	2	3	20	30	50	2
315V08	Core VIII – Human Resource Management	4	3	25	50	75	3
315AV3	Allied III- Mathematical Techniques	6	3	25	75	100	4
315NAD	Part IV-Non Major Elective Course I-Advertising	2	2	50	--	50	3
315VS1	Skill Based Course I-Principles of Banking	3	3	75	--	75	3
415B09/ 415R09/ 415N09/ 415V09	**Semester IV** Part III Core IX – Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10/	Core X– Cost Accounting	5	3	25	75	100	4
415V11	Core XI- Visual Basic	3	3	25	50	75	3
415VP3	Core Practical III- Visual Basic	2	3	20	30	50	2
415V12	Core XII - Advertising and Marketing Research	4	3	25	50	75	3
415AV4	Allied IV –Business Environment	6	3	25	75	100	4
415NGA	Part IV Non Major Elective Course II - General Awareness (Online)	--	1	50	--	50	2

415VS2	Skill Based Course II-Banking Operations	3	3	75	--	75	3
415GIS	Information Security	2	2	50	--	Grade	Grade
415ALV	Advanced Learners Course I- Management thoughts in Thirukkural	--	3	--	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13/	**Semester V** Part III Core XIII- E-Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14/	Core XIV –Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15/	Core XV – Business Finance	5	3	25	75	100	4
515V16	Core XVI- Organizational Behaviour	4	3	25	50	75	3
515VE1	Elective I- Services Marketing	6	3	25	75	100	4
515BS3/ 515VS3	Part IV- Skill Based Course III- Business Data Analytics using EXCEL	3	3	75	--	75	3
615B17/ 615R17/ 615N17/ 615V17/	**Semester VI** Part III Core XVII-Management Accounting	6	3	25	75	100	4
615V18	Core XVIII –Strategic Management	4	3	25	50	75	3
615V19	Core XIX- RDBMS and Oracle Programming	3	3	25	50	75	3
615VP4	Core Practical IV - RDBMS and Oracle Programming	2	3	20	30	50	2
615VE2	Elective II- Entrepreneurship and Project Management	6	3	25	75	100	3
615VE3	Elective III- Global Business Management	6	3	25	75	100	4

<mark>615VS4</mark>	<mark>Part IV Skill Based Course IV- Principles of Insurance</mark>	3	3	75	--	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V-Extension Activity	--	--	50	--	50	2
615ALV	Advanced Learners Course II- ISO 9000 and TQM	--	3	--	100	100	3*
TOTAL						3500	140

*Starred credits are to be treated as additional credits which are optional

II UG Course
SEMESTER-III
Part IV-Non Major Elective Course I– Advertising   315NAD
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **25 hours**
- This paper enables the students to learn about advertising.
- To make the students know about the role of advertising in business
- To impart knowledge of visualization ad agency and ad budget.

Unit I

Advertising-meaning-attributes of advertising - Structure of ad industry-role of advertising-draw backs of advertising. Forms of advertising.   (5Hours)

Unit II

Ad budget – meaning - ad appropriations – Printer guide to allocation – Factors influencing the size – Methods of preparation.   (5Hours)

Unit III

Visualisation: process-qualities-ad theme –ad copy: objectives - attributes-types. Ad layout: functions – types - principles of good layout.   (5Hours)

Unit IV

Ad agency – meaning – Features – Elements of agency service – functions – agency relations. Advertising appeals – meaning-essentials of good appeal – ad appeal and buying motives.   (5Hours)

Unit V

Advertising planning-steps- Media of advertising: indoor, outdoor, direct advertising, display advertising – e-advertising - choice of media. Ad testing – Need – advertising In India.   (5Hours)

Book for study :

1. Advertising   - C.N. Sontakki, 3 rd edition reprint 2008 Kalyani Publishers, new delhi.

Book for reference:

1. Advertising theory &practice-S.A Chunawalla, 2004 Himalaya publishing house, Mumbai
 2. Advertising management-Sherlekar, victor and Nirmala prasad.

Part IV- Skill Based Course I – Principles of Banking   315VS1
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **38 hours**
- To acquaint the students with the banking concepts and principles.

Unit I

Commercial banking – definition – bank – banking system – commercial banking – functions – role of banks in economic development.   (8 Hours)

Unit II

Central banking - need – principles – functions of RBI.   (8 Hours)

Unit III

Negotiable instruments: meaning – characteristics – nature – features – types.
                                                                          (8 Hours)

Unit IV

Crossing – definition – need for crossing – types of crossing – Consequences of crossing – marking of a cheque.   (7 Hours)

Unit V

Endorsement – definition – types of endorsement – effect of endorsement – rules regarding endorsement.   (7 Hours)

Books for study:

1. Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:

3. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi,
        Reprint – 2013

4. Banking principles and operations – M.N.Gopinath, First Edition August 2008,
                                Snow White Publications Private Ltd, Mum

Part IV- Skill Based Course II – Banking Operations   415VS2
(For the students admitted from the academic year 2015-16 onwards)

Preamble: **38 hours**

To familiarise the students with banking operations and e-banking.

Unit I

Bank customer – relationship – special types of customer. - Opening bank accounts – types of account – steps in opening accounts – disclosure of information.   (8 Hours)

Unit II

Paying banker – meaning – banker's duty – precautions by a paying banker – Dishonoring customer's cheque – discourage of paying banker. Collecting banker – meaning – collecting banker's role – collecting banker's duty.   (8Hours)

Unit III

Bank lending – significance of bank lending – lending sources – bank lending principles – forms of lending. E-banking – meaning – services of E-banking - benefits – initiatives and opportunities.   (8 Hours)

Unit IV

     Internet banking Vs traditional banking – mechanics of internet banking – major issues of internet banking – drawbacks. Mobile banking: meaning – definition – features – registration services – security issues.   (7 Hours)

Unit V

ATM – concept – features – ATM types – mechanism. Electronic fund transfer system: steps – benefits. INFINET – factors responsible for launch – benefits.   (7 Hours)

Books for study:

   2. Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009,

                                Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:

 3. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi,

           Reprint – 2007

 4. Banking principles and operations – M.N.Gopinath, First Edition August 2008,

                          Snow White Publications Private Ltd, Mumbai

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B.Com/B.Com(CA)/B.Com(e-Commerce)/BBA(CA)
SEMESTER - V
Part III - Core XIV – Income Tax
515B14/515R14/515N14/515V14
(For the students admitted from the academic year 2015-2016 onwards)

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Preamble   (75 Hours)

The objectives of this course are:

     • To provide an in-depth knowledge of Income Tax Provisions.

     • To impart practical knowledge about Income Tax calculation.

Unit I

     Income Tax Act – Definition of Income – Assessment year – Previous Year – Assessee – Scope of Income – Residential Status – Exempted Income.   (15 Hours)

Unit II

     Income from Salaries.   (15 Hours)

Unit III

     Income from House Property – Income from Other Sources.   (15 Hours)

Unit IV

     Profit and Gains of Business or Profession.   (15 Hours)

Unit V

     Capital Gains – Deductions from Gross Total Income with respect to payments only.

                                          (15 Hours)

Note: Distribution of Marks between theory and problem shall be 40% and 60% respectively.

Book for Study

Income Tax Law and Practice   : V.P. Gaur and D.B. Narang,

                             Kalyani Publishers, Ludhiana.

                             B.Com/BBA(CA)

                             SEMESTER - V

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P
art IV- Skill Based Course III –Business Data Analytics using EXCEL
515BS3/515VS3
(For the students admitted from the academic year 2015-2016 onwards)

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 List of Practicals   **(35 Hours)**

   11. Sort data in ascending and descending order.

   12. Prepare employee payroll.

   13. Design Mark Sheet.

14. Prepare chart for analysing students result.
15. Summarise and present data using pivot table.
16. Calculate mean, median and standard deviation.
17. Analyse the data using correlation.
18. Analyse the data using regression.
19. Calculate Time Value of money - NPV, IRR, ROI, using FV, NPER, PMT, PV, TYPE functions.
20. Calculate interest using financial functions.

BBA (CA)
SEMESTER – VI
Part IV- Skill Based Course IV - Principles of Insurance

615VS4

(For the students admitted from the academic year 2015-16 onwards)
Course Objectives: **(38 Hours)**
- To provide basic knowledge of insurance business.
- To enhance employability of students in insurance sector.

Unit I
Risk: Classification of Risks – Methods of Handling Risks. Risk insurance management – Introduction – Scope – Principles. (7 Hours)
Unit II
Insurance –Characteristics of insurance contract- Functions – Benefits of insurance. Insurance Contract: Essential elements of Insurance Contract – Insurance Documents.
(8 Hours)
Unit III
Life Insurance - Essential Features of life assurance – Classification of Policies – Assignment of life policy - Nomination-Surrender value - payment of claims.
(8 Hours)
Unit IV
Marine Insurance – Characteristics – essential elements – Double Insurance - Kinds of marine policies –Marine losses and abandonment. (8 Hours)
Unit V
Fire Insurance – principles – types of fire policies. Property insurance - Motor Vehicle Insurance – Health Insurance. (7 Hours)

Book for Study

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
Dr. P. Periasamy	Principles and Practice of Insurance	Himalaya Publishing House, New Delhi, 2015 Edition

Book for Reference

Author	Title	Publisher, Place of Publication, Edition, Year of Publication
M.N. Mishra and Dr. S.B. Mishra	Insurance Principles and Practice	S.chand and Company Ltd, New Delhi 10thEdition

Part IV – ENVIRONMETNAL STUDIES

Unit I: Natural Resources

      Scope and importance of environmental studies- types of resources- forest resources- water resources- mineral resources- food resources- energy resources- land resources. Role of individual in conservation of natural resources.   (6 hours)

Unit II: Eco system

      Concept of eco system- structure and functions of a eco system- food chain- food web- ecological pyramids- types of eco system: forest eco system- grassland eco system- desert eco system- aquatic eco system.   (6 hours)

Unit III: Bio diversity

      Functions- value of bio diversity- bio diversity in India- threats to bio diversity- endangered and endemic species of India- conservation of bio diversity.   (6 hours)

Unit IV: Pollution and disaster management

      Causes, effects and control measures of: air pollution- water pollution- soil pollution – marine pollution- noise pollution- thermal pollution- role of an individual in the prevention of pollution- solid waste management- disaster management.   (6 hours)

Unit V: Social issues and the environment

      Environmental issues: water conservation- rain water harvesting- water shed management- climate change- global warming, acid rain, ozone layer depletion- consumerism and waste products- environmental laws- environmental ethics- public awareness. (6 hours)

Book for study:

Environmental science, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

Part IV- Value Education

Unit I:

Value Education: meaning, concept- purpose and significance in the present world- components. Human values: concept and types

Unit II:

Family values: family, brotherhood- pride of womanhood- duties and responsibilities – respect to elders- flexibility- importance of joint family- dependability- accomplishment- family ethics.

Unit III:

Social values: society- social sense and commitment- social awareness – consumer awareness- consumer rights and responsibility.

Unit IV:

National values: citizenship- salient features of the Indian constitution- fundamental rights and duties- franchise- unity in diversity- role of youth towards national integration and development.

Unit V:

Life skills: self awareness- health- self esteem- self management- relationship management- cognitive skills- yoga and meditation for healthy life.

Book for study:

Value Education, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

2014 -2015

Program Code	Course Code	UG BBA(CA)	Explanation
BU	314US1	SBC I-Principles of banking	Develop a clear understanding and knowledge about the functioning of a Central bank and Commercial bank.
BU	414US2	SBC II- Banking operations	Able to understand the differentiation between paying banker and collecting banker with respect to negotiable instruments
BU	514US3	SBC III – E-Banking	To equip the students with the operational aspects of E-banking products and services.
BU	614US4	SBC IV – Banking practical's	To have basic practical knowledge supported by text books including up-to-date information in the field of Banking sector.
BU	314NAD	NME-Advertising	To impart knowledge of visualization ad agency and ad budget.
BU	111EVS	Part IV - Environmental Studies	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
BU	211VEC	Part IV - Value Education	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.

DEPARTMENT OF BBM (CA)
SEMESTER WISE DISTRIBUTION WITH SCHEME OF EXAMINATION
For candidates admitted from (2012-13 only)

Sem	Course	Credit	Duration of Exam Hours(ESE)	CIA	ESE	Total
I	Part I-Language I	3	3	25	75	100
	Part II- English I	3	3	25	75	100
	Part III- Core I- Business Organization	3	3	25	75	100
	Part III- Core II- Principles of Management	3	3	25	75	100
	Part III-Core Practical I-MS-Office	5	3	30	45	75
	Part III-Allied I – Mathematics for management	5	3	25	75	100
	Part IV-Environmental Studies	2	-	50	--	50
II	Part I-Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III- Core III- Programming in C	3	3	25	75	100
	Part III-Core IV -Principles of Accountancy	3	3	25	75	100
	Part III- Core Practical - II Programming in C	3	3	30	45	75
	Part III-Allied II – Mathematical Techniques	5	3	25	75	100
	Part III-Advanced Learner's Course -I-Management thoughts in Thirukkural	3*	3 -	--	100	100
	Part IV-Value Education	2		50	100	50
III	Part III- Core V- Business Economics	3	3	25	75	100
	Part III-Core VI Business Communication	3	3	25	75	100
	Part III-Core VII- Production and Materials Management	3	3	25	75	100
	Part III-Core VIII- Programming in C++	4	3	20	55	75
	Part III-Core Practical III- Programming in C++	3	3	30	45	75
	Part III-Allied III –Taxation	5	3	25	75	100
	Part IV-Non Major Elective	2	3	75	--	75
	Part IV-Skill Based Course I-Principles of Banking	3	--	100	--	100

Sem	Course	Credits	Hours	Internal	External	Total
IV	Part III- Core IX- Cost and Management Accounting	3	3	25	75	100
	Part III-Core X – Visual Basic	4	3	20	55	75
	Part III-Core Practical IV- Visual Basic	3	3	30	45	75
	Elective –I- Human Resource Management	5	3	25	75	100
	Allied IV –Mercantile Law	5	3	25	75	100
	Part III-Advanced Learner's Course II- Business Environment	3*	3	--	100	100
	Part IV-General awareness	2	--	75	--	75
	<mark>Part IV-Skill Based Course II-Basic Banking Operations</mark>	3	--	100	--	100
	Part V-Extension Activity	1	--	50	--	50
V	Part III- Core XI-Marketing Management	3	3	20	55	75
	Part III-Core XII – Organizational Behaviour	3	3	25	75	100
	Part III-Core XIII – Global Business Management	3	3	25	75	100
	Part III-Core XIV – Java Programming	2	3	20	55	75
	Part III-Core Practical V- Java Programming	3	3	30	45	75
	Part III-Elective –II- Entrepreneurship and Project Management	5	3	20	55	75
	<mark>Part IV-Skill Based Course III-E-Banking</mark>	3	--	100	--	100
VI	Part III- Core XV- Financial Management	3	3	25	75	100
	Part III-Core XVI –Strategic Management	3	3	25	75	100
	Part III-Core XVII- Advertising and Marketing Research	3	3	20	55	75
	Part III-Elective –III- Computerized Accounting Tally	5	3	30	45	75
	Project and Vivavoce	3	--	--	100	100
	Part III-Advanced Learner's Course III- ISO 9000&TQM	3*	3	--	100	100
	<mark>Part IV-Skill Based Course IV-Banking Practicals</mark>	3	--	100	--	100

- *Starred credits are to be treated as additional credits which are optional
- Non major elective course offered: Advertising
- 30% of the syllabus in each subject should be taught using OHP LCD and SEMINARS

Part IV – ENVIRONMETNAL STUDIES

Unit I: Natural Resources

Scope and importance of environmental studies- types of resources- forest resources- water resources- mineral resources- food resources- energy resources- land resources. Role of individual in conservation of natural resources.   (6 hours)

Unit II: Eco system

Concept of eco system- structure and functions of a eco system- food chain- food web- ecological pyramids- types of eco system: forest eco system- grassland eco system- desert eco system- aquatic eco system.   (6 hours)

Unit III: Bio diversity

Functions- value of bio diversity- bio diversity in India- threats to bio diversity- endangered and endemic species of India- conservation of bio diversity.   (6 hours)

Unit IV: Pollution and disaster management

Causes, effects and control measures of: air pollution- water pollution- soil pollution – marine pollution- noise pollution- thermal pollution- role of an individual in the prevention of pollution- solid waste management- disaster management.   (6 hours)

Unit V: Social issues and the environment

Environmental issues: water conservation- rain water harvesting- water shed management- climate change- global warming, acid rain, ozone layer depletion- consumerism and waste products- environmental laws- environmental ethics- public awareness. (6 hours)

Book for study:

Environmental science, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

Part IV- Value Education

Unit I:

Value Education: meaning, concept- purpose and significance in the present world- components. Human values: concept and types

Unit II:

Family values: family, brotherhood- pride of womanhood- duties and responsibilities – respect to elders- flexibility- importance of joint family- dependability- accomplishment- family ethics.

Unit III:

Social values: society- social sense and commitment- social awareness – consumer awareness- consumer rights and responsibility.

Unit IV:

National values: citizenship- salient features of the Indian constitution- fundamental rights and duties- franchise- unity in diversity- role of youth towards national integration and development.

Unit V:

Life skills: self awareness- health- self esteem- self management- relationship management- cognitive skills- yoga and meditation for healthy life.

Book for study:

Value Education, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

BBM(CA)-Semester-III
Part IV-Non Major Elective – Advertising QP Code:314NAD
For the candidates admitted from 2011-2012 onwards

Preamble: **25 hours**

- This paper enables the students to learn about advertising.
- To make the students know about the role of advertising in business
- To impart knowledge of visualisation ad agency and ad budget.

Module-I

   Advertising-meaning-attributes of advertising – publicity, propoganda, sales promotion and advertising - Structure of ad industry-role of advertising-draw backs of advertising. Forms of advertising.   (5hrs)

Module –II

   Ad budget –meaning - ad appropriations – Printer guide to allocation – ad budget procedure – Factors influencing the size – Methods of preparation.   (5hrs)

Module-III

   Visualisation : process-qualities-ad theme –ad copy: objectives-attributes-types. Structuring a poster, radio& television copy. adlayout: functions- types-principles of good layout. Typography: meaning-principles of good typography. colour in advertising :functions-limitations of colour uses.   (5hrs)

Module-IV

    Ad agency – meaning – Features – Elements of agency service – functions – organization of ad agency – selection – agency relations. Advertising appeals – meaning-essentials of good appeal – ad appeal and buying motives – appeals and selling points – classification of ad appeals.   (5hrs)

Module V

       Advertising planning-steps- Media of advertising: indoor, outdoor, direct advertising, display advertising – e-advertising - choice of media-factors governing the choice. Ad testing – Need – Methods of testing – advertising In India.   (5Hrs)

Book for study

Advertising   - C.N. Sontakki,3 rd edition reprint 2008 Kalyani Publishers,new delhi.

Book for references:

       Advertising theory &practice-S.A Chunawalla, 2004 Himalaya publishing house Mumbai

       Advertising management-Sherlekar, victor and Nirmala prasad.

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BBM [CA] Semester – III

Part IV- Skill Based Course I – Principles of banking QP code: 314US1

For the candidates admitted from 2011 – 2012 onwards

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Preamble   **38 hours**

       To acquaint the students with the banking concepts and principles.

Module I:

       Commercial banking – definition – bank – banking system – commercial banking – functions – role of banks in economic development.   (8 Hrs)

Module II:

Central banking - need – principles – central banking functions – functions of RBI.   (8 Hrs)

Module III:

       Negotiable instruments: meaning – characteristics – nature – features – types. (8 Hrs)

Module IV:

       Crossing – definition – need for crossing – types of crossing – Consequences of crossing – marking of a cheque.   (7 Hrs)

Module V:

       Endorsement – definition – types of endorsement – effect of endorsement – rules regarding endorsement.   (7 Hrs)

Books for study:
Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.
Books for reference:
1. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi, Reprint – 2007
2. Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow White Publications Private Ltd, Mumbai.

BBM [CA] Semester – IV
Part IV- Skill Based Course II – Basic Banking Operations QP Code: 414US2
For the candidates admitted from 2011 – 2012 onwards

Preamble: **38 hours**
       To familiarise the students with basic banking operations.
Module I:
       Bank customer – relationship – special types of customer.   (8 Hrs)

Module II:
       Opening bank accounts – types of account – steps in opening accounts – disclosure of information.   (8Hrs)
Module III:
       Paying banker – meaning – banker's duty – precautions by a paying banker – Dishonoring customer's cheque – discourage of paying banker – material alteration – statutory protection – refusal of cheque payment.   (8 Hrs)
Module IV:
       Collecting banker – meaning – collecting banker's role – statutory protection – payment in due course – collecting banker's duty.   (7 Hrs)
Module V:
       Bank lending – significance of bank lending – lending sources – bank lending principles – forms of lending – securities for lending – factors influencing bank lending.
                                                                                    (7 Hrs)
Books for study:
Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.
Books for reference:
1. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi, Reprint – 2007
2. Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow White Publications Private Ltd, Mumbai.

BBM [CA] Semester – V
Part IV- Skill Based Course III – E-Banking
For the candidates admitted from 2010 – 2011 onwards
QP Code: 514US3
38 hours

Preamble:
       To equip the students with the operational aspects of E-banking products and services.
Module I:
       E-banking – meaning – services of E-banking - E-banking and financial services – benefits – initiatives and opportunities – risk management for E-banking – types of risks - meaning risks.   (8 Hrs)

Module II:

Internet banking Vs traditional banking – mechanics of internet banking – major issues of internet banking – drawbacks – Indian scenario – future outlook.
(8 Hrs)

Module III:

Mobile banking: meaning – definition – features – registration services – security issues. Telephone banking: menaing – definition – features – mechanism – banking facilities – Telephone banking system – drawbacks – Call centers.   (8 Hrs)

Module IV:

ATM – concept – features – ATM types – mechanism – ATM functions.   (7 Hrs)

Module V:

Electronic fund transfer system: steps – benefits. Electronic payment system – methods of payment.   INFINET – factors responsible for launch – benefits – application of INFINET.
(7 Hrs)

Books for study:

Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:

1. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi, Reprint – 2007
2. Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow White Publications Private Ltd, Mumbai.

2013 -2014

Program Code	Course Code	UG BBA(CA)	Explanation
BU	313US1	SBC I-Principles of banking	Develop a clear understanding and knowledge about the functioning of a Central bank and Commercial bank.
BU	413US2	SBC II- Banking operations	Able to understand the differentiation between paying banker and collecting banker with respect to negotiable instruments
BU	513US3	SBC III – E-Banking	To equip the students with the operational aspects of E-banking products and services.
BU	613US4	SBC IV – Banking practical's	To have basic practical knowledge supported by text books including up-to-date information in the field of Banking sector.
BU	313NAD	NME-Advertising	To impart knowledge of visualization ad agency and ad budget.
BU	111EVS	Part IV - Environmental Studies	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
BU	211VEC	Part IV - Value Education	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.

DEPARTMENT OF BBM (CA)
SEMESTER WISE DISTRIBUTION WITH SCHEME OF EXAMINATION
For candidates admitted from (2012-13 only)

Sem	Course	Credit	Duration of Exam Hours(ESE)	Marks CIA	Marks ESE	Total
I	Part I-Language I	3	3	25	75	100
	Part II- English I	3	3	25	75	100
	Part III- Core I- Business Organization	3	3	25	75	100
	Part III- Core II- Principles of Management	3	3	25	75	100
	Part III-Core Practical I-MS-Office	5	3	30	45	75
	Part III-Allied I – Mathematics for management	5	3	25	75	100
	Part IV-Environmental Studies	2	-	50	--	50
II	Part I-Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III- Core III- Programming in C	3	3	25	75	100
	Part III-Core IV -Principles of Accountancy	3	3	25	75	100
	Part III- Core Practical - II Programming in C	3	3	30	45	75
	Part III-Allied II – Mathematical Techniques	5	3	25	75	100
	Part III-Advanced Learner's Course -I-Management thoughts in Thirukkural	3*	3 -	--	100	100
	Part IV-Value Education	2		50	100	50
III	Part III- Core V- Business Economics	3	3	25	75	100
	Part III-Core VI Business Communication	3	3	25	75	100
	Part III-Core VII- Production and Materials Management	3	3	25	75	100
	Part III-Core VIII- Programming in C++	4	3	20	55	75
	Part III-Core Practical III- Programming in C++	3	3	30	45	75
	Part III-Allied III –Taxation	5	3	25	75	100
	Part IV-Non Major Elective	2	3	75	--	75
	Part IV-Skill Based Course I-Principles of Banking	3	--	100	--	100

IV	Part III- Core IX- Cost and Management Accounting	3	3	25	75	100
	Part III-Core X – Visual Basic	4	3	20	55	75
	Part III-Core Practical IV- Visual Basic	3	3	30	45	75
	Elective –I- Human Resource Management	5	3	25	75	100
	Allied IV –Mercantile Law	5	3	25	75	100
	Part III-Advanced Learner's Course II- Business Environment	3*	3	--	100	100
	Part IV-General awareness	2	--	75	--	75
	<mark>Part IV-Skill Based Course II-Basic Banking Operations</mark>	3	--	100	--	100
	Part V-Extension Activity	1	--	50	--	50
V	Part III- Core XI-Marketing Management	3	3	20	55	75
	Part III-Core XII – Organizational Behaviour	3	3	25	75	100
	Part III-Core XIII – Global Business Management	3	3	25	75	100
	Part III-Core XIV – Java Programming	2	3	20	55	75
	Part III-Core Practical V- Java Programming	3	3	30	45	75
	Part III-Elective –II- Entrepreneurship and Project Management	5	3	20	55	75
	<mark>Part IV-Skill Based Course III-E-Banking</mark>	3	--	100	--	100
VI	Part III- Core XV- Financial Management	3	3	25	75	100
	Part III-Core XVI –Strategic Management	3	3	25	75	100
	Part III-Core XVII- Advertising and Marketing Research	3	3	20	55	75
	Part III-Elective –III- Computerized Accounting Tally	5	3	30	45	75
	Project and Vivavoce	3	--	--	100	100
	Part III-Advanced Learner's Course III- ISO 9000&TQM	3*	3	--	100	100
	<mark>Part IV-Skill Based Course IV-Banking Practicals</mark>	3	--	100	--	100

- *Starred credits are to be treated as additional credits which are optional
- Non major elective course offered: Advertising
- 30% of the syllabus in each subject should be taught using OHP LCD and SEMINARS

Part IV – ENVIRONMETNAL STUDIES

Unit I: Natural Resources

      Scope and importance of environmental studies- types of resources- forest resources- water resources- mineral resources- food resources- energy resources- land resources. Role of individual in conservation of natural resources.   (6 hours)

Unit II: Eco system

      Concept of eco system- structure and functions of a eco system- food chain- food web- ecological pyramids- types of eco system: forest eco system- grassland eco system- desert eco system- aquatic eco system.   (6 hours)

Unit III: Bio diversity

      Functions- value of bio diversity- bio diversity in India- threats to bio diversity- endangered and endemic species of India- conservation of bio diversity.   (6 hours)

Unit IV: Pollution and disaster management

      Causes, effects and control measures of: air pollution- water pollution- soil pollution – marine pollution- noise pollution- thermal pollution- role of an individual in the prevention of pollution- solid waste management- disaster management.   (6 hours)

Unit V: Social issues and the environment

      Environmental issues: water conservation- rain water harvesting- water shed management- climate change- global warming, acid rain, ozone layer depletion- consumerism and waste products- environmental laws- environmental ethics- public awareness. (6 hours)

Book for study:

Environmental science, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

Part IV- Value Education

Unit I:

Value Education: meaning, concept- purpose and significance in the present world- components. Human values: concept and types

Unit II:

Family values: family, brotherhood- pride of womanhood- duties and responsibilities – respect to elders- flexibility- importance of joint family- dependability- accomplishment- family ethics.

Unit III:

Social values: society- social sense and commitment- social awareness – consumer awareness- consumer rights and responsibility.

Unit IV:

National values: citizenship- salient features of the Indian constitution- fundamental rights and duties- franchise- unity in diversity- role of youth towards national integration and development.

Unit V:

Life skills: self awareness- health- self esteem- self management- relationship management- cognitive skills- yoga and meditation for healthy life.

Book for study:

Value Education, Edited by curriculum development committee, Sri G.V.G.Visalakshi College for Women.

BBM(CA)-Semester-III
Part IV-Non Major Elective - Advertising
For the candidates admitted from 2011-2012 onwards

                         QP Code:313NAD

Preamble: **25 hours**

- This paper enables the students to learn about advertising.
- To make the students know about the role of advertising in business
- To impart knowledge of visualisation ad agency and ad budget.

Module-I

Advertising-meaning-attributes of advertising – publicity, propoganda, sales promotion and advertising - Structure of ad industry-role of advertising-draw backs of advertising. Forms of advertising.   (5hrs)

Module –II

Ad budget –meaning - ad appropriations – Printer guide to allocation – ad budget procedure – Factors influencing the size – Methods of preparation.   (5hrs)

Module-III

Visualisation: process-qualities-ad theme –ad copy: objectives- attributes- types. Structuring a poster, radio& television copy. ad layout: functions- types- principles of good lay out. Typography: meaning- principles of good typography. colour in advertising :functions-limitations of colour uses.   (5hrs)

Module-IV

Ad agency – meaning – Features – Elements of agency service – functions – organization of ad agency – selection – agency relations. Advertising appeals – meaning-essentials of good appeal – ad appeal and buying motives – appeals and selling points – classification of ad appeals.
                                                                              (5hrs)

Module V

Advertising planning-steps- Media of advertising: indoor, outdoor, direct advertising, display advertising – e-advertising - choice of media-factors governing the choice. Ad testing – Need – Methods of testing – advertising In India.   (5Hrs)

Book for study

Advertising   - C.N. Sontakki,3 rd edition reprint 2008 Kalyani Publishers,new delhi.

Book for references:

Advertising theory &practice-S.A Chunawalla, 2004 Himalaya publishing house Mumbai

Advertising management-Sherlekar, victor and Nirmala prasad.
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BBM [CA] Semester – III
Part IV- Skill Based Course I – Principles of banking
For the candidates admitted from 2011 – 2012 onwards

                                                                    QP code: 313US1
Preamble   **38 hours**

To acquaint the students with the banking concepts and principles.

Module I:

Commercial banking – definition – bank – banking system – commercial banking – functions – role of banks in economic development.   (8 Hrs)

Module II:

Central banking - need – principles – central banking functions – functions of RBI.   (8 Hrs)

Module III:

Negotiable instruments: meaning – characteristics – nature – features – types. (8 Hrs)

Module IV:

Crossing – definition – need for crossing – types of crossing – Consequences of crossing – marking of a cheque.   (7 Hrs)

Module V:

Endorsement – definition – types of endorsement – effect of endorsement – rules regarding endorsement.   (7 Hrs)

Books for study:

 Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:
3. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi, Reprint – 2007
4. Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow White Publications Private Ltd, Mumbai.

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BBM [CA] Semester – IV
Part IV- Skill Based Course II – Basic Banking Operations
For the candidates admitted from 2011 – 2012 onwards
</div>

<div align="right">

QP Code: 413US2
</div>

Preamble: **38 hours**
          To familiarise the students with basic banking operations.
Module I:
          Bank customer – relationship – special types of customer.   (8 Hrs)
Module II:
          Opening bank accounts – types of account – steps in opening accounts – disclosure of information.   (8Hrs)
Module III:
          Paying banker – meaning – banker's duty – precautions by a paying banker – Dishonoring customer's cheque – discourage of paying banker – material alteration – statutory protection – refusal of cheque payment.   (8 Hrs)
Module IV:
          Collecting banker – meaning – collecting banker's role – statutory protection – payment in due course – collecting banker's duty.   (7 Hrs)
Module V:
          Bank lending – significance of bank lending – lending sources – bank lending principles – forms of lending – securities for lending – factors influencing bank lending.
                                                                                                              (7 Hrs)
Books for study:
 Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.
Books for reference:
3. Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi, Reprint – 2007
4. Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow White Publications Private Ltd, Mumbai.

<div align="center">

BBM [CA] Semester – V
Part IV- Skill Based Course III – E-Banking
For the candidates admitted from 2010 – 2011 onwards
QP Code: 513US3
</div>

Preamble: **38 hours**
          To equip the students with the operational aspects of E-banking products and services.
Module I:
          E-banking – meaning – services of E-banking - E-banking and financial services – benefits – initiatives and opportunities – risk management for E-banking – types of risks - meaning risks.   (8 Hrs)
Module II:
          Internet banking Vs traditional banking – mechanics of internet banking – major issues of internet banking – drawbacks – Indian scenario – future outlook.   (8 Hrs)

Module III:

Mobile banking: meaning – definition – features – registration services – security issues. Telephone banking: menaing – definition – features – mechanism – banking facilities – Telephone banking system – drawbacks – Call centers.   (8 Hrs)

Module IV:

ATM – concept – features – ATM types – mechanism – ATM functions.   (7 Hrs)

Module V:

Electronic fund transfer system: steps – benefits. Electronic payment system – methods of payment.   INFINET – factors responsible for launch – benefits – application of INFINET.
                                                                                                              (7 Hrs)

Books for study:

Banking Theory Law and practice – Dr.S.Gurusamy, reprint – 2009, Vijay Nicole Imprints Private Ltd, Chennai.

Books for reference:

Indian banking – S.Natarajan & R.Parameswaran, S.Chand & Co Ltd, New Delhi,
                                                            Reprint – 2007

Banking principles and operations – M.N.Gopinath, First Edition August 2008, Snow
                                                White Publications Private Ltd, Mumbai.

Department of B.Com (CA)

1.3.2 Number of value-added courses imparting transferable and life skills offered during the last five years (10)			
Name of the value added courses (with 30 or more contact hours)offered during last five years	Course Code	Year of offering	Explanation
Part IV – Environmental Studies	117EVS	2017-18	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
Part IV – Value Education	217VEC	2017-18	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
Part IV - Skill Based Course I - Principles of Insurance	315RS1	2017-18	To develop the skills relating to Principles of Insurance
Part IV - Skill Based Course II -Life Insurance Products	415RS2	2017-18	To develop the skills relating to Life Insurance
Part IV – Skill Based Course III - Non-Life Insurance Products	515RS3	2017-18	To develop the skills relating to General Insurance
Part IV – Skill Based Course IV- Data Analytics with Excel	615RS4	2017-18	To develop the practical knowledge of the students relating to Excel
Part IV-Non Major Elective Course I – Basics of Accounting and Inventory in Tally. ERP 9	315NBT	2017-18	To develop the practical knowledge of the students relating to Tally
Part IV – Environmental Studies	115EVS	2016-17	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
Part IV – Value Education	215VEC	2016-17	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
Part IV - Skill Based Course I - Principles of Insurance	315RS1	2016-17	To develop the skills relating to Principles of Insurance
Part IV - Skill Based Course II -Life Insurance Products	415RS2	2016-17	To develop the skills relating to Life Insurance
Part IV - Skill Based Course III - Non- Life Insurance Products	515RS3	2016-17	To develop the skills relating to General Insurance
Part IV - Skill Based Course IV - Data Analytics using Excel	615RS4	2016-17	To develop the practical knowledge of the students relating to Excel
Part IV-Non Major Elective Course I – Basics of Accounting and Inventory in Tally. ERP 9	315NBT	2016-17	To develop the practical knowledge of the students relating to Tally

Part IV – Environmental Studies	115EVS	2015-16	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
Part IV – Value Education	215VEC	2015-16	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
Part IV - Skill Based Course I - Principles of Banking	311RS1	2015-16	To develop the skills relating to Banking
Part IV - Skill Based Course II - Basic Banking Operations	411RS2	2015-16	To develop the skills relating to Banking operations
Part IV - Skill Based Course III -e-Banking	510RS3	2015-16	To develop the skills relating to e-Banking
Part IV - Skill Based Course IV - Practical	610RS4	2015-16	To develop the practical knowledge of the students relating Banking
Part IV-Non Major Elective Course I – Enterprise Resource Planning	312NER	2015-16	To develop the knowledge of the students relating to ERP
Part IV – Environmental Studies	111EVS	2014-15	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
Part IV – Value Education	211VEC	2014-15	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
Part IV - Skill Based Course I - Principles of Banking	311RS1	2014-15	To develop the skills relating to Banking
Part IV - Skill Based Course II - Basic Banking Operations	411RS2	2014-15	To develop the skills relating to Banking operations
Part IV - Skill Based Course III -e-Banking	510RS3	2014-15	To develop the skills relating to e-Banking
Part IV - Skill Based Course IV - Practical	610RS4	2014-15	To develop the practical knowledge of the students relating Banking
Part IV-Non Major Elective Course I – Enterprise Resource Planning	312NER	2014-15	To develop the knowledge of the students relating to ERP
Part IV – Environmental Studies	111EVS	2013-14	To make students conscious of environmental concerns and understand the consequences and impact of environmental trends on human life.
Part IV – Value Education	211VEC	2013-14	To develop fundamental values or respect for human dignity and human rights, democracy, equality and the rule of law to the students.
Part IV - Skill Based Course I -	311RS1	2013-14	To develop the skills relating to

	Principles of Banking				Banking
	Part IV - Skill Based Course II - Basic Banking Operations	411RS2	2013-14		To develop the skills relating to Banking operations
	Part IV - Skill Based Course III -e- Banking	510RS3	2013-14		To develop the skills relating to e-Banking
	Part IV - Skill Based Course IV - Practical	610RS4	2013-14		To develop the practical knowledge of the students relating Banking
	Part IV-Non Major Elective Course I – Enterprise Resource Planning	312NER	2013-14		To develop the knowledge of the students relating to ERP

2017-2018
Department of B.Com(CA)
Scheme of Examination - CBCS
(For the students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	
117BT1/ 117MY1/ 117HD1/ 117FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
117EN1	Part II – English – I	6	3	25	75	100	4
117B01/ 117R01/ 117N01	Part III – Core I- Financial Accounting - I	5	3	25	75	100	4
117B02/ 117R02	Core II- Business Organization	5	3	25	75	100	4
117AR1	Allied I – Computer Application Tools – Practical I	6	3	40	60	100	4
117EVS	Part IV – Environmental Studies	2	2	50	-	50	2
217BT2/ 217MY2/ 217HD2/ 217FR2	**Semester – II** Part I – Language - II	6	3	25	75	100	4
217EN2	Part II – English – II	6	3	25	75	100	4
217B03/ 217R03/ 217N03	Part III – Core III – Financial Accounting – II	5	3	25	75	100	4
217B04/ 217R04/ 217V04	Core IV –Principles of Marketing	5	3	25	75	100	4
217AR2	Allied II – C Programming and Web Designing – Practical II	6	3	40	60	100	4
217VEC	Part IV – Value Education	2	2	50	-	50	2
317B05/	**Semester – III** Part III-	5	3	25	75	100	4

317R05/ 317N05	Core V–Corporate Accounting						
317R06	Core VI - Object Oriented Programming with C++	5	3	25	50	75	3
317R07	Core VII- C++ Programming-Practical III	4	3	40	60	100	4
317R08	Core VIII- Enterprise Resource Planning	5	3	25	75	100	4
317AB3/ 317AR3/ 317AN3	Allied III – Mathematics in Business	6	3	25	75	100	4
317NMM	Part IV – Non Major Elective - Materials Management	2	2	50	-	50	2
317RS1	Part IV-Skill Enhancement Course I - Principles of Insurance	3	3	75	-	75	3
417R09	**Semester – IV** Part III- Core IX- Relational Database Management System	5	3	25	50	75	3
417B10/ 417R10/ 417N10/	Core X - Cost Accounting	5	3	25	75	100	4
417B11/ 417R11	Core XI - Banking Law and Practice	5	3	25	75	100	4
417R12	Core XII- MySQL Programming – Practical IV	4	3	40	60	100	4
417AB4/ 417AR4/ 417AN4	Allied IV- Statistics	6	3	25	75	100	4
417NGA	Part IV – General Awareness	-	1	50	-	50	2
417RS2	Part IV – Skill Enhancement Course II-Life Insurance	3	3	75	-	75	3
417GIS	Information Security - Level – II	2	2	50	-	Grade	Grade
417ALR	Advanced Learners Course I- Management Information System	-	-	-	100	100	4*

*Starred Credits are treated as additional credits, which are option**2016-2017**

Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of B.Com (Computer Applications)
B.Com (Computer Applications)
Scheme of Examination – CBCS Pattern
(For the students admitted during the academic year 2016-2017 only)

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER-I						
115BT1/ 115MY1/ 115HD1/ 115FR1	Part I- Language I	6	3	25	75	100	4
115EN1	Part II- English I	6	3	25	75	100	4
115B01/ 115R01/ 115N01	Part III- Core I – Financial Accounting	5	3	25	75	100	4
115B02/ 115R02/ 115N02/ 115V02	Core II – Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I - Office Automation Tools- Practical I	6	3	40	60	100	4
115EVS	Part IV- Environmental Studies	2	2	50	--	50	2
	SEMESTER- II						
215BT2/ 215MY2/ 215HD2/ 215FR2	Part I- Language II	6	3	25	75	100	4
215EN2	Part II- English II	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III- Core III – Company Law	5	3	25	75	100	4
215B04/ 215R04/ 215N04/ 215V04	Core IV - Marketing	5	3	25	75	100	4
216AR2	Allied II – C Programming and Web Designing– Practical II	6	3	40	60	100	4
215VEC	Part IV- Value Education	2	2	50	--	50	2

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER - III						
315B05/ 315R05/ 315N05	Part III - Core V – Higher Financial Accounting	5	3	25	75	100	4
315R06	Core VI – C++	5	3	25	50	75	3
315R07	Core VII– C++ – Practical III	4	3	40	60	100	4
315R08	Core VIII – Enterprise Resource Planning	5	3	25	50	75	3
315AB3/ 315AR3/ 315AN3	Allied III - Mathematics in Business	6	3	25	75	100	4
315NBT	Part IV-Non Major Elective Course I – Basics of Accounting and Inventory in Tally. ERP 9	2	2	50	--	50	2
315RS1	Part IV-Skill Based Course I - Principles of Insurance	3	3	75	--	75	3
	SEMESTER - IV						
415B09/ 415R09/ 415N09/ 415V09	Part III- Core IX – Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X – Cost Accounting	5	3	25	75	100	4
415R11	Core XI - Relational Database Management System	5	3	25	75	100	4
415R12	Core XII - RDBMS– Practical IV	4	3	40	60	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV- General Awareness **(Online)**	--	1	50	--	50	2
415RS2	Part IV – Skill Based Course II- Life Insurance Products	3	3	75	--	75	3
415GIS	Part IV - Information Security	2	2	50	--	Grade	Grade
415ALR	Advanced Learner's Course I- Subject Viva-Voce	--	--	--	100	100	4*

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER- V						
515B13/ 515R13/ 515N13/ 515V13	Part III- Core XIII - E-Accounting - Practical V	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV - Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV – Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI – Higher Corporate Accounting	5	3	25	75	100	4
515RE1	Elective I – Banking Law and Practice	5	3	25	75	100	4
515RS3	Part IV – Skill Based Course III - Non-Life Insurance Products	3	3	75	--	75	3
	SEMESTER- VI						
615B17/ 615R17/ 615N17/ 615V17	Part III- Core XVII – Management Accounting	6	3	25	75	100	4
615B18/ 615R18/ 615N18	Core XVIII – E- Commerce	6	3	25	75	100	4
615R19	Core XIX – Visual Basic	5	3	25	75	100	4
615RE2	Elective II– Visual Basic– Practical VI	4	3	40	60	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
615RS4	Part IV – Skill Based Course IV- Data Analytics with Excel	3	3	75	--	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V– Extension Activity	--	--	50	--	50	2
6 15ALR	Advanced Learner's Course II - Subject Viva-Voce		--	--	100	100	4*

Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
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Department of B.Com (Computer Applications)
B.Com (Computer Applications)
Scheme of Examination – CBCS Pattern
(For the students admitted during the academic year 2016-2017 only)

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER-I						
115BT1/ 115MY1/ 115HD1/ 115FR1	Part I- Language I	6	3	25	75	100	4
115EN1	Part II- English I	6	3	25	75	100	4
115B01/ 115R01/ 115N01	Part III- Core I – Financial Accounting	5	3	25	75	100	4
115B02/ 115R02/ 115N02/ 115V02	Core II – Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I - Office Automation Tools- Practical I	6	3	40	60	100	4
115EVS	Part IV- Environmental Studies	2	2	50	--	50	2
	SEMESTER- II						
215BT2/ 215MY2/ 215HD2/ 215FR2	Part I- Language II	6	3	25	75	100	4
215EN2	Part II- English II	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III- Core III – Company Law	5	3	25	75	100	4
215B04/ 215R04/ 215N04/ 215V04	Core IV - Marketing	5	3	25	75	100	4
216AR2	Allied II – C Programming and Web Designing– Practical II	6	3	40	60	100	4
215VEC	Part IV- Value Education	2	2	50	--	50	2

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER - III						
315B05/ 315R05/ 315N05	Part III - Core V – Higher Financial Accounting	5	3	25	75	100	4
315R06	Core VI – C++	5	3	25	50	75	3
315R07	Core VII– C++ – Practical III	4	3	40	60	100	4
315R08	Core VIII – Enterprise Resource Planning	5	3	25	50	75	3
315AB3/ 315AR3/ 315AN3	Allied III - Mathematics in Business	6	3	25	75	100	4
315NBT	Part IV-Non Major Elective Course I – Basics of Accounting and Inventory in Tally. ERP 9	2	2	50	--	50	2
315RS1	Part IV-Skill Based Course I - Principles of Insurance	3	3	75	--	75	3
	SEMESTER - IV						
415B09/ 415R09/ 415N09/ 415V09	Part III- Core IX – Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X – Cost Accounting	5	3	25	75	100	4
415R11	Core XI - Relational Database Management System	5	3	25	75	100	4
415R12	Core XII - RDBMS– Practical IV	4	3	40	60	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV- General Awareness **(Online)**	--	1	50	--	50	2
415RS2	Part IV – Skill Based Course II- Life Insurance Products	3	3	75	--	75	3
415GIS	Part IV - Information Security	2	2	50	--	Grade	Grade
415ALR	Advanced Learner's Course I- Subject Viva-Voce	--	--	--	100	100	4*

Course Code	Course Title	Ins. Hrs /week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
	SEMESTER- V						
515B13/ 515R13/ 515N13/ 515V13	Part III- Core XIII - E-Accounting - Practical V	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV - Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV – Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI – Higher Corporate Accounting	5	3	25	75	100	4
515RE1	Elective I – Banking Law and Practice	5	3	25	75	100	4
515RS3	Part IV – Skill Based Course III - Non-Life Insurance Products	3	3	75	--	75	3
	SEMESTER- VI						
615B17/ 615R17/ 615N17/ 615V17	Part III- Core XVII – Management Accounting	6	3	25	75	100	4
615B18/ 615R18/ 615N18	Core XVIII – E- Commerce	6	3	25	75	100	4
615R19	Core XIX – Visual Basic	5	3	25	75	100	4
615RE2	Elective II– Visual Basic– Practical VI	4	3	40	60	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
615RS4	Part IV – Skill Based Course IV- Data Analytics with Excel	3	3	75	--	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V– Extension Activity	--	--	50	--	50	2
6 15ALR	Advanced Learner's Course II - Subject Viva-Voce		--	--	100	100	4*

2015-2016

Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of B.Com (Computer Applications)
B.Com (Computer Applications)
Scheme of Examination – CBCS Pattern
(For the students admitted from the academic year 2015 – 2016 onwards)

Course Code	Course Title	Ins. Hrs /week	Dur. Hrs	CIA Marks	ESE Marks	Total Marks	Credits
			Examination				
	SEMESTER-I						
115BT1/ 115MY1/ 115HD1/ 115FR1	Part I- Language I	6	3	25	75	100	4
115EN1	Part II- English I	6	3	25	75	100	4
115B01/ 115R01/ 115N01	Part III- Core I – Financial Accounting	5	3	25	75	100	4
115B02/ 115R02/ 115N02/ 115V02	Core II – Business Management	5	3	25	75	100	4
115AB1/ 115AR1/ 115AN1/ 115AV1	Allied I - Office Automation Tools- Practical I	6	3	40	60	100	4
115EVS	Part IV- Environmental Studies	2	2	50	--	50	2
	SEMESTER- II						
215BT2/ 215MY2/ 215HD2/ 215FR2	Part I- Language II	6	3	25	75	100	4
215EN2	Part II- English II	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III- Core III – Company Law	5	3	25	75	100	4
215B04/ 215R04/ 215N04/ 215V04	Core IV - Marketing	5	3	25	75	100	4
215AR2	Allied II - HTML, Photoshop and Page Maker– Practical II	6	3	40	60	100	4
215VEC	Part IV- Value Education	2	2	50	--	50	2

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER - III						
315B05/ 315R05/ 315N05	Part III - Core V – Higher Financial Accounting	5	3	25	75	100	4
315R06	Core VI – C++	5	3	25	50	75	3
315R07	Core VII– C++ – Practical III	4	3	40	60	100	4
315R08	Core VIII – Enterprise Resource Planning	5	3	25	50	75	3
315AB3/ 315AR3/ 315AN3	Allied III - Mathematics in Business	6	3	25	75	100	4
315NBT	Part IV-Non Major Elective Course I – Basics of Accounting and Inventory in Tally. ERP 9	2	2	50	--	50	2
315RS1	Part IV-Skill Based Course I - Principles of Insurance	3	3	75	--	75	3
	SEMESTER - IV						
415B09/ 415R09/ 415N09/ 415V09	Part III- Core IX – Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X – Cost Accounting	5	3	25	75	100	4
415R11	Core XI - Relational Database Management System	5	3	25	75	100	4
415R12	Core XII - RDBMS– Practical IV	4	3	40	60	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV- General Awareness **(Online- Self Study)**	--	1	50	--	50	2
415RS2	Part IV – Skill Based Course II- Life Insurance Products	3	3	75	--	75	3
415GIS	Part IV - Information Security	2	2	50	--	Grade	Grade
415ALR	Advanced Learner's Course I- Subject Viva-Voce	--	--	--	100	100	3*

Course Code	Course Title	Ins. Hrs /week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	SEMESTER- V						
515B13/ 515R13/ 515N13/ 515V13	Part III- Core XIII - E-Accounting - Practical V	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV - Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV – Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI – Higher Corporate Accounting	5	3	25	75	100	4
515RE1	Elective I – Banking Law and Practice	5	3	25	75	100	4
515RS3	Part IV – Skill Based Course III - Non-Life Insurance Products	3	3	75	--	75	3
	SEMESTER- VI						
615B17/ 615R17/ 615N17/ 615V17	Part III- Core XVII – Management Accounting	6	3	25	75	100	4
615B18/ 615R18/ 615N18	Core XVIII – E- Commerce	6	3	25	75	100	4
615R19	Core XIX – Visual Basic	5	3	25	75	100	4
615RE2	Elective II– Visual Basic– Practical VI	4	3	40	60	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
615RS4	Part IV – Skill Based Course IV- Data Analytics with Excel	3	3	75	--	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V– Extension Activity	--	--	50	--	50	2
615ALR	Advanced Learner's Course II - Subject Viva-Voce		--	--	100	100	3*

2014-2015

B.COM (COMPUTER APPLICATIONS)
Semester wise distribution with scheme of Examination
(For candidates admitted during the period 2012 – 2013 Onwards)

Semester	Course	Credits	Duration of exam Hrs(ESE)	Marks CIA	Marks ESE	Total
I	Part I –Language I	3	3	25	75	100
	Part II –English I	3	3	25	75	100
	Part III- Core I-Principles of Accountancy	4	3	25	75	100
	Core II- Business Organization & Office Management	4	3	25	75	100
	Core Practical I- Ms-Office	2	3	30	50	80
	Allied I- Business Mathematics	5	3	25	75	100
	Part IV-Environmental Studies	2	--	50	--	50
II	Part I –Language II	3	3	25	75	100
	Part II –English II	3	3	25	75	100
	Part III- Core III- Financial Accounting	4	3	25	75	100
	Core IV- Programming in C	3	3	25	75	100
	Core Practical II- Programming in C	2	3	30	50	80
	Allied II – Business Statistics	5	3	25	75	100
	Part IV- Value Education	2	--	50	--	50
	Part III-Advanced Learner's Course I- Business Law	3*	3	--	100	100
III	Part III- Core V – Cost Accounting	4	3	25	75	100
	Core VI- Marketing	4	3	25	75	100
	Core VII- C++	3	3	25	75	100
	Core Practical III- C++	2	3	30	50	80
	Allied III- Managerial Economics	5	3	25	75	100
	Part IV-Non Major Elective – Enterprise Resource Planning	2	--	75	--	75
	Part IV-Skill based Course I - Principles of Banking.	3	--	100	--	100

Semester	Course	Credits	Duration of exam Hrs(ESE)	Marks CIA	Marks ESE	Total
IV	Part III- Core VIII – Management Accounting	4	3	25	75	100
	Core IX- Company Law	4	3	25	75	100
	Core X- Visual Basic	3	3	25	75	100
	Core Practical IV – Visual Basic	2	3	30	50	80
	Allied IV- Principles of Management	5	3	25	75	100
	Part IV-General Awareness	2	--	75	--	75
	Part IV – Skill based Course II – Basic Banking Operations	3	--	100	--	100
	Part III- Advanced Learner's Course II –Auditing	3*	3	--	100	100
	Part V–Extension Activity	1	--	--	50	50
V	Part III- Core XI- Financial Management	5	3	25	75	100
	Core XII- Company Accounts	5	3	25	75	100
	Core XIII- E-Commerce	4	3	25	75	100
	Elective I – Income Tax Law and Practice	5	3	40	60	100
	Elective II – Accounting Package –Tally	5	3	25	75	100
	Part IV – Skill Based Course III – E-Banking	3	--	100	--	100
VI	Part III-Core XIV- Relational Database Management System	4	3	25	75	100
	Core XV- Financial Market Operations and Services	4	3	25	75	100
	Core XVI –Business Communication	4	3	25	75	100
	Elective III–Internet and Web Designing	4	3	25	75	100
	Core Practical V – RDBMS & HTML	2	3	30	50	80
	Part IV – Skill based Course IV-Practical	3	--	100	--	100
	Part III-Advanced Learner's Course III - Human Resource Management	3*	3	--	100	100

Starred credits are to be treated as additional credits which are optional
Non Major Elective Course offered: Enterprise Resource Planning
30% of the syllabus in each course should be taught using OHP, LCD and Seminar.

B.COM (COMPUTER APPLICATIONS)
Semester wise distribution with scheme of Examination
(For candidates admitted during the period 2012 – 2013 Onwards)

Semester	Course	Credits	Duration of exam Hrs(ESE)	Marks CIA	Marks ESE	Total
I	Part I –Language I	3	3	25	75	100
	Part II –English I	3	3	25	75	100
	Part III- Core I-Principles of Accountancy	4	3	25	75	100
	Core II- Business Organization & Office Management	4	3	25	75	100
	Core Practical I- Ms-Office	2	3	30	50	80
	Allied I- Business Mathematics	5	3	25	75	100
	Part IV-Environmental Studies	2	--	50	--	50
II	Part I –Language II	3	3	25	75	100
	Part II –English II	3	3	25	75	100
	Part III- Core III- Financial Accounting	4	3	25	75	100
	Core IV- Programming in C	3	3	25	75	100
	Core Practical II- Programming in C	2	3	30	50	80
	Allied II – Business Statistics	5	3	25	75	100
	Part IV- Value Education	2	--	50	--	50
	Part III-Advanced Learner's Course I- Business Law	3*	3	--	100	100
III	Part III- Core V – Cost Accounting	4	3	25	75	100
	Core VI- Marketing	4	3	25	75	100
	Core VII- C++	3	3	25	75	100
	Core Practical III- C++	2	3	30	50	80
	Allied III- Managerial Economics	5	3	25	75	100
	Part IV-Non Major Elective – Enterprise Resource Planning	2	--	75	--	75
	Part IV-Skill based Course I - Principles of Banking.	3	--	100	--	100

Semester	Course	Credits	Duration of exam Hrs(ESE)	Marks CIA	Marks ESE	Total
IV	Part III- Core VIII – Management Accounting	4	3	25	75	100
	Core IX- Company Law	4	3	25	75	100
	Core X- Visual Basic	3	3	25	75	100
	Core Practical IV – Visual Basic	2	3	30	50	80
	Allied IV- Principles of Management	5	3	25	75	100
	Part IV-General Awareness	2	--	75	--	75
	Part IV – Skill based Course II – Basic Banking Operations	3	--	100	--	100
	Part III- Advanced Learner's Course II –Auditing	3*	3	--	100	100
	Part V–Extension Activity	1	--	--	50	50
V	Part III- Core XI- Financial Management	5	3	25	75	100
	Core XII- Company Accounts	5	3	25	75	100
	Core XIII- E-Commerce	4	3	25	75	100
	Elective I – Income Tax Law and Practice	5	3	40	60	100
	Elective II – Accounting Package –Tally	5	3	25	75	100
	Part IV – Skill Based Course III – E-Banking	3	--	100	--	100
VI	Part III-Core XIV- Relational Database Management System	4	3	25	75	100
	Core XV- Financial Market Operations and Services	4	3	25	75	100
	Core XVI –Business Communication	4	3	25	75	100
	Elective III–Internet and Web Designing	4	3	25	75	100
	Core Practical V – RDBMS & HTML	2	3	30	50	80
	Part IV – Skill based Course IV-Practical	3	--	100	--	100
	Part III-Advanced Learner's Course III - Human Resource Management	3*	3	--	100	100

Starred credits are to be treated as additional credits which are optional
Non Major Elective Course offered: Enterprise Resource Planning
30% of the syllabus in each course should be taught using OHP, LCD and Seminar.

B.Com (Computer Applications)
Semester – III
Part IV- Skill Based Course I - Principles of Insurance   315RS1
(For the students admitted from the academic year 2015 – 2016 onwards)

(38 Hours)

Preamble:

The Course aims to

- Provide knowledge to basic concepts and importance of insurance and
- Impart knowledge on the various insurance legislations.

Unit I

     Nature and scope of risk management: Introduction-Meaning-Definition-Classification of risks. Methods of handling risks: Introduction-Methods. **(7 Hours)**

Unit II

     Nature of Insurance business: Meaning-Definition-Characteristics of Insurance Contract-Difference between Insurance contract and wagering Agreement-Functions-Importance-Benefits-Kinds of Insurance Organization. **(8 Hours)**

Unit III

     Evolution of Insurance: Kinds of Insurance-Insurance organization in India-Life Insurance Act 1938. **(8 Hours)**

Unit IV

     The Actuarial Science: Characteristics of Actuarial Science –Actuarial Education –Actuarial Research – IRDA Act 1999.**(Note: Theory only)** **(8 Hours)**

Unit V

     Role of Development officer- Role of Insurance Agent. **(7 Hours)**

SKILL DEVELOPMENT:

1. Understand the procedure involved in evaluation of a proposal.
2. Visit any branch of LIC and familiarize with loan facilities available to policy holders.
3. Examine the Life insurance as a means of tax planning and risk coverage.

Books for Study:

1. Principles and Practice of Insurance (**Unit I, II & V**) **-** Dr.P.Periasamy(Edition 2013)
                                Himalaya Publishing House,
                                New Delhi.
2. Insurance Principles and Practice (**Unit III & IV**) **-** M.N.Mishra & Dr.S.B.Mishra
                                (Edition 2012),
                                S.Chand & Company,
                                New Delhi.

Books for Reference:

1. Insurance Theory and Practice   - B.D.Bhargava,
                                  Pearl Books,New Delhi 2008.

2. Insurance Principles and Practice   - Inderjit Singh & Rakesh Kartyal
                                  Kalyani Publishers,New Delhi 2003.

     Course Designed By :Mrs.S.Hemalatha & Mrs.R.Akalya
     Course Reviewed By:Mrs.A.Parameswari & Ms.J.Mahalakshmi
     Checked By   :Mrs.B.Shailaja

B.Com (Computer Applications)
Semester IV
Part IV- Skill Based Course II – Life Insurance Products   415RS2
(For the students admitted from the academic year 2015 – 2016 onwards)
(38 Hours)

Preamble:
The Course aims to provide
- To expose students to an overview of the working of life insurance business.
- To impart to students relevant skills for handling major functions of life insurance business.

Unit I
Essentials of Life Insurance: Meaning and Definition of Life Insurance-Difference between Insurance and Assurance-Essential feature of Life Assurance.
Classification of Life Insurance Policies: Objectives of Life Insurance Policies-
Classification of Policies-Policies according to the duration-Group Insurance schemes.**(8 Hours)**
Unit II
Assignment of Life Policies: Meaning and Procedure-Nomination of life policy-Surrender value-Paid up value-Difference between Surrender value and Paid up value-Days of Grace-Payment of claims.   **(7 Hours)**
Unit III
Life Insurance Corporation of India: Introduction-Aim of LIC-Organisational Structure-Life Insurance Administration-Advantages of Life Insurance-Important functions-Role of LIC in National Economy-Progress of Life Business of LIC-Highlights the performance of LIC-IRDA Guidelines for Investment of LIC's Funds-Identification of various types of Investments-Progress of LIC's Investment in various sectors.   **(8 Hours)**
Unit IV
Marketing of Life Insurance: Introduction-Definition of Services-Characteristics-Objectives of Life Insurance Marketing-Life Insurance Marketing Mix-Elements-Importance-Scope.
World Life Insurance Market: Introduction-Share of World Insurance Market-Insurance Operations in the U.S.A-Life Insurance in Japan-Other Asian Countries-Performance of Global Life Insurance.   **(7 Hours)**
Unit V
Financial Services: Introduction-Points in Favour-Drawbacks-LIC Housing Finance Ltd-Introduction-Objectives-Housing Scheme Loans. LIC Mutual Funds Schemes: Introduction-Meaning and Definition-Classification of Mutual Funds-Mutual Funds in India-Importance-Types-Progress in LIC Mutual Funds-Factors determine the Mutual Funds. Information Technology in LIC: Introduction-Meaning-Characteristics-IT Revolution in India-Information Technology in LIC-Objectives-Moduling Systems-Advantages.   **(8 Hours)**

SKILL DEVELOPMENT:
1. Visit any branch of LIC and understand various policies offered with benefit and elements.
2. Understand the procedure involved in evaluation of a proposal firm and final issue of policy.

Books for Study:
1. Principles and Practice of Insurance   - Dr.P.Periasamy(Edition 2013)
                                        Himalaya Publishing House, New Delhi

Books for Reference:
1.Insurance Principles and Practice - Inderjit Singh & Rakesh Kartyal
                Kalyani Publishers,New Delhi 2003.
2.Life Insurance in India   -R.Haridas,
                New Century Publications,2011

B.Com (Computer Applications)
Semester V
Part IV- Skill Based Course III – Non - Life Insurance Products 515RS3
(For the students admitted from the academic year 2015 – 2016 onwards)
(38 Hours)

Preamble:
The Objectives of this course are:
- To understand the basic concepts of General Insurance.
- To learn the principles, practices, procedures and treatment of General Insurance Products.

Unit I
   General Insurance Business and Role of GIC: Introduction-General Insurance Business Nationalization Act 1972-Objectives-Establishment of General Insurance Corporation of India (GIC)-Source of Funds-Organizational Structure-Progress of General Insurance Business-Business Growth in GIC-Performance of Public Sector and Private Sector Insurers-Performance of Major Business Segments.

   Nature of Marine Insurance Contract: Definition-Characteristics-Elements-Double Insurance-Reinsurance in Marine Insurance Schemes-Mutual Insurance.   **(8 Hours)**

Unit II
   Kinds of Marine Insurance Policies-Various Kinds of Marine policy. Important Clauses in Marine Policy: Clauses Incorporated in Marine Policy-Important Clauses. **(7 Hours)**

Unit III
   Marine Losses and Abandonment: Introduction-Kinds of Marine Losses-Abandonment-Notice of Abandonment-York-Antwerp Rules.

   Nature of Fire Insurance Contract: Introduction-Definition-Subject Matter of Fire Insurance-Fundamental Principles of Fire Insurance-Fire policy-The Risk. **(7 Hours)**

Unit IV
   Types of Fire Policies: More Common Types of Fire policies-Double Insurance in Fire Policy-Assignment of Fire policy-Rights of Insurer. Fire Insurance Claims: Introduction-Types of losses-Steps in the Preparation of Claim under Loss of Profits**.** **(8 Hours)**

Unit V
   Miscellaneous Insurance: Personal Accident Insurance: Definition- Classification of Occupation-Claims. National Agricultural Insurance Scheme: Crop Insurance Scheme-Features-Objective- Horticulture/Plantation (Input) Insurance-Hut Insurance Individual. Property Insurance-Meaning- Burglary Insurance-Types of Policies. Motor Vehicle Insurance: Definition-Classification-Kinds of Policies-Procedure for Motor Vehicle Insurance-Settlement of Claims Under Motor Vehicle Insurance. **(8 Hours)**

SKILL DEVELOPMENT:
 1. Visit any branch of General Insurance establishment and familiarise with the features of
  policies offered.

 Books for Study:
1. Principles and Practice of Insurance - Dr.P.Periasamy(Edition 2013)
               Himalaya Publishing House, New Delhi.

Books for Reference:
1. Insurance Principles and Practice **-** M.N.Mishra & Dr.S.B.Mishra
                                                  (Edition 2012),S.Chand & Company,
                                                  New Delhi.
2. Insurance Principles and Practice - Inderjit Singh & Rakesh Kartyal
                                                  Kalyani Publishers,New Delhi 2003.

II UG Course
Semester – III
Part IV-Non Major Elective Course I-Basics of Accounting and Inventory in Tally. ERP 9
315NBT
(For the students admitted from the academic year 2015 – 2016 onwards)
(26 Hours)

Preamble:
This course is designed to
* acquaint the basic knowledge about Tally.ERP 9 and
* to understand basics of Accounting and Inventory concepts in Tally. ERP 9

Unit I
        Basic of Accounting: Introduction- Types of Accounts-Golden rules of Accounting-Accounting Principles, Concepts and Conventions- Double entry system of book keeping- Mode of Accounting- Financial Statements-Transactions-Recording Transactions.

Unit II
        Fundamentals of Tally.ERP 9: Introduction- Getting functional with Tally.ERP 9-Creation/Setting up of a Company in Tally.ERP 9.

Unit III
        Creating Accounting masters in Tally.ERP 9: F_{11}: Features-F_{12}: Configurations

Unit IV
        Creating Inventory Masters in Tally.ERP 9: Stock groups-Stock categories-Godowns/Locations-Units of Measure-Stock items. Recording Transactions - Reports.

Unit V
        Voucher Entry in Tally.ERP 9: Accounting Vouchers- Inventory Vouchers –Invoicing.

Book for Reference:
1. Accounting on Computers using Tally ERP9   - Basic accounting and Inventory
                                                              Volume-I

B.Com (Computer Applications) – Semester III
Part IV-Skill based Course I - Principles of Banking.- Sub Code:311RS1 – 38 Hrs
(For Candidates admitted during the period 2011-2012 Onwards)

Preamble:
        Knowledge of operational aspects of banking products and services are very essential to equip students on core banking system and to increase their chances of placement in banking sector.

Module I   (7 Hrs)
        Commercial Banking – Definition – bank – banking system – commercial banking – functions – role of banks in economic development.

Module II   (7 Hrs)
        Central Banking – need – principles – central banking functions – functions of RBI.

Module III   (8 Hrs)
        Negotiable instruments: Meaning – characteristics – nature – features – types.

Module IV (8 Hrs)

Crossing – Definition – need for crossing – types of crossing – consequences of crossing – marking of a cheque.

Module V (8 Hrs)

Endorsement – Definition – types of Endorsement – effect of Endorsement – rules regarding Endorsement.

Book for Study :

Banking theory law and practice   :   Dr. S.Gurusamy

Vijay Nicole Imprints Pvt Ltd, Chennai.

Book for Reference:

1.Indian Banking   :   S.Natarajan & R.Parameswaran

S.Chand and Co Ltd, New Delhi.

2.Banking Principles and Operations :   M.N Gopinath

Snow white publication Pvt Ltd ,Mumbai.

B.Com (Computer Applications) – Semester IV

Part IV-Skill based Course II – Basic Banking Operations - Sub Code: 411RS2 – 38 Hrs

(For Candidates admitted during the period 2011-2012 Onwards)

Module I (7 Hrs)

Bank customer – relationship – special type of customer.

Module II (7 Hrs)

Opening bank accounts – types of accounts – steps in opening accounts – enclosure of information.

Module III (8 Hrs)

Paying banker – Meaning – bankers duty – precautions by a paying banker – dishonouring customers cheque – discharge of paying banker – material alteration – statutory protection – refusal of cheque payment.

Module IV (8 Hrs)

Collecting banker – meaning – collecting bankers role – statutory protection – payment in due course – collecting bankers duty.

Module V (8 Hrs)

Bank lending – significance of Bank lending – lending sources – bank lending principles – forms of lending – securities for lending – factors influencing Bank lending.

Book for Study :

Banking theory law and practice   :   Dr. S.Gurusamy

Vijay Nicole Imprints Pvt Ltd, Chennai.

Book for Reference:

1.Indian Banking   :   S.Natarajan & R.Parameswaran

S.Chand and Co Ltd, New Delhi.

2.Banking Principles and Operations :   M.N Gopinath

Snow white publication Pvt Ltd ,Mumbai.

B.Com (Computer Applications) – Semester V
Part IV-Skill based Course III–E – Banking - Sub Code:510RS3 – 38 Hrs
(For Candidates admitted during the period 2010-2011 Onwards)

Module I   (7 Hrs)

E – Banking – Meaning – services of E – Banking - E – Banking and financial services – benefits – initiatives and opportunities – risk management for E – Banking – types of risks – managing risks.

Module II   (7 Hrs)

Internet banking Vs Traditional banking – mechanics of internet banking – major issues of internet banking – drawbacks – Indian scenario – future outlook.

Module III   (8 Hrs)

Mobile banking: Meaning – definition – features – registration services – security issues. Telephone banking: Meaning – definition - features – mechanisms – banking facilities – telephone banking system – drawbacks – call centers.

Module IV   (8 Hrs)

ATM – concepts – features – ATM types – mechanism – ATM functions.

Module V   (8 Hrs)

Electronic fund transfer system: steps – benefits. ECS: Electronis payment system – methods of payment.   INFINET – Factors responsible for launch – benefits – applications of INFINET.

Book for Study :

Banking theory law and practice   :   Dr. S.Gurusamy

Vijay Nicole Imprints Pvt Ltd, Chennai.

Book for Reference:

1. Indian Banking   :   S.Natarajan & R.Parameswaran

S.Chand and Co Ltd, New Delhi.

2. Banking Principles and Operations: M.N Gopinath

Snow white publication Pvt Ltd, Mumbai.

B.Com (Computer Applications) – Semester VI
Part IV-Skill based Course IV– Practical - Sub Code: 610RS4 – 38 Hrs
(For Candidates admitted during the period 2010-2011 Onwards)

The students should study the module and attend the Online Exam. They should submit a certificate on specified module.

B.Com (Computer Applications) - Semester –III
Part IV –Non Major Elective –Enterprise Resource Planning-SubCode: 311NEER–26 Hrs
(For candidates admitted during the period 2011 – 2012 Onwards)

Preamble:

This course is designed to

- acquaint the basic knowledge about Enterprise Recourse Planning and
- Develop an understanding on ERP Modules.

Module I   (05 Hours)

Introduction to ERP: Meaning - Evolution of ERP – Reasons for growth of ERP market – Advantages of ERP – Reasons for Failure of ERP implementations. Enterprise – An Overview:

Introduction – Integrated Management Information – Business Modeling – Integrated Data Model.

Module II (05 Hours)

ERP Modules: Finance – Sales and Distribution.

Module III (05 Hours)

ERP Modules: Manufacturing- Human Resources.

Module IV (05 Hours)

ERP Modules: Plant maintenance – Quality Management – Materials Management.

Module V (06 Hours)

Benefits of ERP: Introduction – Reduction of Lead Time – On-time Shipment – Reduction in Cycle Time – Improved Resource Utilisation – Better Customer Satisfaction – Improved Flexibility – Reduced Quality Costs – Improved Information Accuracy and Decision-Making capability.

Book for Study:

Enterprise Resource Planning : Alexis Leon,

Tata McGraw Hill Publishing Company

Book for reference:

Enterprise Resource Planning : Mahadeo Jaiswal & Ganesh Vanapalli

Macmillan India Ltd, 2005 Edition

Department of B.Com(e-commerce)			
Name of the value added courses (with 30 or more contact hours)offered during last five years	Course Code	Year of offering	Explanation
Part IV – Environmental Studies	117EVS	2017-18	To develop positive social values strong feelings of concern for environment, motivation in active participation in environmental protection activities.
Part IV – Value Education	217VEC	2017-18	To develop human values,family values, social values, national values and also to initiate and enhance the practice of yoga among students.
NME - Mobile Commerce	315NME	2017-18	To impart knowledge on concepts of mobile commerce
SBC I-e-banking	315NS1	2017-18	To equip the students relating to e-banking activities
SBC III – E- Business	515NS3	2017-18	To enhance knowledge relating to the dynamics of e-business
SBC IV – Mobile Commerce	615NS4	2017-18	To develop skills on mobile commerce aspects
Part IV - Information Security	415GIS	2017-18	To Promote the core competency skills and augment citizenship values
SBC III – E- Banking	515NS3	2016-17	To equip the students relating to e-banking activities
SBC IV – Practicals	615NS4	2016-17	To gain practical knowledge on application of e-banking aspects
SBC I-e-banking	315NS1	2016-17	To equip the students relating to e-banking activities
SBC II- e-Retailing	415NS2	2016-17	To equip with the principles of e-Retailing business

NME-Mobile Commerce	315NME	2016-17	To impart knowledge on concepts of mobile commerce
Part IV - Information Security	415GIS	2016-17	To Promote the core competency skills and augment citizenship values
Part IV - Environmental Studies	115EVS	2016-17	To develop positive social values strong feelings of concern for environment, motivation in active participation in environmental protection activities.
Part IV - Value Education	215VEC	2016-17	To develop human values, family values, social values, national values and also to initiate and enhance the practice of yoga among students.
SBC I-Principles of banking	312NS1	2015-16	To impart knowledge basic principles of banking
SBC II- Basic banking operations	412NS2	2015-16	To impart knowledge basic banking operations
SBC III – E- Banking	512NS3	2015-16	To equip the students relating to e-banking activities
SBC IV – Practicals	512NS4	2015-16	To gain practical knowledge on application of e-banking aspects
NME-Consumer e-Commerce	312NEC	2015-16	To provide understanding on the applications of e-commerce in business
Part IV - General Awareness		2015-16	To provide skill to attend competitive exams
Part IV - Environmental Studies	115EVS	2015-16	To develop positive social values strong feelings of concern for environment, motivation in active participation in environmental protection activities.
Part IV - Value Education	215VEC	2015-16	To develop human values, family values, social values, national values and also to initiate and enhance the practice of yoga among students.
SBC II- Basic Banking operations	412NS2	2014-15	To impart knowledge basic banking operations
SBC III – E-Banking	512NS3	2014-15	To equip the students relating to e-banking activities
NME-Consumer e-Commerce	312NEC	2014-15	To provide understanding on the applications of e-commerce in business
Part IV - Environmental Studies	111EVS	2014-15	To develop positive social values strong feelings of concern for

			environment, motivation in active participation in environmental protection activities.
Part IV - Value Education	211VEC	2014-15	To develop human values, family values, social values, national values and also to initiate and enhance the practice of yoga among students.
SBC II- Basic Banking operations	412NS2	2013-14	To impart knowledge basic banking operations
SBC III – E-Banking	512NS3	2013-14	To equip the students relating to e-banking activities
SBC IV – Banking practicals	612NS4	2013-14	To impart practical banking skills
Part IV - Environmental Studies	111EVS	2013-14	To develop positive social values strong feelings of concern for environment, motivation in active participation in environmental protection activities.
Part IV - Value Education	211VEC	2013-14	To develop human values, family values, social values, national values and also to initiate and enhance the practice of yoga among students.

Department of B.Com (e-Commerce)

Programme - B.Com (e-Commerce)
Scheme of Examination - CBCS
(For the students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	
117BT1/ 117MY1/ 117HD1/ 117FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
117EN1	Part II – English – I	6	3	25	75	100	4
117B01/ 117R01/ 117N01/	Part III Core I- Financial Accounting - I	5	3	25	75	100	4
117N02	Core II- Fundamentals of e-Commerce	5	3	25	75	100	4
117AN1	Allied I – Office Automation Tools –Practicals	6	3	40	60	100	4
117EVS	Part IV – Environmental Studies	2	2	50	-	50	2
217BT2/ 217MY2/ 217HD2/ 217FR2	**Semester – II** Part I – Language -II	6	3	25	75	100	4
217EN2	Part II – English – II	6	3	25	75	100	4
217B03/ 217R03/ 217N03	Part III Core III- Financial Accounting - II	5	3	25	75	100	4
217N04	Core IV – Mobile Commerce	5	3	25	75	100	4
217AN2	Allied II – Oracle and MySQL-Practicals	6	3	40	60	100	4
217VEC	Part IV – Value Education	2	2	50	-	50	2
317B05/ 317R05/ 317N05	**Semester – III** Part III-Core V.– Corporate Accounting	5	3	25	75	100	4
317N06	Core VI – Visual Programming	4	3	25	50	75	3
317B07/ 317N07	Core VII- Principles of Management	5	3	25	75	100	4
317N08	Core VIII- Applications in Visual Programming – Practicals	5	3	40	60	100	4

317AB3/ 317AR3/ 317AN3	Allied III – Mathematics in Business	6	3	25	75	100	4
317NEC	Part IV – Non Major Elective – Mobile Commerce	2	2	50	-	50	2
317BS1/ 317NS1	Part IV Skill Enhancement Course I – Business Application Tools:Image Editor-Practicals	3	3	75	-	75	3
417B09/ 417N09/	**Semester – IV** Part III - Core IX - Company Law	5	3	25	75	100	4
417B10/ 417R10/ 417N10/	Core X - Cost Accounting	5	3	25	75	100	4
417N11	Core XI – Web Designing	5	3	25	50	75	4
417N12	Core XII-Applications in Webpage Designing – Practicals	4	3	40	60	100	4
417AB4/ 417AR4/ 417AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
417NGA	Part IV – General Awareness	-	1	50	-	50	2
417BS2/ 417NS2	Part IV Skill Enhancement Course II – Business Application Tools: Business Data Analytics using Excel –Practicals	3	3	75	-	75	3
417GIS	Information Security – Level II	2	2	50	-	Grade	Grade
417ALN	Advanced Learners Course I Management Information System	-	-	-	100	100	4*
517B13/ 517R13/ 517N13/ 517V13	**Semester – V** Part III – Core XIII- E - Accounting – Practicals	5	3	40	60	100	4
517B14/ 517R14/ 517N14/ 517V14	Core XIV- Income Tax	6	3	25	75	100	4
517N15	Core XV- Logistics Management	5	3	25	75	100	4
517B16/ 517R16/ 517N16/ 517V16	Core XVI- Business Communication	5	3	25	75	100	4
517NE1/ 517BE2/ 517RE2/ 517NE2	Elective I - e-Banking/ Retail Marketing	6	3	25	75	100	4

517NS3	Part IV– Skill Enhancement Course III –Image Designing-Practicals	3	3	75	-	75	3
617B17/ 617R17/ 617N17	**Semester – VI** Part III-Core XVII-Management Accounting	6	3	25	75	100	4
617N18	Core XVIII – e-Commerce Technology	5	3	25	75	100	3
617N19	Core XIX – e-Commerce Application –Online Transactions	4	3	40	60	100	4
617NE3/ 617BE4/ 617RE4/ 617NE4	Elective II – e-Retailing/Service Marketing	6	3	25	75	100	4
617NE5/ 617BE6/ 617RE6/ 617NE6	Elective III- e-Business/Digital Marketing	6	3	25	75	100	4
617BS4/ 617RS4/ 617NS4	Part IV – Skill Enhancement Course IV – Business Application Tools: Business Skills– Practicals	3	3	75	-	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V – Extension Activities	-	-	50	-	50	2
617ALN	Advanced Learners Course II – Enterprise Resource Planning	-	-	-	100	100	4*
Total						**3500**	**140**

2016-17

Curriculum Design
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	Credits
			Examination				
115TA1/ 115HD1/ 115MY1/ 115FR1	**Semester – I** Part I – Language – I	6	3	25	75	100	4
115EN1	Part II – English – I	6	3	25	75	100	4
115B01/ 115R01/ 115N01/	Part III - Core I- Financial Accounting	5	3	25	75	100	4
115 B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB2/ 115AR1/ 115AN1/ 115AV1	Allied I – Office Automation Tools - Practical	6	3	40	60	100	4
115EVS	Part IV – Environmental Studies	2	2	50	-	50	2
215TA2/ 215HD2/ 215MY2/ 215FR2	Semester – II Part I – Language – II	6	3	25	75	100	4
215EN2	Part II – English – I	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III - Core III – Company Law	5	3	25	75	100	4
215 B04/ 215R04/ 215N04/ 215V04	Core IV – Marketing	5	3	25	75	100	4
215AN2	Allied II – Oracle and PL/SQL	6	3	40	60	100	4
215VEC	Part IV – Value Education	2	2	50	-	50	2
315B05/ 315R05/ 315N05	Semester – III Part III-Core V– Higher Financial Accounting	5	3	25	75	100	4
315N06	Core VI - Logistics Management	6	3	25	75	100	4
315N07	Core VII- Programming in Visual Basic	4	3	25	50	75	3

Code	Course						
315N08	Core VIII- Visual Programming	4	3	40	60	100	4
315 AB3/ 315AR3/ 315AN3	Allied III – Mathematics in Business	6	3	25	75	100	4
315NME	Part IV – Non Major Elective Course I - Mobile Commerce	2	2	50	-	50	2
315NS1	Skill Based Course I – e-Banking	3	3	75	-	75	3
415B09/ 415R09/ 415N09/ 415V09	Semester – IV Part III - Core IX - Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X - Cost Accounting	5	3	25	75	100	4
415N11	Core XI - Management Information System	4	3	25	50	75	3
415N12	Core XII- Data Analytics with Excel	5	3	40	60	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV – Non Major Elective Course II - General Awareness (online)	-	1	50	-	50	2
415NS2	Skill Based Course II - e-Retailing	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALN	Advanced Learners Course I Subject Viva Voce	-	-	-	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13	Semester – V Part III – Core XIII- E Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV- Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV- Business Finance	5	3	25	75	100	4
515B16/ 515R16/ 515N16	Core XVI- Higher Corporate Accounting	5	3	25	75	100	4
515NE1	Elective I – Web Designing	5	3	25	75	100	4
515NS3/	Part IV– Skill Based Course III – e-Business	3	3	75	-	75	3

615B17/ 615R17/ 615N17/ 615V17	Semester – VI Part III-Core XVII-Management Accounting	6	3	25	75	100	4
615B18/ 615R18/ 615N18	Core XVIII – E Commerce	6	3	25	75	100	4
615N19	Core XIX - E-Commerce Applications-Practical	4	3	40	60	100	4
615NE2	Elective II – Enterprise Resource Planning	5	3	25	75	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
615NS4	Part IV – Skill Based Course IV – Mobile Commerce	3	3	75	-	75	3
615ALN	Advanced Learners Course II Subject Viva Voce	-	-	-	100	100	3*
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V – Extension Activities	-	-	50	-	50	2
Total						**3500**	**140**

- Starred Credits are treated as additional credits, which are optional.

2015-16

Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of B.Com (e-Commerce)
B.Com (e-Commerce)
Scheme of Examination-CBCS Pattern
(For the students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Inst Hrs/ week	Examination				Credits
			Dur. Hrs	CIA Marks	ESE Marks	TOTAL Marks	
115TA1/ 115HD1/ 115MY1/ 115FR1	Semester – I Part I – Language – I	6	3	25	75	100	4
115EN1	Part II – English – I	6	3	25	75	100	4
115B01/ 115R01/ 115N01/	Part III - Core I- Financial Accounting	5	3	25	75	100	4
115 B02/ 115R02/ 115N02/ 115V02	Core II- Business Management	5	3	25	75	100	4
115AB2/ 115AR1/ 115AN1/ 115AV1	Allied I – Office Automation Tools - Practical	6	3	40	60	100	4
115EVS	<mark>Part IV – Environmental Studies</mark>	2	2	50	-	50	2
215TA2/ 215HD2/ 215MY2/ 215FR2	Semester – II Part I – Language – II	6	3	25	75	100	4
215EN2	Part II – English – I	6	3	25	75	100	4
215B03/ 215R03/ 215N03	Part III - Core III – Company Law	5	3	25	75	100	4
215 B04/ 215R04/ 215N04/ 215V04	Core IV – Marketing	5	3	25	75	100	4
215AN2	Allied II – Oracle and PL/SQL	6	3	40	60	100	4
215VEC	<mark>Part IV – Value Education</mark>	2	2	50	-	50	2
	Semester – III						

315B05/ 315R05/ 315N05	Part III-Core V– Higher Financial Accounting	5	3	25	75	100	4
315N06	Core VI - Logistics Management	6	3	25	75	100	4
315N07	Core VII- Programming in Visual Basic	4	3	25	50	75	3
315N08	Core VIII- Visual Programming	4	3	40	60	100	4
315 AB3/ 315AR3/ 315AN3	Allied III – Mathematics in Business	6	3	25	75	100	4
315NEC	Part IV – Non Major Elective Course I - Mobile Commerce	2	2	50	-	50	2
315NS1	Skill Based Course I – e-Banking	3	3	75	-	75	3
415B09/ 415R09/ 415N09/ 415V09	Semester – IV Part III - Core IX - Business Communication	5	3	25	75	100	4
415B10/ 415R10/ 415N10/ 415V10	Core X - Cost Accounting	5	3	25	75	100	4
415N11	Core XI - Management Information System	4	3	25	50	75	3
415N12	Core XII- Data Analytics with Excel	5	3	40	60	100	4
415AB4/ 415AR4/ 415AN4	Allied IV- Statistics for Business	6	3	25	75	100	4
415NGA	Part IV – Non Major Elective Course II - General Awareness (online)	-	1	50	-	50	2
415NS2	Skill Based Course II - e-Retailing	3	3	75	-	75	3
415GIS	Information Security	2	2	50	-	Grade	Grade
415ALN	Advanced Learners Course I Subject Viva Voce	-	-	-	100	100	3*
515B13/ 515RP5/ 515N13/ 515V13	Semester – V Part III – Core XIII- E Accounting	6	3	40	60	100	4
515B14/ 515R14/ 515N14/ 515V14	Core XIV- Income Tax	6	3	25	75	100	4
515B15/ 515R15/ 515N15/ 515V15	Core XV- Business Finance	5	3	25	75	100	4

515B16/ 515R16/ 515N16	Core XVI- Higher Corporate Accounting	5	3	25	75	100	4
515NE1	Elective I – Web Designing	5	3	25	75	100	4
515NS3/	Part IV– Skill Based Course III – e-Business	3	3	75	-	75	3
615B17/ 615R17/ 615N17/ 615V17	Semester – VI Part III-Core XVII-Management Accounting	6	3	25	75	100	4
615B18/ 615R18/ 615N18	Core XVIII – E Commerce	6	3	25	75	100	4
615N19	Core XIX - E-Commerce Applications- Practical	4	3	40	60	100	4
615NE2	Elective II – Enterprise Resource Planning	5	3	25	75	100	4
615BE3/ 615RE3/ 615NE3	Elective III – Financial Services	6	3	25	75	100	4
615NS4	Part IV – Skill Based Course IV – Mobile Commerce	3	3	75	-	75	3
615ALN	Advanced Learners Course II Subject Viva Voce	-	-	-	100	100	3*
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V – Extension Activities	-	-	50	-	50	2
Total						3500	140

Starred Credits are treated as additional credits, which are optional.

2014-15
B.Com (e-Commerce)
(For Candidates admitted during the academic year 2012 -2013 & onwards)

Semester	Course	Credits	Duration of Exam	Maximum CIA	ESE	Total
I	Part I –Language I	3	3	25	75	100
	Part II- English I	3	3	25	75	100
	Part III Core I – Business Organization	4	3	25	75	100
	Core Practical I -Front office management	4	3	40	60	100
	Allied I – Business Mathematics	5	3	25	75	100
	Part IV – Environmental Studies	2		50	-	50
II	Part I – Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III Core II – Financial Accounting	5	3	25	75	100
	Core Practical II–Oracle & PL/SQL	4	3	40	60	100
	Allied II – Business Statistics	5	3	25	75	100
	Part IV- Value Education	2		50	-	50
	Advanced Learners' Course I-Principles of Management	3*	3	-	100	100
III	Part III Core III - Cost Accounting	5	3	25	75	100
	Core IV – Marketing	4	3	25	75	100
	Core V – Programming in C	3	3	25	75	100
	Core Practical III - Programming in C	2	3	40	60	100
	Allied III – Principles of Information Technology	5	3	25	75	100
	Part IV Skill Based Course I –Principles of Banking	3		100	-	100
	Non major Elective	2		75	-	75

IV	Part III Core VI- Higher Financial Accounting	5	3	25	75	100
	Core VII – e-Commerce Framework and Business Informatics	4	3	25	75	100
	Core VIII – Visual Programming	3	3	25	75	100
	Core Practical IV- Visual Programming	2	3	40	60	100
	Allied IV – Logistics Management	5	3	25	75	100
	<mark>Part IV Skill Based Course II- Basic Banking Operations</mark>	3		100	-	100
	<mark>General Awareness</mark>	2		75	-	75
	Advanced Learners' Course II –Enterprise Resource Planning	3*	3	-	100	100
	Part V- Extension Activities	1		50	-	50
V	Part III Core IX – e-Commerce Strategy, Technology and Implementation	4	3	25	75	100
	Core X – Internet and Web design	3	3	25	75	100
	Core XI– Java programming	3	3	25	75	100
	Core practical V- e- Commerce Application	4	3	40	60	100
	Elective I-Income Tax	5	3	25	75	100
	<mark>Part IV - Skill Based Course III- e- Banking</mark>	3		100	-	100`
VI	Part III Core XII –Management Accounting	5	3	25	75	100
	Core XIII - Financial Management	4	3	25	75	100
	Core XIV- Management Information System	4	3	25	75	100
	Elective II- Computerized Accounting Tally- practical	5	3	40	60	100
	Elective III –Business Communication	5	3	25	75	100
	<mark>Part IV - Skill Based Course IV– Practical</mark>	3		100	-	100
	Advanced Learners' course III-Business Environment	3*	3	-	100	100
Total Credits		140				3700

B.Com (e-Commerce)
(For Candidates admitted during the academic year 2012 -2013 & onwards)

Seme ster	Course	Cred its	Durat ion of Exam	Maximum		
				CIA	ESE	Total
I	Part I –Language I	3	3	25	75	100
	Part II- English I	3	3	25	75	100
	Part III Core I – Business Organization	4	3	25	75	100
	Core Practical I -Front office management	4	3	40	60	100
	Allied I – Business Mathematics	5	3	25	75	100
	Part IV – Environmental Studies	2		50	-	50
II	Part I – Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	100
	Part III Core II – Financial Accounting	5	3	25	75	100
	Core Practical II–Oracle & PL/SQL	4	3	40	60	100
	Allied II – Business Statistics	5	3	25	75	100
	Part IV- Value Education	2		50	-	50
	Advanced Learners' Course I-Principles of Management	3*	3	-	100	100
III	Part III Core III - Cost Accounting	5	3	25	75	100
	Core IV – Marketing	4	3	25	75	100
	Core V – Programming in C	3	3	25	75	100
	Core Practical III - Programming in C	2	3	40	60	100
	Allied III – Principles of Information Technology	5	3	25	75	100
	Part IV Skill Based Course I –Principles of Banking	3		100	-	100
	Non major Elective	2		75	-	75
IV	Part III Core VI- Higher Financial Accounting	5	3	25	75	100
	Core VII – e-Commerce Framework and Business Informatics	4	3	25	75	100
	Core VIII – Visual Programming	3	3	25	75	100
	Core Practical IV- Visual Programming	2	3	40	60	100
	Allied IV – Logistics Management	5	3	25	75	100
	Part IV Skill Based Course II- Basic Banking Operations	3		100	-	100
	General Awareness	2		75	-	75
	Advanced Learners' Course II –Enterprise Resource Planning	3*	3	-	100	100
	Part V- Extension Activities	1		50	-	50

V	Part III Core IX – e-Commerce Strategy, Technology and Implementation	4	3	25	75	100
	Core X – Internet and Web design	3	3	25	75	100
	Core XI– Java programming	3	3	25	75	100
	Core practical V- e- Commerce Application	4	3	40	60	100
	Elective I-Income Tax	5	3	25	75	100
	<mark>Part IV - Skill Based Course III- e- Banking</mark>	3		100	-	100`
VI	Part III Core XII –Management Accounting	5	3	25	75	100
	Core XIII - Financial Management	4	3	25	75	100
	Core XIV- Management Information System	4	3	25	75	100
	Elective II- Computerized Accounting Tally-practical	5	3	40	60	100
	Elective III –Business Communication	5	3	25	75	100
	<mark>Part IV - Skill Based Course IV– Practical</mark>	3		100	-	100
	Advanced Learners' course III-Business Environment	3*	3	-	100	100
Total Credits		140				3700

(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble (25 Hours)

- To provide an overview of basic Concepts of Mobile Commerce.
- To impart the knowledge of M-Commerce technology.
- Global and Integrated view of emerging Mobile Commerce.

Unit I

Introduction to Mobile Commerce-Scope of Mobile Commerce, Principles, Benefits, Limitations. Comparison of e-Commerce and M-Commerce-Impact of M-Commerce.
(5 Hours)

Unit II

Mobile Commerce Services: Types of M-Commerce Services-Location Based Services-Information Services, NIT DoCoMo I-Mode, Mobile Portal**.** (5 Hours)

Unit III

Applications of Mobile Commerce-Financial Sector, Retail Sector, Tele Communication Sector, Entertainment Sector. Mobile Application Development-Software platforms, Software tools. (3 Hours)

Unit IV

Mobile Commerce Technology: Wireless Communication-Wireless Service, Spectrum Allocation, Wireless System. Satellite Communication-Satellite Application. Mobile Communication System-Broad Band Technology-Wireless Broad Band Internet, Wireless Application, Practical (WAP). (6 Hours)

Unit V

Mobile Payments-Characteristics-Models-Type of Mobile Payments. Mobile Computing: Applications of Mobile Computing-Challenges of Mobile Computing-Business Application of Mobile Computing. (6 Hours)

Book for Study

Mobile Commerce   - Karabi Bandyopadhyay,
                                                   PHI Learning Private Ltd.,Delhi,2013

Book for Reference

E-Commerce and
Mobile Commerce Technologies - Dr.U.S.Pandey, Er.Saurash Shukla,
                                                    S.Chand & Company Ltd, New Delhi,2011.
E-Commerce   - Puja Walia Mann & Nidhi
                                                    MJP Publishers, 2009
Frontiers of electronic commerce - Ravi Kalakota, Andrew B.Whinston
                                                     Pearson Education, Inc-2011

Part IV- Skill Based Course I - e-Banking   315NS1
(For the students admitted from the academic year 2015 – 2016 onwards)
Preamble (35 Hours)

- To equip the students with the operational aspects of e-banking products and services.
- Get an overview of the financial situation.

Unit I

Commercial banking-Classification of banking-Banking system-Universal Banking-Function-Role of Banks in Economic Development. (6 Hours)

Unit II

e-Banking – Meaning – Services of e-Banking - e-Banking and financial services – Benefits – Initiatives and Opportunities –Types of risks. (7 Hours)

Unit III

       Internet Banking Vs Traditional Banking – Mechanics of Internet Banking – Major issues of Internet Banking–Indian scenario – Future Outlook. Mobile Banking: Meaning – Definition – Features – Registration Services – Security issues. **(8 Hours)**

Unit IV

       Telephone Banking: Meaning – Definition – Features – Mechanism – Banking facilities - Telephone Banking System – Drawbacks – Call centers.ATM –Concept – Features – ATM Types – Mechanism – ATM functions. **(7 Hours)**

Unit V

       Electronic Fund Transfer System: Steps – Benefits. Electronic Payment System – Methods of payment. INFINET – Factors responsible for launch – Benefits - Application of INFINET. **(7 Hours)**

Book for Study

Banking Theory Law & Practice   - Dr.S.Gurusamy
                                   Vijay Nicole Imprints Private Ltd,
                                   Chennai,2013

Books for Reference

Indian Banking   - S.Natarajan & R.Parameswaran
                                   S.Chand & Co Ltd, New Delhi, 2012

Banking Principles and Operations - M.N.Gopinath
                                   First Edition August 2008
                                   Snow White Publication Private Ltd, Mumbai.

Banking Theory, Law and Practice   - E.Gordon & Dr. K.Natarajan
                                   Himalaya Publishing house, New Delhi-2014

e-banking in India   - R.K.Uppal and Rimpti Jatana.
                                   New Century Publications, New Delhi-2007

Banking Law and Practice   - K.P.Kandasami,S.Natarajan &R.Prameswaran
                                   S.Chand & Co. PVT Ltd, New Delhi-2007.

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Part IV- Skill Based Course II- e-Retailing   415NS2

(For the students admitted from the academic year 2015 - 2016 onwards)
</div>

  Preamble   **(35 Hours)**

- To equip with the principles and aspects of e-Retailing Business.
- To creates a new platform for goods from different parts of the world which could be imported by placing an order.

  Unit I

     Retailing-Importance-Strategy and structure-Retailing Decisions-Emerging trends in retail marketing. **(6 Hours)**

  Unit II

     e-Retailing- guide to e-retailing resources-disciplines with e-retailing-different mode of retailing-advantages of e-retailing-short comings of e-retailing-success factors for e-retailing. **(8 Hours)**

  Unit III

     e-Retailing applications-e-retailing elements-application-online merchandising technique-online brand management-online advertising terminology-online purchasing. **(7 Hours)**

  Unit IV

     Competitive strategy for e-Retailing-customer care-CRM-CRM Cycle-myths about CRM-Foundation of CRM-online Pricing. **(7 Hours)**

Unit V

e-Retailing current trends-analysis and measures-current status of online retailing-criticality and statics of e-retailing-continuing trends of e-retailing-retail business and e-retailing-e-retailing across the global-Impact of FDI in retailing.   **(7 Hours)**

Book for Study
e-Retailing Principles   - D.P.Sharma,
and Practice   Himalaya Publishing House, 2012.
(For Unit I to IV)

Books for Reference
Retailing and e-Tailing   - S.L.Gupta,RameshMittal,Ruchi Nayyar
(For Unit V)   International Book House Pvt Ltd., 2011.
Retailing and e-Tailing   - Mickey Kosioski, Kim Creamer, Sharon Davis
                                  2013.
Retail Marketing   - Dr.L.Natarajan
                                  Margham Publication, Chennai.2015

Part IV- Skill Based Course III – e-Business   515NS3
(For the students admitted from the academic year 2015 - 2016 onwards)
Preamble   **(35 Hours)**

- To provide knowledge about the Dynamics of e-Business.
- To offer proven solutions that will quickly automate the internal business processes and procedures at a reasonable cost.

Unit I

e-Business: Introduction - e-Business Vs e-Commerce – characteristics – elements – roles and their challenges – requirements – impacts – inhibitors.   **(7 Hours)**

Unit II

e-Business strategy: Introduction – Relationship between e-business and other organization strategies – strategic positioning – levels – strategic planning process – strategic alignment.   **(7 Hours)**

Unit III

e-Business relationships: modeling interdependence activities - The value
chain -Business process and their management. Types and characteristics of e-Business relationships.   **(8 Hours)**

Unit IV

e-Business technological infrastructure: Technical e-Business challenges – Client server technology - web technology and applications.   **(7 Hours)**

Unit V

e-Business environment: International issues – Ethical issues – Legal issues. Internet book shops, grocery supplies – electronic newspapers – virtual auctions.   **(6 Hours)**

Book for study
e-Business Organizational and   - Michael P.Papazoglou, Pieter M.A. Ribbers
Technical foundations   John Wiley and sons Ltd, New Delhi.2012.

Books for reference
e-Commerce   - Dr. K.Abirami Devi, Dr.M.Alagammai
                                      Maragham Publications,Chennai, 2014.

e-Commerce strategy,   - David Whiteley, Tata McGraw – Hill.
Technologies and applications   Chennai, 2012.
e-Commerce e-Business   - Dr.C.S.Rayudu
                                           Himalaya Publishing House, Mumbai, 2012.
e-Commerce strategy, Technology   - Gary P.Scheider
& Implementation   Cengage Learing India PVT Ltd.2012

Part IV - Skill Based Course IV-Mobile Commerce   615NS4
(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble   **(35 Hours)**
  - To provide an overview of basic Concepts of Mobile Commerce.
  - To impart the knowledge of M-Commerce technology.
  - Global and Integrated view of emerging Mobile Commerce.

Unit I
        Introduction to Mobile Commerce - Scope of Mobile Commerce - Principles, Benefits, Limitations. Comparison of e-Commerce and M-Commerce - Impact of M-Commerce. Mobile Commerce Framework – Mobile Commerce models – M-Commerce Applications – e-commerce Vs. M-commerce.   **(7 Hours)**

Unit II
        Mobile Commerce Services: Types of M-Commerce Services-Location Based Services-Information Services, NIT DoCoMo I-Mode, Mobile Portal- Relevance of M-commerce in modern society.   **(7 Hours)**

Unit III
        Applications of Mobile Commerce-Financial Sector, Retail Sector, Tele Communication Sector, Entertainment Sector. Mobile Application Development-Software platforms, Software tools.   **(7 Hours)**

Unit IV
        Mobile Commerce Technology: Communication Systems - Wireless Communication-Wireless Service, Spectrum Allocation, Wireless System. Satellite Communication-Satellite Applications. Mobile Communication Systems -Broad Band Technology-Wireless Broad Band Internet, Wireless Application, Practical (WAP).   **(8 Hours)**

Unit V
        Mobile Payments-Characteristics-Models-Type of Mobile Payments. Mobile Computing: Applications of Mobile Computing-Challenges of Mobile Computing-Business Application of Mobile Computing**.**   **(6 Hours)**

Book for Study
Mobile Commerce   : Karabi Bandyopadhyay,
                                    PHI Learning Private Ltd.,Delhi,2013

Book for Reference
E-Commerce and
Mobile Commerce Technologies : Dr.U.S.Pandey,
                                Er.Saurash Shukla,
                                S.Chand & Company Ltd, New Delhi, 2011.
E-Commerce   : Puja Walia Mann & Nidhi, MJP Publishers, 2009
Frontiers of electronic commerce : Ravi Kalakota, Andrew B.Whinston
                                  Pearson Education, Inc-2011

Part IV – Non Major Elective – Consumer e-Commerce   Sub Code: 312NEC
(For Candidates admitted during the academic year 2012 -2013 onwards)   25Hours

Preamble

- To provide the knowledge of e-Commerce
- To understand the applications of e-Commerce in business

Module I
        E-Commerce-Evolution-Framework-Nature and Scope- Advantages and Disadvantages -
Application-Types.   (5 Hours)
Module II
        Electronic Payment System-Features-Types-Digital Token-E-Cash-E-Cheque-Credit
Card- Smart Card- Debit Card- E-Purse- Visa Cash card.   (6 Hours)
Module III
        EDI: Meaning-Network Infrastructure and Application Layer-EDI in Action-EDI, Legal
Security and Privacy Issue.   (5 Hours)
Module IV
        Mobile Commerce-Mobile Computing Framework-Application-Merits-Demerits.(5 Hours)
Module V
        E-Service-E-Auction-Internet Banking-Security issues in internet banking-E-trading and
E-Investing-E-Sales.   (4 Hours)
  Books for Study:
    1. E-Commerce   : Puja Walia Mann & Nidhi, MJP Publishers, Edition 2009
        (Module I to IV)
    2. E-Commerce the   : Bibhuti B.Pradhan & Manoranjan Dash Vrinda
        Digital Age   Publications (p) Ltd.Edition 2010   (Module V)
  Books for Reference:
      1.Electronic commerce   :   Bharat Bhasker,Tata MCGraw Hill Education Pvt
        Framework Technology   Ltd,New Delhi,Edition 2009
        and Application

Part IV- Skill Based Course –I- Principles of Banking   Sub Code: 312NS1
(For Candidates admitted during the academic year 2012 -2013 onwards)   38 Hours

Preamble :

     To acquaint the students with the banking concepts and principles

Module I:-
        Commercial banking – Definition – Bank – Banking system - Commercial banking –
Functions – Role of banks in economic development.
Module II: (8 Hours)
        Central banking – Need – Principles - Central Banking Functions – Functions of RBI.
Module III: (8 Hours)
        Negotiable instruments: Meaning – Characteristics – Nature – Features – Types.
.   (8 Hours)
Module IV:
        Crossing – Definition – Need for Crossing – Types of Crossing – Consequence of
Crossing – Marking of a Cheque.   (7 Hours)

Module V:

Endorsement – Definition – Types of Endorsement – Effect of Endorsement – Rules regarding Endorsement.   (7 Hours)

Book for Study:

Banking Theory Law & Practice – Dr.S.Gurusamy
                                                      Edition – 2010
                                                      Vijay Nicole Imprints Private Ltd, Chennai.

Books for Reference:

1. Indian Banking   - S.Natarajan & R.Parameswaran
                                                      S.Chand & Co Ltd, New Delhi
                                                      Edition– 2012
2. Banking Principles and Operations -M.N.Gopinath
                                                      First Edition August 2008
                                                      Snow White Publication Private Ltd, Mumbai.

Part IV- Skill Based Course –II- Basic Banking Operations   Sub Code: 412NS2
(For Candidates admitted during the academic year 2012 -2013 onwards)   38 Hours

Preamble:

To familiarise the students with basic banking operations.

Module I:

Bank Customer Relationship – Special types of Customer.   (8 Hours)

Module II:

Opening Bank Accounts – Types of Accounts – Steps in opening accounts – Disclosure of information.   (8 Hours)

Module III:

Paying Banker – Meaning – Banker's duty – Precautions by a paying banker – Dishonouring customer's Cheque – Discharge of paying banker – Material alteration – Statutory protection – Refusal of cheque payment.   (8 Hours)

Module IV:

Collecting banker – Meaning – Collecting banker's role - Statutory protection – Payment in due course – Collecting Banker's duty.   (7 Hours)

Module V:

Bank lending – Significance of Bank lending – Lending Sources - Bank lending principles – forms of lending – Securities for lending – Factors influencing Bank lending.   (7 Hours)

Book for Study:

Banking Theory Law & Practice   – Dr.S.Gurusamy
                                                      Edition– 2010
                                                      Vijay Nicole Imprints Private Ltd, Chennai.

Books for Reference:

1. Indian Banking   - S.Natarajan & R.Parameswaran
                                                      S.Chand & Co Ltd, New Delhi
                                                      Edition– 2012
2. Banking Principles and Operations - M.N.Gopinath
                                                      First Edition August 2008
                                                      Snow White Publication Private Ltd, Mumbai.

Part IV- Skill Based Course –III– e-Banking Sub Code: 512NS3
(For Candidates admitted during the academic year 2012 -2013 onwards)   38 Hours
Preamble

     To equip the students with the operational aspects of e-banking products and services.
Module I:

          e-Banking – Meaning – Services of e-Banking - e-Banking and financial services –
Benefits – Initiatives and Opportunities –Types of risks.   (8 Hours)
Module II:

          Internet Banking Vs Traditional Banking – Mechanics of Internet Banking – Major issues
of Internet Banking –Drawbacks – Indian scenario – Future Outlook.   (8 Hours)
Module III:

          Mobile Banking: Meaning – Definition – Features – Registration Services – Security
issues. Telephone Banking: Meaning – Definition – Features – Mechanism – Banking facilities -
Telephone Banking System – Drawbacks – Call centers.   (8 Hours)
Module IV:

          ATM –Concept – Features – ATM Types – Mechanism – ATM functions.   (7 Hours)
Module V:

          Electronic Fund Transfer System: Steps – Benefits. Electronic Payment System –
Methods of payment. INFINET – Factors responsible for launch – Benefits - Application of
INFINET.   (7 Hours)
Book for Study:

Banking Theory Law & Practice – Dr.S.Gurusamy, Edition – 2010
                         Vijay Nicole Imprints Private Ltd, Chennai.

Books for Reference:

1. Indian Banking   - S.Natarajan & R.Parameswaran
                                          S.Chand & Co Ltd, New Delhi
                                          Edition – 2012
2. Banking Principles and Operations - M.N.Gopinath
                                          First Edition August 2008
                                          Snow White Publication Private Ltd, Mumbai.

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Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Information Technology
Scheme of Examination – CBCS Pattern
Programme: B.Sc.IT
(For the Students admitted from the academic year 2017 – 2018 onwards)

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Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
	Semester I						
117BT1/ 117MY1/ 117HD1/ 117FR1	Part I Language I	6	3	25	75	100	4
117EN1	Part II English I	6	3	25	75	100	4
117G01	Part III Core I – Computer Fundamentals and Digital Principles	5	3	25	75	100	4
117GP1	Core Practical I – Internet and Open Source Office Automation Tools	5	3	40	60	100	4
117AG1	Allied I – Principles of Accountancy	6	3	25	75	100	4
117EVS	Part IV Environmental Studies	2	2	50	-	50	2
	Semester II						
217BT2/ 217MY2/ 217HD2/ 217FR2	Part I Language II	6	3	25	75	100	4
217EN2	Part II English II	6	3	25	75	100	4
217G02	Part III Core II-C Programming	5	3	25	75	100	4
217GP2	Core Practical II-C Programming and Web Designing	5	3	40	60	100	4
217AG2	Allied II-Discrete Mathematics	6	3	25	75	100	4
217VEC	Part IV Value Education	2	2	50	-	50	2

| Course Code | Course Title | Ins. Hrs/ Week | Examination | | | | Credits |
			Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	
	Semester III						
	Part III						
317G03	Core III- Operating System	5	3	25	75	100	4
317G04	Core IV- C ++ Programming	4	3	25	75	100	4
317G05	Core V- Data Structures and Algorithms	5	3	25	75	100	4
317GP3	Core Practical III- C++ Programming	5	3	40	60	100	4
317AG3	Allied III- Operations Research	6	3	25	75	100	4
317NTA	Part IV: Non Major Elective Course I: Animation	2	2	50	-	50	2
317GS1	Skill Enhancement Course I: Multimedia – Image Designing and Graphics Tool	3	3	75	-	50	2
	Semester IV						
	Part III						
417G06	Core VI- .NET Programming	4	3	25	50	75	3
417G07	Core VII- Database Management Systems	5	3	25	75	100	4
417G08	Core VIII- Computer Networks	5	3	25	75	100	4
417GP4	Core Practical IV- .NET Programming	5	3	40	60	100	4
417AG4	Allied IV- Organizational Behavior	6	3	25	75	100	4
417NGA	Part IV Non Major Elective Course II : General Awareness (Online)	-	1	50	-	50	2
417GS2	Skill Enhancement Course II: Multimedia – Image Editing Tool	3	3	75	-	75	3
417GIS	Information Security	2	2	50	-	Grade	Grade
417ALG	Advanced Learners Course I – Enterprise resource planning	-	3	-	100	100	4*

B .Sc Information Technology

Semester II

Part III – Core II – C Programming   217G02

(For the students admitted from the academic year 2017 – 2018 onwards)

Course Objectives: **[65 Hrs]**

➢ To Study the fundamentals of C programming and the standard C libraries.
➢ Understand the principles of creating an effective web page, including an in-depth consideration of information architecture.

Unit I: **[13 Hrs]**

Overview of C: History of C - Importance of C - Basic Structure of C Programs - Programming Style - Executing a 'C' Program. Constants, Variables and Data Types.

Operators and Expressions: Introduction - Arithmetic Operators - Relational Operators - Logical Operators - Assignment Operators - Increment and Decrement Operators - Conditional Operator - Bitwise Operators - Special Operators - Arithmetic Expressions - Evaluation of Expressions - Precedence of Arithmetic Operators – Type conversions in Expressions.

(Chapters : 1,2,3)

Unit II: **[13 Hrs]**

Managing Input and Output Operations - Decision Making and Branching - Decision Making and Looping**.**

(Chapters : 4,5,6)

Unit III :   **[13 Hrs]**

Array - Characters Arrays and Strings: Introduction - Declaring and Initializing String Variables - Reading Strings from Terminal - Writing Strings To Screen - Comparison of Two Strings - String Handling

User defined Functions: Introduction - Need for User-defined Functions - A Multi-Function Program - Elements of User-defined Functions - Definition of Functions - Return Values and their Types - Function Calls - Function Declaration - Category of Functions - No Arguments and No Return Values - Arguments but No Return Values - Arguments with Return Values - No Arguments but Returns a Value - Functions that Return Multiple Values - Nesting of Functions - Recursion - The Scope, Visibility and Lifetime of Variables.

(Chapters :7,8,9)

Unit IV: **[13Hrs]**
Structures and Unions: Introduction - Defining a Structure - Declaring Structure Variables - Unions.

Pointers: Introduction, Understanding Pointers - Accessing the Address Of Variables - Declaring Pointer Variables - Initialization of Pointer Variables – Array of Pointers – Pointers as Function Arguments.

 (Book 1 : Chapters : 10,11)

Unit V: [13 Hrs]

File Management in C: Introduction - Defining and Opening A File - Closing A File - Input/output Operations on Files - Error Handling During I/O Operations - Random Access To Files – Command Line Arguments - Dynamic memory allocation and linked list.

(Chapters : 12,13)

Books for Study:

1. E.Balagurusamy, "Programming in Ansi C", Tata McGraw Hill Education (India) Private Limited, New Delhi, 7th Edition, 2017.
2. Chris Bates, "Web Programming Building Internet Applications", Wiley India Private Limited, Reprint 2016.

Books for Reference:

1. Yashavant Kanetkar, "Let Us C ", BPB Publications, First Edition 2012.
2. Deitel,. "Internet and World Wide Web, How to Program", Pearson Education, 4th Edition 2013.

Course Outcomes:

Upon successful completion of this course, students will be able to

1. Understand the basic terminology used in computer programming.
2. Write, compile and debug programs in C language.
3. Use different data types in a computer program.
4. Design programs involving decision structures, loops and functions.
5. Use the structures and unions through which derived data types can be formed.

Mapping of Course Outcomes with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	M	H	H	M	M	H	K
CO2	H	H	H	M	H	H	A
CO3	H	H	H	L	M	H	A
CO4	H	H	H	M	M	H	A
CO5	H	H	H	M	M	H	U

Course Designed By   : Ms.D.Jothikanna

Course Reviewed By : Mrs.L.Sankara Maheswari

Checked By   : Mrs.L.Sankara Maheswari

(For the students admitted from the academic year 2017 – 2018 onwards)

Course Objectives: **[26Hrs]**

➢ To gain Knowledge about the basics of Image Editing tool to create, edit and composite images that can be used on Web sites and as graphics for movies.
➢ To achieve clear idea on basics of creating different animation effects like tweening, morphing, audio etc.

List of Programs:
Image Editor:
1. Design scenery using drawing tools.

2. Design an image using Clone stamp tools.

3. Design an invitation using Paint Tools.

4. Design a page using type masking.

5. Design a program applying filter option.

6. Use a heal brush tool and make changes in an image.

Animation Tool:

1. Draw a butterfly using Oval and Pencil tools [use Straight Smooth and Freeform lines].
2. Design a program using text tool and apply different effects.
3. Create a program using Drop Shadow, Drop to Ice and 3D Rotation effects.
4. Draw a pendulum using motion tweening.
5. Create a program using shape tweening (Morphing).
6. Design a scene and add bitmap and sound effect.

Course Outcomes:

Upon successful completion of this course, students will be able to

1. **Develop their creativity in image editing and animation.**
2. Design layouts for web pages, Paper Adverts, Brouchers.
3. Understand the editing tools and create movies.
4. Do Paintings, Drawing using various shapes.
5. Gain Knowledge to create a movie with bitmap images and sounds.

Mapping of Course Outcomes with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	M	M	M	H	H	M	K
CO2	M	M	M	H	H	H	A
CO3	M	M	M	H	H	H	U
CO4	L	H	H	H	H	L	A
CO5	L	M	L	H	M	L	A

Course Designed by   : Ms D.Jothikanna

Course Reviewed by   : Mrs.G.Neelaveni

Course Checked by   : Mrs.L.Sankara Maheswari

B.Sc. Information Technology
Semester III

Part IV- Skill Enhancement Course I: Multimedia – Image Designing and Graphics Tool

(For the students admitted from the academic year 2017 – 2018 onwards)

317GS1

Course Objective: **[35 Hrs]**

➢ Educate clear idea to create brochures, flyers, newsletters, reports and a variety of other professional-quality documents used for business or educational purposes.

List of Programs:

Image Designing Tool

1. Create a program to draw College Logo using layers.
2. Create a program to draw a Robo using drawing tools.
3. Create a program to import images and apply image effects.
4. Design a program using text tool and apply various format and styles.
5. Create a program for transformation of an object and text.
6. Create a program to design an invitation for Book Exhibition using frames.
7. Create a program for converting text to outlines and to image frame.

Graphics Tool
1. Create a program to design Scenery using drawing tools.
2. Create a logo for Car Company using various tools.
3. Create an invitation for an Inter Collegiate competition.
4. Create a program to design an advertisement using Text tool.
5. Create a Banner using Multiple layers.

Course Outcomes:

Upon successful completion of this course, students will be able to

1. Draw and import different types of images.
2. Apply different styles and format for text.
3. Control the animation speed, portion of the view, the geometric relationship of the object.
4. Create innovative sceneries using graphics tools.
5. Design an creative advertisement, invitation, Brouchers etc..

Mapping of Course Outcomes with Programme Outcomes:

	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	M	M	M	H	H	M	A
CO2	M	M	M	H	H	H	A
CO3	M	M	M	H	H	H	U
CO4	M	H	H	H	H	M	A
CO5	L	H	H	H	H	M	A

Course Designed by : Mrs. V.Vadivu
Course Reviewed by : Mrs. G.Neelaveni
Course Checked by   : Mrs. L.Sankara Maheswari

B .Sc Information Technology

Semester IV

Part IV- Skill Enhancement Course II: Multimedia – Image Editing Tool

417GS2

(For the students admitted from the academic year 2017 – 2018 onwards)

Course Objective: [35 Hrs]
➢ To understand the basics of Image Editing tools to create, edit and composed images that can be used on Web sites and as graphics for movies.

List of Programs:

1. Design Scenery using drawing tools.

2. Design an image using GIF Animation.

3. Design a Sports Day Invitation using 3D text.

4. Create an advertisement by using Clone stamp tools.

5. Create a program for Cartoon effect.

6. Design a brochure using Paint Tools.

7. Create a program using lighting effects with difference clouds.

8. Design an image and apply type masking.

9. Design an banner using filter option.

10. Design the movie scene using multiple layers.

11. Use a heal brush tool and make changes in an image.

12. Design a college prospectus.

Course Outcomes:

Upon successful completion of this course, students will be able to

1. Draw and import different types of images.
2. Apply different styles and format for text.
3. Control the animation speed, portion of the view, the geometric relationship of the object.
4. Create innovative sceneries using graphics tools.
5. Design an creative advertisement, invitation, Brouchers etc..

Mapping of Course Outcomes with Programme Outcomes:

SEC-II	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge Level
CO1	M	H	M	H	H	M	A
CO2	M	H	M	H	H	M	A
CO3	M	H	M	H	H	M	A
CO4	M	H	M	H	H	M	A
CO5	L	M	H	H	H	M	A

Course Designed by : Ms. V.Vadivu
Course Reviewed by : Ms. L.Sankara Maheswari
Course Checked by   : Ms. L.Sankara Maheswari

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Information Technology
Scheme of Examination – CBCS Pattern
Programme: B.Sc.IT
(For the students admitted during the academic year 2016 – 2017 only)

Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs.	CIA Marks	ESE Marks	ESE Marks	Credits
	Semester I						
115BT1/ 115MY1/ 115HD1/ 115FR1	Part I Language I	6	3	25	75	100	4
115EN1	Part II English I	6	3	25	75	100	4
115G01	Part III Core I – Digital Principles and Computer Architecture	5	3	25	75	100	4
115GP1	Core Practical I -Word Processing and Internet	5	3	40	60	100	4
115AG1	Allied I – Principles of Accountancy	6	3	25	75	100	4
115EVS	Part IV Environmental Studies	2	2	50	-	50	2
	Semester II						
215BT2/ 215MY2/ 215HD2/ 215FR2	Part I Language II	6	3	25	75	100	4
215EN2	Part II English II	6	3	25	75	100	4
215G02	Part III Core II-C Programming and Web Designing	6	3	25	75	100	4
216GP2	Core Practical II-C Programming and Web Designing	4	3	40	60	100	4
215AG2	Allied II-Discrete Mathematics	6	3	25	75	100	4
215VEC	Part IV Value Education	2	2	50	-	50	2

Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
	Semester III						
	Part III						
315G03	Core III-Object Oriented Programming with C++	4	3	25	75	100	4
315G04	Core IV-Data Structures and Algorithms	5	3	25	75	100	4
315G05	Core V- Operating System Concepts	5	3	25	75	100	4
315GP3	Core Practical III- Object Oriented Programming with C++	5	3	40	60	100	4
315AG3	Allied III- Operations Research	6	3	25	75	100	4
315GS1	Part IV: Skill Based Course I: Multimedia –Image Designing and Graphics Tool	3	3	75	-	75	3
315NTA	Non Major Elective Course I: 2D Animation-Practical	2	2	50	-	50	2
	Semester IV						
	Part III						
415G06	Core VI-.NET Programming	4	3	25	50	75	3
415G07	Core VII-Database Management Systems	5	3	25	50	75	3
415G08	Core VIII-Computer Networking and the Internet	5	3	25	75	100	4
415GP4	Core Practical IV- .NET Programming	5	3	40	60	100	4
415AG4	Allied IV- Principles of Management	6	3	25	75	100	4
415GS2	Part IV Skill Based Course II: Multimedia – Image Editor	3	3	75	-	75	3
415NGA	Non Major Elective Course II: General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	-	-	Grade	Grade
415ALG	Advanced Learners Course I – Enterprise Resource Planning	-	-	-	100	100	4*

Course Code	Course Title	Ins. Hrs/ Week	Examination Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
	Semester V Part III						
515G09	Core IX-Java Programming	4	3	25	75	100	4
515G10	Core X-Software Engineering and Testing Tools	5	3	25	75	100	4
515G11	Core XI- Cloud Computing	6	3	25	75	100	4
515GP5	Core Practical V- Java Programming and Software Testing	6	3	40	60	100	4
515GE1	Elective I –Computer Graphics Part IV	6	3	25	75	100	4
515GS3	Skill Based Course III: Multimedia - Animation	3	3	75	-	75	3
	Semester VI Part III						
615G12	Core XII – PHP and Python Programming	5	3	25	75	100	4
615G13	Core XIII- Cryptography and Network Security	6	3	25	75	100	4
615GP6	Core Practical VI – Open Source Programming	4	3	40	60	100	4
615GE2	Elective II- Data Mining and Data Warehousing	6	3	25	75	100	4
615GPV	Project and Viva Voce	6	3	25	75	100	4
615GS4	Part IV:Skill Based Course IV: Multimedia – Authoring Tool	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V:Extension Activities	-	-	50	-	50	2
615ALG	Advanced Learners Course II- Client/Server Technology	-	-	-	100	100	4*

Total Credits: 140

Starred Credits are treated as additional credits, which are optional

Semester II

Part III – Core II – C Programming and Web Designing   215G02

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[75 Hrs]**

- ➢ C has emerged as the language of choice for most applications due to Speed, Portability and Compactness of Code.
- ➢ Learn the fundamentals of Ansi C programming and the standard C libraries.

Unit I: **[14 Hrs]**

Overview of C – Constants, Variables and Data Types – Operators and Expressions, Managing Input and Output Operations – Decision Making and Branching – Decision Making and Looping.

Unit II: **[16 Hrs]**

Arrays – Characters Array and Strings – User defined Functions.

Unit III: **[16 Hrs]**

Structures and Unions – Pointers – File Management in C.

Unit IV: **[15 Hrs]**

Internet Basics- Internet Basics –Introduction to HTML-Lists-Adding Graphics to HTML Documents-Tables-Linking Documents- Frames-Forms used by a Website.

Unit V :   **[14 Hrs]**

Dynamic HTML:Cascading Style sheets- CLASS – Using the <SPAN>…</SPAN> Tag-External Style Sheets- Using the <DIV>…</DIV> Tag.

Book for Study:

3. E.Balagurusamy, "Programming in Ansi C", Tata McGraw Hill Publishing, V Edition, 2010.
4. Ivan Bayross, "Web Enabled Commercial Application Development Using HTML,JavaScript,DHTML and PHP", BPB Publications,2005.

Book for Reference:

1. Kelly , "A Book of C ", Pearson Education (2008).

2 Deitel,."Internet and World Wide Web, How to Program", Pearson Education,4th Edition,2013

3 Spoken Tutorial Project (C) as e-Resource for learning- IIT, Mumbai under national mission on education through ICT, MHRD, Government of India.

Course Designed By   :Ms.V.Vadivu
Course Reviewed By :Ms.N.Sathyapriya
Checked By   :Mrs.S.Shobana

B.Sc. Information Technology

Semester III

Part IV- Skill Based Course I: Multimedia – Image Designing and Graphics Tool 315GS1

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[35 Hrs]**

This paper gives an idea to create brochures, flyers, newsletters, reports and a variety of other professional-quality documents used for business or educational purposes.

List of Programs:

Image Designing Tool

8. Create a program to work with layers.

9. Create a program using drawing tools.

10. Create a program to import images and apply image effects.

11. Design a program using text tool and apply various format and styles.

12. Create a program for transformation of an object and text.

13. Create a program to work with frames.

14. Create a program for converting text to outlines and to image frame.

Graphics Tool

6. Create a program using drawing tools.

7. Create a logo using various tools.

8. Create an invitation for an Inter Collegiate competition.

9. Create a program using Text tool.

10. Create a Banner using Multiple layers.

Course Designed by : Mrs. A. Kalaivani

Course Reviewed by : Mrs. N. Sathyapriya

Course Checked by : Mrs. S. Shobana

Part IV – Non Major Elective Course I – 2D Animation-Practical   315NTA

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[26Hrs]**

This paper emphasize the basics of Image Editing tool to create, edit and composite images and gives an idea on basics of creating different animation effects like tweening, key frame animation.

List of Programs:

Image Editing Tool

1. Design a program to import images and make adjustments.
2. Create a program using clone stamp and healing brush tool.
3. Create a program using Blur, Sharpen, Dodge and Burn tools.
4. Design a program using text, transform and re touching tools.
5. Create a program by filter option.
6. Design the program using layers.

Animation Tool

1. Design scenery using various tools.
2. Design an animation using Frame by Frame Animation.
3. Create a pendulum using Motion Tweening.
4. Create an Album with the help of Buttons.
5. Create folders in the library and add different symbols like doors, windows, roof, walls with different colors etc to the folders. Using those symbols assemble different types of houses.
6. Create a simple story using key frame animation.

Course Designed by : Mrs. R. Nandhini

Course Reviewed by : Mrs. N. Sathyapriya

Course Checked by : Mrs. S. Shobana

Part IV- Skill Based Course II: Multimedia – Image Editor 415GS2

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: [35 Hrs]

      To learn the basics of Image Editing tool to create, edit and composite images that can be used on Web sites and as graphics for movies.

List of Programs:

1. Create a program using drawing tools.

2. Create a GIF Animation.

3. Design a 3D text.

4. Create a program by using clone stamp tools.

5. Create a program by using Transformation tools.

6. Design a program using Paint Tools.

7. Create a program using lighting effects and difference clouds.

8. Create type masking.

9. Create a program by filter option.

10. Design the program using multiple layers.

11. Use a heal brush tool and make changes in an image.

12. Design a college prospectus.

                    Course Designed by : Mrs. G. Neelaveni

                    Course Reviewed by : Mrs. N. Sathyapriya

                    Course Checked by : Mrs. S. Shobana

Part IV- Skill Based Course III: Multimedia – Animation 515GS3

(For the students admitted from the academic year 2015- 2016 onwards)

Preamble: **[35 Hrs]**

This paper gives an idea on basics of creating different animation effects like tweening, morphing, audio and video.

List of Programs:

7. Draw scenery using Oval, Circle, Rectangle and Pencil tools [use Straight Smooth and Freeform lines].

8. Create a program using text tool and apply different effects.

9. a)Draw a 3D Ring.

   b)Create a 3D Tunnel.

10. Create a program with cartoon effects.

11. Create a animated button with a gradient in the up state and a text over it.

12. Create folders in the library and add different symbols like eyes, head, nose, mouth etc to the folders. Using those symbols assemble different types of faces.

13. Draw a pendulum using motion tweening.

14. Convert a ball to a rectangular box using shape tweening (Morphing).

15. Create a program and apply filter option.

16. Create a program using Action Script.

17. Design a scene and add audio, video effect.

18. Create a movie with multiple scenes.

Course Designed by : Mrs. N. Sathyapriya

Course Reviewed by :Mrs. G. Neelaveni

Course Checked by : Mrs. S. Shobana

B.Sc. Information Technology
Semester VI
Part IV- Skill Based Course IV: Multimedia– Authoring Tool
615GS4

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[35 Hrs]**

This paper induces to understand the fundamental concepts of digital video and introduces the techniques of video editing and enhancing.

List of Programs:

1.Create a program using Transformation effects.

2.Create a program using text and apply different effects.

3.Create a program for text to speech.

4. Create text and graphics for production titles.

5. Create a program using sequences.

6. Design a program by importing images as videos.

7. Create a program and apply filter option.

8 .Create a program to import video and apply blending and color correction.

9. Design a program to import audio file and apply effects.

10.Create a program and use artistic effects.

11.Create a program for batch file editor.

12.Create a movie with audio and video effects.

Course Designed by : Mrs.N. Sathyapriya

Course Reviewed by: Mrs.G.Neelaveni

Course Checked by : Ms.S.Shobana

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Information Technology
Scheme of Examination – CBCS Pattern
Programme: B.Sc.IT
(For the students admitted during the academic year 2015 – 2016 only)

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
			Dur. Hrs.	CIA Marks	ESE Marks	ESE Marks	
	Semester I						
115BT1/ 115MY1/ 115HD1/ 115FR1	Part I Language I	6	3	25	75	100	4
115EN1	Part II English I	6	3	25	75	100	4
115G01	Part III Core I – Digital Principles and Computer Architecture	5	3	25	75	100	4
115GP1	Core Practical I -Word Processing and Internet	5	3	40	60	100	4
115AG1	Allied I – Principles of Accountancy	6	3	25	75	100	4
115EVS	Part IV Environmental Studies	2	2	50	-	50	2
	Semester II						
215BT2/ 215MY2/ 215HD2/ 215FR2	Part I Language II	6	3	25	75	100	4
215EN2	Part II English II	6	3	25	75	100	4
215G02	Part III Core II-C Programming and Web Designing	6	3	25	75	100	4
215GP2	Core Practical II-C Programming and Web Designing	4	3	40	60	100	4
215AG2	Allied II-Discrete Mathematics	6	3	25	75	100	4
215VEC	Part IV Value Education	2	2	50	-	50	2

Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
	Semester III						
	Part III						
315G03	Core III-Object Oriented Programming with C++	4	3	25	75	100	4
315G04	Core IV-Data Structures and Algorithms	5	3	25	75	100	4
315G05	Core V- Operating System Concepts	5	3	25	75	100	4
315GP3	Core Practical III- Object Oriented Programming with C++	5	3	40	60	100	4
315AG3	Allied III- Operations Research	6	3	25	75	100	4
315GS1	Part IV: Skill Based Course I: Multimedia –Image Designing and Graphics Tool	3	3	75	-	75	3
315NTA	Non Major Elective Course I: 2D Animation-Practical	2	2	50	-	50	2
	Semester IV						
	Part III						
415G06	Core VI-.NET Programming	4	3	25	50	75	3
415G07	Core VII-Database Management Systems	5	3	25	50	75	3
415G08	Core VIII-Computer Networking and the Internet	5	3	25	75	100	4
415GP4	Core Practical IV- .NET Programming	5	3	40	60	100	4
415AG4	Allied IV- Principles of Management	6	3	25	75	100	4
415GS2	Part IV Skill Based Course II: Multimedia – Image Editor	3	3	75	-	75	3
415NGA	Non Major Elective Course II: General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	-	-	Grade	Grade
415ALG	Advanced Learners Course I – Enterprise Resource Planning	-	-	-	100	100	4*

Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
	Semester V						
	Part III						
515G09	Core IX-Java Programming	4	3	25	75	100	4
515G10	Core X-Software Engineering and Testing Tools	5	3	25	75	100	4
515G11	Core XI- Cloud Computing	6	3	25	75	100	4
515GP5	Core Practical V- Java Programming and Software Testing	6	3	40	60	100	4
515GE1	Elective I –Computer Graphics	6	3	25	75	100	4
	Part IV						
515GS3	Skill Based Course III: Multimedia - Animation	3	3	75	-	75	3
	Semester VI						
	Part III						
615G12	Core XII – PHP and Python Programming	5	3	25	75	100	4
615G13	Core XIII- Cryptography and Network Security	6	3	25	75	100	4
615GP6	Core Practical VI – Open Source Programming	4	3	40	60	100	4
615GE2	Elective II- Data Mining and Data Warehousing	6	3	25	75	100	4
615GPV	Project and Viva Voce	6	3	25	75	100	4
615GS4	Part IV:Skill Based Course IV: Multimedia – Authoring Tool	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	Part V:Extension Activities	-	-	50	-	50	2
615ALG	Advanced Learners Course II- Client/Server Technology	-	-	-	100	100	4*

Total Credits: 140

Starred Credits are treated as additional credits, which are optional

B .Sc Information Technology

Semester II

Part III – Core II – C Programming and Web Designing   215G02

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[75 Hrs]**

➢ C has emerged as the language of choice for most applications due to Speed, Portability and Compactness of Code.
➢ Learn the fundamentals of Ansi C programming and the standard C libraries.

Unit I: **[14 Hrs]**

Overview of C – Constants, Variables and Data Types – Operators and Expressions, Managing Input and Output Operations – Decision Making and Branching – Decision Making and Looping.

Unit II: **[16 Hrs]**

Arrays – Characters Array and Strings – User defined Functions.

Unit III: **[16 Hrs]**

Structures and Unions – Pointers – File Management in C.

Unit IV: **[15 Hrs]**

Internet Basics- Internet Basics –Introduction to HTML-Lists-Adding Graphics to HTML Documents-Tables-Linking Documents- Frames-Forms used by a Website.

Unit V :   **[14 Hrs]**

Dynamic HTML:Cascading Style sheets- CLASS – Using the <SPAN>…</SPAN> Tag-External Style Sheets- Using the <DIV>…</DIV> Tag.

Book for Study:

5. E.Balagurusamy, "Programming in Ansi C", Tata McGraw Hill Publishing, V Edition, 2010.
6. Ivan Bayross, "Web Enabled Commercial Application Development Using HTML,JavaScript,DHTML and PHP", BPB Publications,2005.

Book for Reference:

1. Kelly , "A Book of C ", Pearson Education (2008).

2 Deitel,."Internet and World Wide Web, How to Program", Pearson Education,4th Edition,2013

3 Spoken Tutorial Project (C) as e-Resource for learning- IIT, Mumbai under national mission on education through ICT, MHRD, Government of India.

Course Designed By   :Ms.V.Vadivu
Course Reviewed By :Ms.N.Sathyapriya
Checked By   :Mrs.S.Shobana

B.Sc. Information Technology

Semester III

Part IV- Skill Based Course I: Multimedia – Image Designing and Graphics Tool 315GS1

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[35 Hrs]**

This paper gives an idea to create brochures, flyers, newsletters, reports and a variety of other professional-quality documents used for business or educational purposes.

List of Programs:

Image Designing Tool

15. Create a program to work with layers.

16. Create a program using drawing tools.

17. Create a program to import images and apply image effects.

18. Design a program using text tool and apply various format and styles.

19. Create a program for transformation of an object and text.

20. Create a program to work with frames.

21. Create a program for converting text to outlines and to image frame.

Graphics Tool

11. Create a program using drawing tools.

12. Create a logo using various tools.

13. Create an invitation for an Inter Collegiate competition.

14. Create a program using Text tool.

15. Create a Banner using Multiple layers.

Course Designed by : Mrs. A. Kalaivani

Course Reviewed by : Mrs. N. Sathyapriya

Course Checked by : Mrs. S. Shobana

Semester III

Part IV – Non Major Elective Course I – 2D Animation-Practical   315NTA

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[26Hrs]**

This paper emphasize the basics of Image Editing tool to create, edit and composite images and gives an idea on basics of creating different animation effects like tweening, key frame animation.

List of Programs:

Image Editing Tool

7. Design a program to import images and make adjustments.
8. Create a program using clone stamp and healing brush tool.
9. Create a program using Blur, Sharpen, Dodge and Burn tools.
10. Design a program using text, transform and re touching tools.
11. Create a program by filter option.
12. Design the program using layers.

Animation Tool

7. Design scenery using various tools.
8. Design an animation using Frame by Frame Animation.
9. Create a pendulum using Motion Tweening.
10. Create an Album with the help of Buttons.
11. Create folders in the library and add different symbols like doors, windows, roof, walls with different colors etc to the folders. Using those symbols assemble different types of houses.
12. Create a simple story using key frame animation.

Course Designed by : Mrs. R. Nandhini

Course Reviewed by : Mrs. N. Sathyapriya

Course Checked by : Mrs. S. Shobana

B .Sc Information Technology

Semester IV

Part IV- Skill Based Course II: Multimedia – Image Editor 415GS2

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[35 Hrs]**

To learn the basics of Image Editing tool to create, edit and composite images that can be used on Web sites and as graphics for movies.

List of Programs:

1. Create a program using drawing tools.

2. Create a GIF Animation.

3. Design a 3D text.

4. Create a program by using clone stamp tools.

5. Create a program by using Transformation tools.

6. Design a program using Paint Tools.

7. Create a program using lighting effects and difference clouds.

8. Create type masking.

9. Create a program by filter option.

10. Design the program using multiple layers.

11. Use a heal brush tool and make changes in an image.

12. Design a college prospectus.

Course Designed by : Mrs. G. Neelaveni

Course Reviewed by : Mrs. N. Sathyapriya

Course Checked by : Mrs. S. Shobana

Preamble: [35 Hrs]

This paper gives an idea on basics of creating different animation effects like tweening, morphing, audio and video.

List of Programs:

19. Draw scenery using Oval, Circle, Rectangle and Pencil tools [use Straight Smooth and Freeform lines].
20. Create a program using text tool and apply different effects.
21. a)Draw a 3D Ring.

    b)Create a 3D Tunnel.
22. Create a program with cartoon effects.
23. Create a animated button with a gradient in the up state and a text over it.
24. Create folders in the library and add different symbols like eyes, head, nose, mouth etc to the folders. Using those symbols assemble different types of faces.
25. Draw a pendulum using motion tweening.
26. Convert a ball to a rectangular box using shape tweening (Morphing).
27. Create a program and apply filter option.
28. Create a program using Action Script.
29. Design a scene and add audio, video effect.
30. Create a movie with multiple scenes.

Course Designed by : Mrs. N. Sathyapriya

Course Reviewed by :Mrs. G. Neelaveni

Course Checked by : Mrs. S. Shobana

Part IV- Skill Based Course IV: Multimedia– Authoring Tool

615GS4

(For the students admitted from the academic year 2015 – 2016 onwards)

Preamble: **[35 Hrs]**

This paper induces to understand the fundamental concepts of digital video and introduces the techniques of video editing and enhancing.

List of Programs:

1.Create a program using Transformation effects.

2.Create a program using text and apply different effects.

3.Create a program for text to speech.

4. Create text and graphics for production titles.

5. Create a program using sequences.

6. Design a program by importing images as videos.

7. Create a program and apply filter option.

8 .Create a program to import video and apply blending and color correction.

9. Design a program to import audio file and apply effects.

10.Create a program and use artistic effects.

11.Create a program for batch file editor.

12.Create a movie with audio and video effects.

Course Designed by : Mrs.N. Sathyapriya

Course Reviewed by: Mrs.G.Neelaveni

Course Checked by : Ms.S.Shobana

SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Information Technology
Scheme of Examination – CBCS Pattern
Programme: B.Sc.IT
(For the students admitted from the academic year 2014 – 2015 only)

Semester	Title of the course	Examination				Credits
		Dur.Hrs.	CIA Marks	ESE Marks	ESE Marks	
I	Part I –Language I	3	25	75	100	3
	Part II – English I	3	25	75	100	3
	Part III Core I – Principles of Information Technology and Digital Fundamentals	3	25	75	100	4
	Core Practical I – Word Processing and Internet Lab	3	40	60	100	3
	Allied I- Principles of Accountancy	3	25	75	100	5
	Part IV- Environmental Studies	-	50	-	50	2
II	Part I-Language II	3	25	75	100	3
	Part II-English II	3	25	75	100	3
	Part III Core II-C Programming and Web Designing	3	25	75	100	4
	Core Practical II-C Programming and Web Designing Lab	3	40	60	100	3
	Allied II-Discrete Mathematics	3	25	75	100	5
	Part IV-Value Education	-	50	-	50	2
	Advanced Learner's Course I- Principles of Management	3	-	100	100	3*

Semester	Title of the course	Dur.Hrs.	CIA Marks	ESE Marks	ESE Marks	Credits
III	Part III Core III- Object Oriented Programming with C++	3	25	75	100	4
	Core IV- Data Structures and Algorithms	3	25	75	100	5
	Core V- Operating Systems	3	25	75	100	4
	Core Practical III – Object Oriented Programming with C++ Lab	3	40	60	100	2
	Allied III-Operations Research	3	25	75	100	5
	Part IV Skill Based Course Multimedia – Paper I- Page Maker and Corel Draw	-	100	-	100	3
	Non Major Elective Course I	-	75	-	75	2
IV	Part III Core VI - Visual Basic Programming	3	25	75	100	4
	Core VII-Relational Database Management Systems	3	25	75	100	4
	Core VIII- Computer Networks	3	25	75	100	4
	Core Practical IV - Visual Basic and RDBMS Programming Lab	3	40	60	100	3
	Allied IV- Enterprise Resource Planning	3	25	75	100	5
	Part IV Skill Based Course Multimedia – Paper II - Photoshop	-	100	-	100	3
	Non Major Elective Course II- General Awareness	-	75	-	75	2
	Part V – Extension Activities	-	50	-	50	1
	Advanced Learners Course II- Bioinformatics Computing	3	-	100	100	3*

Semester	Title of the course	Dur.Hrs.	CIA Marks	ESE Marks	ESE Marks	Credits
V	Part III Core IX-Java Programming	3	25	75	100	4
	Core X-Software Engineering	3	25	75	100	4
	Core XI- Microprocessor	3	25	75	100	5
	Elective I - Neural Networks and Fuzzy Logic	3	25	75	100	5
	Core Practical V- Java Programming Lab	3	40	60	100	3
	Part IV- Skill Based Course Multimedia –Paper III- Animation	-	100	-	100	3
VI	Part III Core XII-Embedded Systems	3	25	75	100	4
	Core XIII-Software Testing	3	25	75	100	4
	Core XIV-Information Security	3	25	75	100	4
	Elective II- Mobile Communications	3	25	75	100	5
	Project and Viva Voce	3	25	75	100	5
	Part IV Skill Based Course Multimedia – Paper IV- Authoring Tool	-	100	-	100	3
	Advanced Learners Course III-Client/Server Technology	3	-	100	100	3*

Total Credits   140

Starred Credits are treated as additional credits, which are optional.

Non Major Elective Course offered by the Department – 2D Animation Practical

30% of the syllabus in each course should be taught using OHP/LCD & Seminar.

Skill Based Course Multimedia –Paper I- Page Maker and Corel Draw

List of Programs: **[35 Hrs]**

Page Maker

1. Create a program to work with layers.
2. Create a program using drawing tools.
3. Create a program to import images and apply photoshop effects.
4. Design a Resume using text tool.
5. Create a program for transformation of an object and text.
6. Create a program to work with frames.
7. Create a program for masking a picture.

Corel Draw

8. Create a program using drawing tools.
9. Create a logo using various tools.
10. Create an invitation for an Inter Collegiate competition.
11. Create a program using Text tool.
12. Create a Banner using Multiple layers.

Course Designed By   : Ms.N.Sathyapriya
Course Reviewed By :Ms.G.Neelaveni

Checked By   :Mrs.S.Shobana

Part IV – Non Major Elective Course I Practical – 2D Animation

List of Programs: **[26 Hrs]**

Photoshop:

13. Design a program to import images and make adjustments.
14. Create a program using clone stamp and healing brush tool.
15. Create a program using lasso and magic wand tools.
16. Design a program using text, transform and re touching tools.
17. Create a program by filter option.
18. Design the program using layers.

Flash:

19. Design a scenery using various tools.
20. Design an animation using Frame by Frame Animation.
21. Create a pendulum using Motion Tweening.
22. Create an Album with the help of Buttons.
23. Create folders in the library and add different symbols like doors, windows, roof, walls with different colors etc to the folders. Using those symbols assemble different types of houses.
24. Create a simple story using key frame animation.

Course Designed By   : Ms.N.Sathyapriya
Course Reviewed By :Mrs.V. Vadivu

Checked By   :Mrs.S.Shobana

B .Sc Information Technology
(For Candidates admitted from 2014-2015 and Onwards)

Semester IV   414GS2

Skill Based Course Multimedia –Paper II- Photoshop

List of Programs: **[35 Hrs]**

 1. Create a program using drawing and re touching tools.

 2. Create a Gif transparency.

 3. Design a 3D text.

 4. Create a program by using clone stamp tools.

 5. Create a program by using Transformation tools.

 6. Create a program by lasso tool.

 7. Create a program lighting effects and difference clouds.

 8. Create type masking.

 9. Create a program by filter option.

10. Design the program using multiple layers.

11. Use a heal brush tool and make changes in an image.

12. Design a college prospectus.

Course Designed By   :Mrs.V.Vadivu

Course Reviewed By :Ms.N.Sathyapriya

Checked By   :Mrs.S.Shobana

B.Sc. Information Technology

Semester V

Part IV - Skill Based Course Multimedia – Paper III – Animation   514GS3

(For the students admitted during the academic year 2014- 2015 only)

Preamble: **[35 Hrs]**

        This paper gives an idea on basics of creating different animation effects like tweening,

morphing, audio and video.

List of Programs:

1. Draw scenery using Oval, Circle, Rectangle and Pencil tools [use Straight Smooth and Freeform lines].

2. Create a program using text tool and apply different effects.

3. a)Draw a 3D Ring.

   b)Create a 3D Tunnel.

4. Create a program with cartoon effects.

5. Create a animated button with a gradient in the up state and a text over it.

6. Create folders in the library and add different symbols like eyes, head, nose,mouth etc to the folders. Using those symbols assemble different types of faces.

7. Draw a pendulum using motion tweening.

8. Convert a ball to a rectangular box using shape tweening (Morphing).

9. Create a program and apply filter option.

10. Create a program using Action Script.

11. Design a scene and add audio, video effect.

12. Create a movie with multiple scenes.

Course Designed by : Mrs. N. Sathyapriya

Course Reviewed by :Mrs. G. Neelaveni

Course Checked by : Mrs. S. Shobana

B.Sc. Information Technology

Semester VI

Part IV- Skill Based Course Multimedia – Paper IV - Authoring Tool   614GS4

(For the students admitted from the academic year 2014 – 2015 only)

Preamble: **[35 Hrs]**

This paper induces to understand the fundamental concepts of digital video and introduces the techniques of video editing and enhancing.

List of Programs:

1. Create a program using Transformation effects.

2. Create a program using text and apply different effects.

3. Create a program for text to speech.

4. Create the text and graphics for production titles.

5. Create a program using sequences.

6. Design a program by importing images as videos.

7. Create a program and apply filter option.

8. Create a program to import video and apply blending and color correction.

9. Design a program to import audio file and apply effects.

10. Create a program and use artistic effects.

11. Create a program for batch file editor.

12. Create a movie with audio and video effects.

Course Designed by : Mrs.N.Sathyapriya

Course Reviewed by: Mrs.G.Neelaveni

Course Checked by : Ms.S.Shobana

B.Sc. Information Technology

Semester wise distribution with Scheme of Examination with Credits

(For the students admitted during the academic year 2012 – 2013) and onwards

Semester	Title of the course	Credits	ESE (Hrs)	CIA	ESE	Total
I	Part I –Language I	3	3	25	75	100
	Part II – English I	3	3	25	75	100
	Part III - Core I-Digital Fundamentals and Computer Architecture	4	3	25	75	100
	Part III-Core Practical I –PC Software Packages	2	3	40	60	100
	Part III-Allied I-Principles of Accountancy	5	3	25	75	100
	Part IV- Environmental Studies	2	-	50	-	50
II	Part I-Language II	3	3	25	75	100
	Part II-English II	3	3	25	75	100
	Part III-Core II-C Programming	4	3	25	75	100
	Part III-Core Practical II- C Programming	3	3	40	60	100
	Part III- Allied II-Discrete Mathematics	5	3	25	75	100
	Part IV-Value Education	2	-	50	-	50
	Advanced Learner's Course I-UNIX	3*	3	-	100	100
III	Part III- Core III-Object Oriented Programming with C++	4	3	25	75	100
	Part III-Core IV-Data Structures and Algorithms	5	3	25	75	100
	Part III-Core V-Operating Systems	4	3	25	75	100
	Part III-Core Practical III-Object Oriented Programming with C++	2	3	40	60	100
	Part III-Allied III-Operations Research	5	3	25	75	100
	Part IV-Skill Based I- HTML, DHTML & Dream weaver	3	-	100	-	100
	Part IV-Non Major Elective	2	-	75	-	75

Semester	Title of the course	Credits	ESE (Hrs)	CIA	ESE	Total
IV	Part III-Core VI-Visual Basic Programming	4	3	25	75	100
	Part III-Core VII-Relational Database Management System	5	3	25	75	100
	Part III-Core VIII-Computer Networks	4	3	25	75	100
	Part III-Core Practical IV- Visual Basic and RDBMS Programming	3	3	40	60	100
	Part III-Allied IV-E-Commerce Concepts	5	3	25	75	100
	Part IV-Skill Based II-PageMaker and Corel Draw	3	-	100	-	100
	Part IV- General Awareness	2	-	75	-	75
	Advanced Learner's Course II-Visual C# Programming	3*	3	-	100	100
	Part V-Extension Activities	1	-	50	-	50
V	Part III- Core IX-JAVA Programming	4	3	25	75	100
	Part III- Core X-Software Engineering	5	3	25	75	100
	Part III- Core XI-Computer Graphics	4	3	25	75	100
	Part III- Core Practical V-JAVA and Computer Graphics Programming	3	3	40	60	100
	Part III-Elective I-Client Server Technology	5	3	25	75	100
	Part IV-Skill Based III-Photoshop	3	-	100	-	100
VI	Part III- Core XII-Web Technology	4	3	25	75	100
	Part III- Core XIII-Software Testing	4	3	25	75	100
	Part III- Core XIV-Network Security and Administration	4	3	25	75	100
	Part III- Elective II-Data Mining and Data Warehousing	5	3	25	75	100
	Part III- Project and Viva Voce	5	3	25	75	100
	Part IV-Skill Based IV-Flash	3	-	100	-	100
	Advanced Learner's Course III-Mobile Computing	3*	3	-	100	100

| | Total Credits | 140 |

Starred Credits are treated as additional credits, which are optional.

Part IV Skill Based Course I-HTML, DHTML &Dream weaver   S.C:312SS1
(For the Candidates admitted during the academic year 2011-2012 Onwards)   38 Hrs
Preamble:
- ➢ Information plays a vital and dynamic role in HTML and DHTML
- ➢ DHTML is a new and emerging technology that has evolved to meet the increasing demand for eye catching and mind catching web sites.
- ➢ Dream weaver is a web development application allows users to preview websites in locally installed web browsers.

Module I: **[10 Hrs]**
Introduction to Html-Hypertext markup language (HTML)-commonly used HTML commands-Titles & footers-Text formatting-Emphasizing material in a web page-Text styles-Other text effects.

Module II: **[7 Hrs]**
Lists: Type of lists, Adding graphics to HTML Documents.

Module III: **[7 Hrs]**
Tables-linking documents-frames

Module IV: **[7 Hrs]**
Dynamic HTML-Cascading style sheets –Class-Using the <SPAN> … </SPAN>-External style sheets-Using the <DIV>… </DIV>

Module V: **[7 Hrs]**
Get Started with DreamWeaver-Create a Page with Text-Add Images and Hyperlinks to your Web Page

Books for study

1. Ivan Bayross, "HTML, DHTML, Java Script, perl, CGI",BPB Publications, New Delhi, Reprinted
   2011.
2. Michael Meadhra,"DreamWeaver 8 A Beginner's Guide",Dream Tech Press,Edition 2006.

List of programs:

1.Design a web page which displays text in physical & logical styles.
2.Create a web page with external and internal links.
3.Design a timetable using HTML tags.
4 Design a web page for hospital.
5 Create a web page with links between two frames.
6.Write a HTML program using image and list tags.
7.Create a web page in DHTML using Cascading Style Sheets (use all attributes).
8.Design a web page in DHTML using class in external style sheets.
9.Design a web page for online recruitment process using dreamweaver.
10.Design a web page showing your bio-data using dreamweaver.

B.Sc Computer Science
(For B.Sc Computer Science / Information Technology / Computer Applications)
Semester IV
Part IV Skill Based Course II - PageMaker and CorelDraw   S.C: 412SS2
(For the Candidates admitted during the academic year 2011-2012 Onwards)   38 Hrs
Preamble:
- ➢ This Paper enlighten the students with the knowledge of CorelDraw And PageMaker
- ➢ This software helps the students to work and edit along with the images and pictures.

Module I: **[10 Hrs]**

What's new in CorelDraw 12? – Interfacing with CorelDraw. Getting Started with CorelDraw12: Measuring and Drawing Helpers - Zooming and Viewing – Essential Objects Commands.

Module II: **[7 Hrs]**

Working with object tools: Creating Basic Shapes – Drawing with Line Tools – Cutting, Shaping and Reshaping objects – Arranging and organizing objects.

Module III: **[7Hrs]**

PageMaker Basics – Working with Publications – Drawing tools – Text tools.

Module IV: **[7 Hrs]**

Importing Graphics – Transformations - Master Pages – Utilities

Module V: **[7 Hrs]**

Working with Text – The Story Editor -Working with Frames – Working with Layers.

Book for Study:
1. SteveBain with Nick Wilkinson,"CorelDraw 12"DreamTech Publications.
2. Satish jain , "Trainning Guid – PageMaker 7", BPB, Publications

List of Programs:

Corel Draw:
1. Create a program using Drawing Tools
2. Create a logo using Corel Draw.
3. Create an invitation for college day.

PageMaker:
1. Create a program to work with Layers.
2. Create a program using Drawing Tools
3. Create a program using Text tools.
4. Create a program to Import Images and align the images.
5. Create a program for Transformation of an object.
6. Create a program to work with Frames.
7. Create a program for masking a picture.

Preamble:
- ➢ Photoshop is an important tool for graphic designers and professionals who have to work with images.
- ➢ The syllabus starts with the basics of Photoshop and subsequently studies every aspect in detail.
- ➢ Different kinds of image effects can be developed with the Photoshop.
- ➢ The practical programs develop the skill to expert with Photoshop, which is a basic tool for multimedia and animation.

Module I: **[10 Hrs]**
        Starting Photoshop CS2: Getting started with Photoshop CS2– Opening an existing file- The Photoshop program window- Guidelines for working with toolbox- Screen modes- Creating a new file- Saving files.
        Working with images: Vector and bitmap images- Opening recently used files- Image size- Editing images- Opening files created in illustrator or freehand- Color modes- Setting a current foreground and background colors- File formats.

Module II: **[7 Hrs]**
        Making selections: Making selection-The selection tools- The magnetic lasso tool- The grow and similar commands- Moving a portion of an image- Editing selections- Copying a selection into another image- Filling a selection – Transforming selections.

Module III: **[7 Hrs]**
        Painting, drawing and retouching tools: The painting tools- The drawing tools- The retouching tools.

Module IV: **[7 Hrs]**
        Layers: Layers palette- Working with layers- New layer via cut- New layer via copy- Hiding/showing layers- Repositioning layers- Flattening images-Working with adjustment layers- Layer effects.
        Type: Creating type- Type tool- Converting point type to paragraph type- Converting type layers to standard layers- Type masking.

Module V: **[7 Hrs]**
        Filters: The filter menu- Filter gallery- Extract filter- Vanishing point filter- Artistic filters- Blur filters- Distort filters- Noise filters- Pixelate filters- Lighting effects.

Book for study:
        "Photoshop CS2 in simple steps", Shalini Gupta, Adity Gupta, Published by Dream tech press, 2006.

List of programs:
1. Create a GIF transparency.
2. Design a 3D text.
3. Use the heal brush and make changes in an image.
4. Build a glow effect with stroke path.
5. Show/ Hide a layer.
6. Merge two or more layers.
7. Create different layer effects.
8. Build lighting effects and difference clouds.
9. Annotate files with text and audio.
10. Create type masking.
11. Build a filter based GIF animations.
12. Create an advertisement.
13. Design a student identity card.
14. Create a newsletter.
15. Create an invitation.

B.Sc Computer Science
(For B.Sc Computer Science / Information Technology / Computer Applications)
Semester VI
Part IV Skill Based IV –Flash   S.C:612SS4
(For the Candidates admitted during the academic year 2011-2012 Onwards)   38 Hrs

Preamble:

➢ This paper gives introductory knowledge about Flash and its application areas.
➢ The students are capable of doing Animation.
➢ Publishing a Flash Movie is also given.
➢ Flash Component technology helps the user to create forms to bind data and to stream video easily using predefined components.

Module I: **[10Hrs]**

Introduction: Hierarchy of Flash movie-The work space-Toolbars-Toolbox-Timeline-Panels: Menus.

Module II: **[7 Hrs]**

Panels: Design panels-Development panels-Other panels-Project Panels. Graphic Tools in Flash: Drawing tool-Object Selection Tools-Color Selection Tools-Viewing Tools.

Module III: **[7 Hrs]**

Advanced Editing Techniques: Reshaping the Objects-Optimizing the Curves-Expand and insert the file-Softening the edges-Converting the lines to fills-Editing the gradient fill and the bitmap fill-Transformation-Arranging the elements-Aligning objects-Handling text-3D Graphics in Flash. Frames, Layers and Scenes: Frames-Layers-Scenes-Documents Properties.

Module IV: **[7 Hrs]**

Symbols: Movies clip-Buttons-Graphic-Methods of creating symbols-Editing the symbol-Changing the behavior of the symbol-Instances-Animated symbol-Symbol from other Movie files-Library-Importing Pictures-Importing video clips-Component definition-Shared Library. Animation: Frame-by-Frame animation-Motion tweening –Shape tweening-Hybrid tweening-Text animation-3D Animation.

Module V: **[7 Hrs]**

Adding sound to animation: Characteristics of digital sound's-Importing sound files-Exporting sound files-Sound effect settings-Editing the sound envelop-Synchronizing the sound with animation-Exporting the sound with animation. Publishing flash movie: Testing flash movies-File formats for publishing-Publish Preview command-Publish Command.

Book for Study:

"Flash MX 2004" V.V.Thiyagarjan and B.Anubumani, Tata McGraw-Hill Publishing Company Limited-New Delhi.

List of Programs:

1. Draw a Butterfly using Oval tool, Circle tool and Pencil tool.
2. Create a shape with Pencil tool (Using Straight smooth and free form lines).
3. Draw a Pentagon using Vector Graphics Method.
4. Create a Drop Shadow effect with depth.
   - i)   Create a text along a curved path.
   - ii)   Draw a 3D Ring.
5. Create a 3D Tunnel.
6. Draw a picture in multiple frame use Onion Skin Effect.
7. Create an animated button with a gradient in the upstate and a text over it.
8. Create folders in the library with names, eyes, heads, mouth and nose. Create symbols with different types of eyes, head etc., and store in the corresponding folders. Using those symbols assemble different types of Faces.
9. Using multiple motion tweening effect,draw a pendulum.

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
Department of Statistics
B.Sc. Statistics
Scheme of Examination – CBCS Pattern
[For students admitted during the academic year 2017-2018 and onwards]

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
117TA1/ 117MY1/ 117HD1/ 117FR1	Part I: Language I	6	3	25	75	100	4
117EN1	Part II: English I	6	3	25	75	100	4
	Part III:						
117W01	Core I: Descriptive Statistics - I	4	3	25	75	100	4
117W02	Core II: Descriptive Statistics - II	4	3	25	75	100	4
217WP1	Core Practical I: Statistical Practical I	2	-	-	-	-	-
117AW1	Allied I : Mathematics for Statistics I	6	3	25	75	100	4
117EVS	Part IV: Environmental Studies	2	3	50	-	50	2
Semester II							
217TA2/ 217MY2/ 217HD2/ 217FR2	Part I: Language II	6	3	25	75	100	4
217EN2	Part II: English II	6	3	25	75	100	4
	Part III:						
217W03	Core III: Applied Statistics	6	3	25	75	100	4
217WP1	Core Practical I: Statistical Practical I	4	3	25	50	75	3
217AW2	Allied II : Mathematics for Statistics II	6	3	25	75	100	4
217VEC	Part IV: Value Education	2	3	50	-	50	2

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester III							
317TA3/ 317MY3/ 317HD3/ 317FR3	Part I: Language III	6	3	25	75	100	4
317EN3	Part II: English III	6	3	25	75	100	4
	Part III:						
317W04	Core IV : Demographic methods	3	3	25	75	100	4
317W05	Core V: Probability Distribution-I	3	3	25	75	100	4
317AW3	Allied III: Computer programming for Statistical Analysis-I	5	3	25	50	75	3
	Allied Practical - C & C++ programming	2	-	-	-	-	-
	Part IV :						
317NSA	NME - Statistical Analysis	2	2	50	-	50	2
317WS1	Skill Enhancement Course I : Actuarial Statistics - I	3	3	75	-	75	3
Semester IV							
417TA4/ 417MY4/ 417HD4/ 417FR4	Part I: Language IV	6	3	25	75	100	4
417EN4	Part II: English IV	6	3	25	75	100	4
	Part III:						
417W06	Core VI: Probability Distribution-II	4	3	25	75	100	4
417WP2	Core Practical II: Statistical Practical II	2	3	25	50	75	3
417AW4	Allied IV : Computer programming for Statistical Analysis-II	5	3	25	50	75	3
417AWP	Allied Practical - C & C++ programming	2	3	20	30	50	2
	Part IV :						
417NGA	General Awareness	-	1	50	-	50	2
417WS2	Skill Enhancement Course II:						
	Actuarial Statistics - II	3	3	75	-	75	3
417GIS	Information Security	2	2	50	-	Grade	Grade

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester V Part III:						
517W07	Core VII : Statistical Inference I	5	3	25	7	100	4
517W08	Core VIII: Basic Sampling theory	5	3	25	5	100	4
517W09	Core IX : Design of Experiments	5	3	25	75	100	4
	Core Practical III: Statistical Practical III	2	-	-	-	-	-
517W10	Core X: Numerical Mathematics	5	3	25	75	100	4
517WE1	Elective I: Psychological Statistics	5	3	25	75	75	3
	Part IV :						
517WS3	Skill Enhancement Course III : Actuarial Statistics – III	3	3	75	50	75	3
	Semester VI Part III:						
617W11	Core XI: Statistical Inference II	5	3	25	75	100	4
617W12	Core XII: Statistical Quality Control	5	3	25	75	100	4
617WP3	Core Practical III: Statistical Practical III	2	3	25	50	75	3
617WE2	Elective II: Elements of Econometrics	5	3	25	50	75	3
617WE3	Elective III: Operations Research	5	3	25	50	75	3
617WP4	Core Practical IV: Statistical Practical IV	5	3	40	60	100	4
	Part IV :						
617WS4	Skill Enhancement Course IV: Actuarial Statistics - IV	3	3	75	-	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V : Extension	-	-	50	-	50	2
Total						3500	140

Curriculum Design
SRI GVG VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
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Department of Statistics
B.Sc. Statistics
Scheme of Examination – CBCS Pattern
[For students admitted during the academic year 2017-2018 and onwards]

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
Semester I							
117TA1/ 117MY1/ 117HD1/ 117FR1	Part I: Language I	6	3	25	75	100	4
117EN1	Part II: English I	6	3	25	75	100	4
	Part III:						
117W01	Core I: Descriptive Statistics - I	4	3	25	75	100	4
117W02	Core II: Descriptive Statistics - II	4	3	25	75	100	4
217WP1	Core Practical I: Statistical Practical I	2	-	-	-	-	-
117AW1	Allied I : Mathematics for Statistics I	6	3	25	75	100	4
117EVS	Part IV: Environmental Studies	2	3	50	-	50	2
Semester II							
217TA2/ 217MY2/ 217HD2/ 217FR2	Part I: Language II	6	3	25	75	100	4
217EN2	Part II: English II	6	3	25	75	100	4
	Part III:						
217W03	Core III: Applied Statistics	6	3	25	75	100	4
217WP1	Core Practical I: Statistical Practical I	4	3	25	50	75	3
217AW2	Allied II : Mathematics for Statistics II	6	3	25	75	100	4
217VEC	Part IV: Value Education	2	3	50	-	50	2

Course Code	Course Title	Ins. Hrs/ Week	Examination					Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks		
Semester III								
317TA3/ 317MY3/ 317HD3/ 317FR3	Part I: Language III	6	3	25	75	100		4
317EN3	Part II: English III	6	3	25	75	100		4
	Part III:							
317W04	Core IV : Demographic methods	3	3	25	75	100		4
317W05	Core V: Probability Distribution-I	3	3	25	75	100		4
317AW3	Allied III: Computer programming for Statistical Analysis-I	5	3	25	50	75		3
	Allied Practical - C & C++ programming	2	-	-	-	-		-
	Part IV :							
317NSA	NME - Statistical Analysis	2	2	50	-	50		2
317WS1	Skill Enhancement Course I : Actuarial Statistics - I	3	3	75	-	75		3
Semester IV								
417TA4/ 417MY4/ 417HD4/ 417FR4	Part I: Language IV	6	3	25	75	100		4
417EN4	Part II: English IV	6	3	25	75	100		4
	Part III:							
417W06	Core VI: Probability Distribution-II	4	3	25	75	100		4
417WP2	Core Practical II: Statistical Practical II	2	3	25	50	75		3
417AW4	Allied IV : Computer programming for Statistical Analysis-II	5	3	25	50	75		3
417AWP	Allied Practical - C & C++ programming	2	3	20	30	50		2
	Part IV :							
417NGA	General Awareness	-	1	50	-	50		2
417WS2	Skill Enhancement Course II:							
	Actuarial Statistics - II	3	3	75	-	75		3
417GIS	Information Security	2	2	50	-	Grade		Grade

Course Code	Course Title	Ins. Hrs/ Week	Examination				Credit
			Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester V Part III:						
517W07	Core VII : Statistical Inference I	5	3	25	7	100	4
517W08	Core VIII: Basic Sampling theory	5	3	25	5	100	4
517W09	Core IX : Design of Experiments	5	3	25	75	100	4
	Core Practical III: Statistical Practical III	2	-	-	-	-	-
517W10	Core X: Numerical Mathematics	5	3	25	75	100	4
517WE1	Elective I: Psychological Statistics	5	3	25	75	75	3
517WS3	Part IV : Skill Enhancement Course III : Actuarial Statistics – III	3	3	75	50	75	3
	Semester VI Part III:						
617W11	Core XI: Statistical Inference II	5	3	25	75	100	4
617W12	Core XII: Statistical Quality Control	5	3	25	75	100	4
617WP3	Core Practical III: Statistical Practical III	2	3	25	50	75	3
617WE2	Elective II: Elements of Econometrics	5	3	25	50	75	3
617WE3	Elective III: Operations Research	5	3	25	50	75	3
617WP4	Core Practical IV: Statistical Practical IV	5	3	40	60	100	4
617WS4	Part IV : Skill Enhancement Course IV: Actuarial Statistics - IV	3	3	75	-	75	3
617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V : Extension	-	-	50	-	50	2
Total						3500	140

DEPARTMENT OF LOGISTICS

LIST OF VALUE ADDED COURSES

Year	Program code	Value added courses	Total Number of courses	Explanation
2017-18	BT	Principles of Management	8	Educate the students to develop the Management and leadership skills with competencies
		Environmental Studies		Educate on ecological balance, types of pollution and create awareness on global warming
		Organisational Behaviour		Enlighten the students about the behavioural Knowledge of organisation
		Value Education		Impart human values, family values, social values, national values and professional ethics
		SBC I - Communication Skills for Business		Develop communication skills for professionalism
		SBC II - Management Information System		Develop the skill in determining the information requirements and formulation of an information system plan
		SBC III - Computer Applications in Business-Practical		Acquire knowledge of Microsoft Access as Database Management System to organizing staggering information about personal and business life
		SBC IV - Computerized Tally-Practical		Familiarize the students with accounting skills using tally software

Year	Program code	Value added courses	Total Number of courses	Explanation
2016-17	BT	Environmental Studies	5	Educate on ecological balance, types of pollution and create awareness on global warming
		Value Education		Impart human values, family values, social values, national values and professional ethics
		SBC I - Communication Skills for Business		Develop communication skills for professionalism
		SBC II - Management Information System		Develop the skill in determining the information requirements and formulation of an information system plan
		Total Quality Management		Provides knowledge about the Quality System and Environmental Management system

Year	Program code	Value added courses	Total Number of courses	Explanation
2015-16	BT	Environmental Studies	5	Educate on ecological balance, types of pollution and create awareness on global warming
		Value Education		Impart human values, family values, social values, national values and professional ethics
		SBC III - Retail Business Management		
		Total Quality Management		Provides knowledge about the Quality System and Environmental Management system
		SBC IV - Retail Store Planning and Design Layout		

Year	Program code	Value added courses	Total Number of courses	Explanation
2014-15	BT	Environmental Studies	7	Educate on ecological balance, types of pollution and create awareness on global warming
		Value Education		Impart human values, family values, social values, national values and professional ethics
		SBC I - Introduction to retailing		Gives Knowledge of Career opportunities in retailing
		SBC II - Retail merchandising management and retail pricing		Impart the retail management skills and ethics in price fixation
		SBC III - Retail Business Management		Understand the ethical aspects of management
		Total Quality Management		Provides knowledge about the Quality System and Environmental Management system
		SBC IV - Retail Store Planning and Design Layout		Develop the skill of planning and designing a retail store

Year	Program code	Value added courses	Total Number of courses	Explanation
2013-14	BT	Environmental Studies	4	Educate on ecological balance, types of pollution and create awareness on global warming
		Value Education		Impart human values, family values, social values, national values and professional ethics
		SBC I - Introduction to retailing		Gives Knowledge of Career opportunities in retailing
		SBC II - Retail merchandising management and retail pricing		Impart the retail management skills and ethics in price fixation

Programme - B.A Economics with Logistics and Freight Management
Scheme of Examination – CBSE Pattern
(For the Students admitted from the academic year 2017-2018 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
117TA/ 117MY1/ 117HD1/ 117FR1	**Part I** – Language I	6	3	25	75	100	4
117EN1	**Part II** – English I	6	3	25	75	100	4
117T01	**Part III** Core I – Managerial Economics –I	5	3	25	75	100	4
117T02	Core II - Logistics Management	5	3	25	75	100	4
117AT1	Allied I – Principles of Management	6	3	25	75	100	4
117EVS	**Part IV** – Environmental Studies	2	2	50	-	50	2
217TA2/ 217MY2/ 217HD2/ 217FR2	**Semester II** **Part I** – Language II	6	3	25	75	100	4
217EN2	**Part II** – English II	6	3	25	75	100	4
217T03	**Part III** Core III– Managerial Economics II	5	3	25	75	100	4
217T04	Core IV – Logistics Information System	5	3	25	75	100	4
217AT2	Allied-II- Organisational Behaviour	6	3	25	75	100	4
217VEC	**Part IV** – Value Education	2	2	50	-	50	2
317TA3/ 317MY3/ 317HD3/ 317FR3	**Semester III** **Part I** – Language III	6	3	25	75	100	4
317EN3	**Part II** – English III	6	3	25	75	100	4
317T05	**Part III** Core V– Macro Economics	4	3	25	75	100	4
317T06	Core VI – Supply Chain Management	3	3	25	50	75	3

317AT3	Allied III-Mathematical Methods	6	3	25	75	100	4
317NCT	**Part IV** Non Major Elective - Introduction to Logistics Management	2	2	50	-	50	2
317TS1	Skill Enhancement Course I – Communication Skills for Business	3	3	75	-	75	3
417TA4/ 417MY4/ 417HD4/ 417FR4	**Semester IV** **Part I** – Language IV	6	3	25	75	100	4
417EN4	**Part II** – English IV	6	3	25	75	100	4
417T07	**Part III** Core VII– Monetary Economics	3	3	25	50	75	3
417T08	Core VIII- Materials Management	4	3	25	75	100	4
417AT4	Allied IV–Business Statistics	6	3	25	75	100	4
417NGA	**Part IV** General Awareness	-	1	50	-	50	2
417TS2	Skill Enhancement Course II –Tally Accounting Programme-Practical	3	3	75	-	75	3
417GIS	Information Security	2	2	50	-	Grade	Grade
417ALT	**ALC I** - Subject Viva Voce	-	-	-	100	100	4*

B.A. Economics with Logistics and Freight Management
Semester I
Part III - Allied I – Principles of Management   117AT1
(For the students admitted from the academic year 2017-2018 onwards)
Credits: 4   Hours: 75
Course Objective:
    This course endeavours to impart the basic knowledge of organizing and managing a firm in an efficient manner.

Unit I   (15 Hours)
    Management: Definition – Features – Functions – Importance - Administration and Management - Manager: Functions – Role – Responsibilities - Entrepreneur and Manager.
Unit II   (15 Hours)
    Planning: Definition – Characteristics – Objectives - Advantages and Limitations - Steps in Planning Process - Management by Objectives (MBO) - Decision Making - Decision Making Process.

Unit III   (15 Hours)

Organisation: Functions – Nature – Importance - Classification of Organisation: Formal and Informal Organisation - Difference between Formal and Informal Organisation - Directing: Meaning and Principles.

Unit IV   (15 Hours)

Delegation: Elements – Principles – Types – Advantages - Problems. Decentralization –Advantages – Disadvantages - Departmentation: Need – Factors - Basis.

Unit V   (15 Hours)

Controlling – Steps - Requirements of Effective Control System – Features - Need – Advantages – Limitations - Coordination - Features – Importance – Types - Problems- Steps for effective Co-ordination.

Book for Study:

1. Ramasamy. T, Principles of Management, Himalaya Publishing House, Mumbai, 2017

Book for Reference:

1. Tripathi. P.C & Reddy. P.N, Principles of Management, Tata McGraw Hill Ltd., New Delhi, 2015.

Course Outcomes:

On the successful completion of the course, students will be able to.

CO1   Equip with the basic knowledge of organising a business unit.

CO2   Inculcate professionalism and leadership qualities.

CO3   Provide the capacity to apply theoretical knowledge in stimulated and real-life settings.

CO4   Identify and analyse both qualitative and quantitative information to solve the issues and formulate   best control methods.

Mapping with Programme Outcomes

PO / CO	PO1	PO2	PO3	PO4	PO5	PO6	Knowledge level
CO1	H	H	H	H	M	H	K
CO2	H	H	M	M	L	M	A
CO3	H	H	H	H	M	H	A
CO4	M	H	M	M	H	H	A

B.A. Economics with Logistics and Freight Management
Semester II
Part III - Allied II – Organizational Behaviour   217AT2
(For the students admitted from the academic year 2017 -2018 onwards)

Credits: 4   **Hours: 75**

Course Objectives:

➢ To gain a solid understanding of human behaviour in the workplace from an individual, group, and organizational perspective.

> ➤ To obtain frameworks and tools to effectively analyze and approach various organizational situations.

Unit I (15 Hours)

Organizational Behaviour: concept – Nature and scope – role – disciplines contributing OB – Hawthorne Experiments – Human Behaviour Approach – OB Models - Emerging challenges and opportunities for Organizational Behaviour – Nature of human behaviour: Process of behaviour – Individual differences – Factors.

Unit II (15 Hours)

Personality: Concept – Theories of personality – determinants of personality – Personality and behaviour – organizational applications of personality. Perception – concept – Managerial applications of personality.

Unit III (15 Hours)

Attitude: Concept – factors in attitude formation – attitude change. Motivation: Concept – nature – Motivation and behaviour – theories of Motivation: X, Y and Z theories, Maslow's need hierarchy theory, Herzberg's theory, Vroom's Expectance theory - Financial and non financial Motivation.

Unit IV (15 Hours)

Job Satisfaction: Determinants – effects of Job Satisfaction. Group Dynamics: Concept: Types of Groups – group Norms – Factors influencing Norms – Group Cohesiveness – Factors affecting Group Cohesiveness. Organizational Conflict: Concept – Stages of Conflict – Types – Merits and Demerits of Conflict – Conflict Management.

Unit V (15 Hours)

Leadership: Concept – Functions - Importance – Qualities of a good leader – Leadership styles – theories of leadership: Trait theory, Managerial Grid, Fiedler's Contingency model. Organizational Culture and Climate – Meaning – Importance – Features.

Book for study:

1. Prasad. L.M, Organizational Behaviour, Sultan Chand & Sons, New Delhi, 2015.

Books for Reference:

1. Aswathappa .K, Organizational Behaviour, Himalaya Publishing House, 2016.
2. Stephan. P Robbins, Organizational Behaviour, Timothy A. Judge, Neharika Vohra, Pearson Indian Education Services Pvt. Ltd. 2016

Course Outcomes:

On completion of this course the students are able to

CO1 Conceptualize the models and approaches in an organizational behaviour

CO2 Articulate the personality development and perceptions through managerial applications.

CO3 Synthesize various ideas in motivation and behavioural theories.

CO4 Recognize the factors influencing norms, groups cohesiveness and also able to distinguish the merits and demerits of conflict management.

CO5 Impetus the knowledge on various theories on leadership qualities and the significance of culture and climate.

Mapping with Programme Outcomes

PO / CO	PO1	PO2	PO3	PO4	PO5	Knowledge level
CO1	H	H	H	M	M	K
CO2	H	H	H	H	H	A
CO3	H	H	H	H	H	U
CO4	H	H	H	H	M	A
CO5	H	H	H	H	H	K

CURRICULUM DESIGN

Sri G.V.G. Visalakshi College For Women (Autonomous), Udumalpet
Affiliated to Bharathiar University
Department of Economics with Logistics and Freight Management
Programme-B.A. Economics with Logistics and Freight Management
Scheme of Examination – CBCS Pattern
(For the Students admitted from the academic year 2015-2016 onwards)

Course Code	Course Title	Ins. Hrs/ week	Examination				Credits
			Dur Hrs	CIA Marks	ESE Marks	Total Marks	
	Semester I						
115TA1/ 115MY1/ 115HD1/ 115FR1/	**Part I** – Language I	6	3	25	75	100	4
115EN1	**Part II** – English I	6	3	25	75	100	4
115T01	**Part III** Core I – Managerial Economics and Decision Making I	5	3	25	75	100	4
115T02	Core II - Logistics Management	5	3	25	75	100	4
115AT1	Allied I – Principles of Insurance	6	3	25	75	100	4
115EVS	**Part IV** – Environmental Studies	2	2	50	-	50	2
215TA2/ 215MY2/ 215HD2/ 215FR2/	**Semester II** Part I – Language II	6	3	25	75	100	4
215EN2	**Part II** – English II	6	3	25	75	100	4
215T03	**Part III** Core III– Managerial Economics and Decision Making II	5	3	25	75	100	4
215T04	Core IV – Logistics Information System	5	3	25	75	100	4
215AT2	Allied II – General Insurance and Risk Coverage	6	3	25	75	100	4
215VEC	**Part IV** – Value Education	2	2	50	-	50	2
315TA3/ 315MY3/ 315HD3/ 315FR3/	**Semester III** Part I – Language III	6	3	25	75	100	4

315EN3	**Part II** – English III	6	3	25	75	100	4
315T05	**Part III** Core V– Macro Economics	4	3	25	75	100	4
315T06	Core VI – Supply Chain Management	3	3	25	50	75	3
315AT3	Allied III – Business Statistics	6	3	25	75	100	4
315TS1	**Part IV** Skill Based Course I – Communication Skills for Business	3	3	75	-	75	3
315NCT	Non Major Elective Course I - Introduction to Logistics Management	2	2	50	-	50	2
415TA4/ 415MY4/ 415HD4/ 415FR4/	**Semester IV** **Part I** – Language IV	6	3	25	75	100	4
415EN4	**Part II** – English IV	6	3	25	75	100	4
415T07	**Part III** Core VII– Monetary Economics	3	3	25	50	75	3
415T08	Core VIII- Materials Management	4	3	25	75	100	4
415AT4	Allied IV – Mathematical Methods	6	3	25	75	100	4
415TS2	**Part IV** Skill Based Course II – Management Information System	3	3	75	-	75	3
415NCT	Non Major Elective Course II- General Awareness (Online)	-	1	50	-	50	2
415GIS	Information Security	2	2	-	-	Grade	Grade
415ALT	**ALC I** - Subject Viva Voce	-	-	-	100	100	3*
515T09	**Semester V** **Part III** Core IX – Fiscal Economics	6	3	25	75	100	4
515T10	Core X– Production and Operations Management	6	3	25	75	100	4
515T11	Core XI- Marketing						

	Management	5	3	25	75	100	4
515T12	Core XII – Foreign Trade Procedures and Documentation	5	3	25	75	100	4
515TE1	Elective I -E- Commerce	5	3	25	75	100	4
515TS3	**Part IV** Skill Based Course III – Computer Applications in Business-Practical	3	3	75	-	75	3
615T13	**Semester VI** **Part III** Core XIII– Global Marketing	6	3	25	75	100	4
615TE2	Elective II- Total Quality Management	6	3	25	75	100	4
615TE3	Elective III – Freight Management	6	3	25	75	100	4
615TPV	Group Project	9	-	100	100	200	8
615TS4	**Part IV**–Skill Based Course IV –Computerized Tally-Practical	3	3	75	-	75	3
615EX1/ 615EX2/ 615EX3/ 615EX4/ 615EX5	**Part V –** Extension	-	-	50	-	50	2
615ALT	**ALC II** - Subject Viva Voce	-	-	-	100	100	3*
	Total					**3500**	**140**

B.A. Economics with Logistics and Freight Management
Semester III
Part IV-Skill Based Course I-Communication Skills for Business   315TS1
(For the students admitted from the academic year 2015-2016 onwards)
Credits: 3   **Hours: 38**
Preamble:
The objective of the course is
   ❖ to develop self-confidence in managing the business
   ❖ to equip the students with correct and effective Communication Skills for successful entrepreneurship
Unit I   (7 Hours)
   Communication - Meaning – Importance - Objectives – Principles of Communication- Media of Communication.

Unit II (7 Hours)

Oral Communication , Verbal, Non verbal and Audio-Visual Presentation, Telephone Skills and Etiquettes.

Unit III (8 Hours)

Written Communication –Kinds of business letter – Essentials of a business letter – Enquiries and replies - Orders and their execution- Sales letters - Application letters.

Unit IV (8 Hours)

Agency correspondence – Insurance - Bank Correspondence – Correspondence with public authorities and other agencies- Letter to the editor of news papers.

Unit V (8 Hours)

Report writing - Importance - Kinds – Characteristics of a good report -Report by individuals and committees.

Books for Study:

1.Reddy,Appannaiah & Nagaraj and Raja Rao ,Essentials of Business Communication, Himalaya Publishing House, New Delhi, 2003

Books for Reference:

1.RajendraPal&J.S.Korlahalli   ,Essentials   of   Business   Communication, Sultan Chand and Sons, New Delhi, 1997.

2.Krishna Mohan & Meera Banerji, Developing Communication Skills, Rajiv Beri for Macmillan Indian Ltd., Chennai,1987

3.M.S.Ramesh&.C.Pattenshetti,BusinessCommunication,S.Chand&Co,Delhi, 2000.

4.L.A.Woolcott&W.R.Unwin,MasteringBusinessCommunication, Macmillan Education Ltd, Chennai.2002.

B.A. Economics with Logistics and Freight Management
Semester IV
Part IV-Skill Based Course II-Management Information System   415TS2
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 3 **Hours: 38**

Preamble:

The aim of the Course is to equip students with

  ➢ the knowledge of information systems adopted in office management
  ➢ to develop the skill in determining the information requirements and formulation of an information system plan

Unit I (9 Hours)

Management Information System: Meaning-Definition-Computer Based- User - Machine System-Integrated system- Need for a data base- Utilisation of Database-MIS and Decision Support Systems.

Unit II (8 Hours)

Structure of MIS: Structure: Programmable decisions- Unstructured –Non-Programmable Decisions-Production Subsystem- Logistics Subsystem.

Unit III (7Hours)

Information Based Support System: Transaction Processing Support System-Operational Control- Management Control- Strategic Planning Support System.

Unit IV (7 Hours)

Information System Requirements: Master Plan-Goals- Objectives- Architecture-Current Capabilities- Forecast of developments affecting the plan- Maintenance of the Master Plan.

Unit V (7 Hours)

Implementation of Management Information System: Meaning- Theories of Organisational change- The Change Agent- Mechanisms for Successful Implementation-Socio- Technical Approach to System Design and Implementation

Book for Study:
1.   Gordon B. Davis & Margrethe H.Olson , Management Information Systems, Conceptual

Foundations, Structure and Development, 2nd Edition, Tata Mc-Graw Hill Publishing Company, New Delhi, 2007

Books for Reference:
1. Jawa Dekar (Wamans)**,** Management Information Systems, I Edition, Tata Mc-Graw Hill

Publishing Company, New Delhi, 2013.
2. Gagan Varshini & Others, Management Information System, Global Book Publishing Company, Coimbatore, 2011

B.A. Economics with Logistics and Freight Management
Semester V
Part IV-Skill Based Course III - Computer Applications in Business   515TS3
(For the students admitted from the academic year 2015-2016 onwards)

Credits: 3 **Hours: 38**

Preamble:

The course covers the essential skills for using all the programs to
➢ equip the students to develop their own application using Graphical user Interface
➢ learn Power Point Presentation
➢ acquire knowledge of Microsoft Access as Database Management System to organizing staggering information about personal and business life

List of Practical:

MS Word (10 Hours)
1. Type a paragraph and perform the following changes:
   Font Size, Font style, Line spacing, Page setup (margin) , Text color,Center heading
   Under line a text, Bullets/numbering, Alignment (Justify, centre, left, right)
2. Type a document and perform the following:
   Insert header, Find and replace, Cut, copy and paste, Change case
3. Prepare an advertisement for a product
4. Send an application to many companies for suitable job using mail merge option

MS Excel (9 Hours)
5. Prepare Payroll for employee
6. Draw a Chart using Excel with the details : Student Name and Marks of 5 subjects
MS Power point (9 Hours)
7. Design a Sports Day Invitation and prepare Slides describing various events in Power Point.
8. Display various departments and courses offered in our college using Power point
MS Access (10 Hours)
9. Create a database for Employee Details and generate a report for Pay Slip using MS Access
10. Create a database for Customer Information and generates a report with the customer name in ascending order.

Books for Study:

1. R. Parameswaran ,Computer Application in Business,
                    S.Chand & Company Ltd., New Delhi, 2012.
2 .Sanjay Saxena, MS Office 2007 in a Nutshell,
                    Vikas Publishing House,New Delhi, 2013.

Book for Reference:
    1. Ron Mansfield ,Working in Microsoft Office,
                    Tata McGraw Hill Publishing Co.Ltd.Delhi, 2005.

B.A. Economics with Logistics and Freight Management
Semester VI
Part III – Elective II – Total Quality Management   615TE2
(For the students admitted from the academic year 2015-2016 onwards)
Credits: 4 **Hours: 75**
Preamble:
This course aims to
  ➢ provide knowledge about the basic concepts of Total Quality Management
  ➢ acquire adequate knowledge and skills in TQM Tools and Techniques
  ➢ gives knowledge about the Quality System and Environmental Management system
Unit I (12 Hours)
        Introduction to Quality- Definition of Quality- Six basic concepts- Dimensions of Quality- Quality Planning- Quality Cost- Analysis of Quality Costs.
Unit II (16 Hours)
        Definition of Total Quality Management- Elements- Principles of TQM-
Leadership concept- Deming's 14 points for Top management- Ten strategies for top management- TQM tools and techniques- Barriers to TQM implementation.
Unit III (15 Hours)
        Customer satisfaction- Understanding the customer- Customer perception of quality -Customer complaints- Customer feedback- Using customer complaints and feedback.

Unit IV   (16 Hours)

The seven tools of TQM- Concept of six- sigma- Work of six sigma- Sig sigma implementation- Advantages- New seven management tools- Bench- Marking- Reasons to Bench- Marking- Process- Benefits of Bench-Marking.

Unit V   (16 Hours)

Quality system- Need- ISO 9000 Quality System- Benefits- Importance of 9000 Certification- Environmental Management System: Concepts of ISO 14001- Requirement of ISO 14001- Benefits of EMS.

Books for Study:

1.V.Vijayakumar &Dr.R.Raju,   Total Quality Management,
                        Lakshmi Publication, Chennai-2014
2. Senthil Arasu & J.Praveen, Total Quality Management,
                    SCITECH Publication,Chennai- 2014

Books for Reference:

1. Subburaj Ramasamy, Total Quality Management,
                       Tata McGraw Hill Publishers,New Delhi, 2010.
2. S. Bhaskar, Total Quality Management, Sankar Printers, Chennai, 2004

B.A. Economics with Logistics and Freight Management
Semester VI
Part IV- Skill Based Course IV- Computerized Tally   615TS4
(For the students admitted from the academic year 2015-2016 onwards)
Credits: 3   **Hours: 38**

The objective of the course is

❖ to familiarize the students with accounting skills using tally software.

List of Practical:
   1. Company creation, Enabling Accounting Features
   2. Pre-defined groups
   3. Creation and Alteration of New Groups (Single and Multiple)
   4. Creation and Alteration of Ledger (Single and Multiple)
   5. Creation and Alteration of Cost categories and Cost centre
   6. Accounting Vouchers (Payment, Receipt, Contra, Journal)
   7. Altering Inventory Features
   8. Creation and Alteration of Stock Group (Single and Multiple)
   9. Creation and Alteration of Stock Category (Single and Multiple)
   10.Creation and Alteration of Units of Measure
   11 Creation and Alteration of Stock Item (Single and Multiple)
   12.Creation and Alteration of Godown
   13.Display of Stock summary
   14.Accounting Voucher (Purchase, Sales)
   15.Display of Books, Trial Balance, Profit and Loss Account and Balance Sheet

Books for Study:

1.NamrataAgarwal and Sanjay Kumar, Financial Accounting on Computers using Tally,
   Dreamtech Press, New Delhi, 2010
2.Vishnu Priya Singh,Tally up to 9 Release 3.0 with CD, Computech Publishers,2009.

B.A Economics with Logistics and Freight Management
Semester wise Distribution with Scheme of Examination
(For the candidates admitted during the academic year 2014-2015and onwards)

Semester	Course	Credits	Dur of Exam Hrs (ESE)	Marks CIA	Marks ESE	Total
I	Part I-Language I	3	3	25	75	100
	Part II-English I	3	3	25	75	100
	Part III – Core I – Managerial Economics and Decision Making I	4	3	25	75	100
	Core II – Introduction to Logistics Management	4	3	25	75	100
	Allied I- Computer Applications in Business-Practical	5	3	40	60	100
		2	3	50	-	50
	<mark>Part IV- Environmental Studies</mark>					
II	Part I- Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	
	Part III -Core III – Managerial Economics and Decision Making II	4	3	25	75	100
	Core IV – Principles of Logistics Information	4	3	25	75	100
		5	3	40	60	100
	Allied II-Computerized Tally-Practical	2	3	50	-	50
	<mark>Part IV- Value Education</mark>	3*	3	-	100	100
	ALC I- Business Environment					
III	Part I – Language III	3	3	25	75	100
	Part II –English III	3	3	25	75	100
	Part III –Core V–Macro Economics	4	3	25	75	100
		4	3	25	75	100
	Core VI – Supply Chain Management	5	3	25	75	100
	Allied III – Mathematics Methods	3	3	100	-	100
	Part IV- Skill Based Course I- Fundamentals of Insurance	2	3	75	-	75
	NMEC I- Introduction to Logistics Management					
IV	Part I- Language IV	3	3	25	75	100
	Part II-English IV	3	3	25	75	100
	Part III – Core VII- Monetary Economics	4	3	25	75	100
	Core VIII- Introduction to	4	3	40	60	100
	PL/SQL-Practical	5	3	25	75	100

Semester	Course					
	Allied IV- Statistics Part IV-Skill Based Course II- Life Insurance Products NMEC II – General Awareness ALC II-Quantitative Techniques	3 2 3*	3 3 3	100 - -	- 75 100	100 75 100
V	Part III –Core IX-Fiscal Economics Core X – Operation Management Core XI – Foreign Trade Procedures and Documentation Core XII – Banking Practices Elective I - E- Commerce Part IV- Skill Based Course III - General Insurance Products	4 4 4 4 5 3	3 3 3 3 3 3	25 25 25 25 25 100	75 75 75 75 75 -	100 100 100 100 100 100
VI	Part III- Core XIII- Indian Economic Issues Core XIV – Industrial Marketing Project (Individual) Elective II – Total Quality Management Elective III – Freight Management Part IV – Skill Based Course IV -Insurance Risk and Management ALC III-Enterprise Resource Planning	4 4 4 5 5 3 3*	3 3 3 3 3 3 3	25 25 50 25 25 25 -	75 75 50 75 75 75 100	100 100 100 100 100 100 100

B.A Economics with Logistics and Freight Management
Semester VI
Part III- Elective II –Total Quality Management   614TE2
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 4   **Hours: 75**
Preamble:
This Course aims to

- provide knowledge about the basic concepts of Total Quality Managment
- acquire adequate knowledge and skills in TQM Tools and Techniques
- Gives knowledge about the Quality System and Environmental Management system

Module I:
        Introduction to Quality- Definition of Quality- Six basic concepts- Dimensions of Quality- Quality Planning- Quality Cost- Analysis of Quality Costs.   (10 hours)

Module II

Definition of Total Quality Management- elements- principles of TQM-Leadership concept- Deming's 14 points for Top management- Ten strategies for top management- TQM tools and techniques- barriers to TQM implementation.(14 hours)

Module III

Customer satisfaction- Understanding the customer- customer perception of Quality -customer complaints- customer feedback- using customer complaints and feed back.   (14 hours)

Module IV

The seven tools of TQM- concept of six- sigma- work of six sigma- sig sigma implementation- advantages- new seven management tools- Bench- marking- reasons to bench- marking- process- benefits of bench-marking.   (14 hours)

Module V

Quality system- need- ISO 9000 Quality System- benefits- importance of 9000certification- Environmental Management System: concepts of ISO 14001-requirement of ISO 14001- benefits of EMS.   (13 hours)

Text Book:

B.Senthi Arasu & J.Praveen Paul :Total Quality Management (2nd Edition),
                                    SCITECH Publications (India) Pvt. Ltd., Chennai 2007

Reference Books

 Subburaj Ramasamy   : Total Quality Management,
                                             Tata Mc-Graw HillPublishers,New Delhi, 2010.

S.Bhaskar   : Total Quality Management,
                                              Anuradha Agencies, Sankar Printers, Chennai,2004

B.A Economics with Logistics and Freight Management
Semester wise Distribution with Scheme of Examination
(For the candidates admitted during the academic year 2012-2013 & 2013-2014 only)

Semester	Course	Credits	Duration of Exam Hrs (ESE)	Marks CIA	ESE	Total
I	Part I-Language I	3	3	25	75	100
	Part II-English I	3	3	25	75	100
	Part III – Core I – Managerial Economics and Decision Making I	4	3	25	75	100
	Core II – Introduction to Logistics Management	4	3	25	75	100
	Allied I- Computer Applications in Business-Practical	5	3	40	60	100
	Part IV- Environmental Studies	2	3	50	-	50
II	Part I- Language II	3	3	25	75	100
	Part II- English II	3	3	25	75	
	Part III -Core III – Managerial Economics and Decision Making II	4	3	25	75	100
	Core IV – Principles of Logistics Information	4	3	25	75	100
	Allied II-Computerized Tally-Practical	5	3	40	60	100
	Part IV- Value Education	2	3	50	-	50
	ALC I- Business Environment	3*	3	-	100	100
	Internship I					
III	Part I – Language III	3	3	25	75	100
	Part II –English III	3	3	25	75	100
	Part III –Core V–Macro Economics	4	3	25	75	100
		4	3	25	75	100
	Core VI – Supply Chain Management	5	3	25	75	100
	Allied III –Statistics	3	3	25	75	100
	Part IV- Skill Based Course I- Introduction to Retailing	2	3	75	-	75
	NMEC I- Consumerism					
IV	Part I- Language IV	3	3	25	75	100
	Part II-English IV	3	3	25	75	100
	Part III – Core VII- Monetary Economics	4	3	25	75	100
	Core VIII- Introduction to	4	3	25	75	100
	PL/SQL-	5	3	25	75	100

	Course					
	Allied IV-Business Mathematics					
	Part IV-Skill Based Course II-RetailMerchandising	3	3	25	75	100
	Management and Retail Pricing	2	3	-	75	75
	NMEC II – Social Issues of Indian Economy	3*	3	-	100	100
	ALC II-Quantitative Techniques					
	Internship II					
V	Part III –Core IX-Fiscal Economics	4	3	25	75	100
	Core X –OperationsManagement	4	3	25	75	100
	Core XI – Foreign Trade Procedures and Documentation	4	3	25	75	100
	Core XII – Banking Practices	4	3	25	75	100
	Elective I - E- Commerce	5	3	25	75	100
	Part IV- Skill Based Course III – Retail Business Management	3	3	25	75	100
VI	Part III- Core XIII- Indian Economic Issues	4	3	25	75	100
	Core XIV – Industrial Marketing Project (Individual)	4	3	25	75	100
	Elective II – Total Quality Management	4	3	50	50	100
	Elective III – Freight Management	5	3	25	75	100
	Part IV – Skill Based Course IV -Insurance Risk and Management	5	3	25	75	100
	ALC III-Enterprise Resource Planning	3	3	25	75	100
		3*	3	-	100	100

B.A. Economics with Logistics and Freight Management
Semester III - Part IV – Skill Based Subject Paper I – Introduction to Retailing
Credits:3   **312TS1**   **Total Hours: 38**
Preamble:
      The Paper
- aims to introduce the subject and practice of retailing through its nature, scope and role in the economy.
- gives Knowledge of Career opportunities in retailing.

Unit I:
      Retailing – Definitions – Scope – Characteristics – Functions of a Retailer - The Marketing – Retail Equation –Contribution of Retail Industry to the Economy

Unit II:
      Economic significance of Retailing : Retail sales – Employment – Top Indian Retailers -Opportunities in Retailing : Management Opportunities – Entrepreneurial opportunities.

Unit III:

Retailing and the Competitive Environment: Nature and dynamics of retail Competition – Measures of retail competition – Types of retail competition – forces driving retail competition – Porter's model of competitive structure – strategic groups – competition Regulation.

Unit IV :

Retailing and consumer behaviour : Need for studying consumer behaviour – factors influencing the retail purchase behaviour – the changing consumer demographics lifestyle changes – the consumer buying process – shopping behaviour, shopping missions and motivations, retail outlet choices – retail segmentation.

Unit V :

Careers in retailing: owning business – opportunities as a retail employer – types of positions in retailing – career paths and compensation in retailing – sources and hints to be consulted in searching for career opportunities– hints to prepare for the interview – evaluating retail career opportunities.

Books for Reference:

Barry Berman and Joel R Evans	:	Retail Management A Strategic Approach, Pearson Education, New Delhi, 2002.
Micheal Levy and Barton A Weit	:	Retail Management,Tata Mc Graw Hill Publishing Co Ltd., Delhi, 2002.
Rosemary Varley and Mohammed Rafiq	:	Retail Management, Replic Press PvtLtd., Kundli, 2005.
Swapna Parsdhan	:	Retailing Management, Tata Mc Graw-Hill Publishing Co Ltd., Delhi, 2006.
Gibson G Vedamani	:	Retail Management, Functional Principles and Practices, Jaico Publishing House, Mumbai, 2005.
David Gilbert	:	Retail Marketing Management, Pearson Education, Delhi, 2003.

B.A. Economics with Logistics and Freight Management
Semester IV
Part IV – Skill Based Subject Paper II – Retail Merchandise Management and Retail Pricing   412TS4

Credits:3   **Total Hours: 38**
Preamble:
- To equip the students with the knowledge of procuring and managing the processing of the sale of merchandise
- To acquire the essential knowledge of pricing policies and strategies in the retailing of merchandise

Unit I

Merchandize Management – Meaning – Factors Affecting The Merchandizing Function – Role And Responsibilities Of The Merchandiser And Buyer–The Function Of Buying For Different Types Of Organizations – The Concept Of Lifestyle Merchandising.

Unit II

The Process Of Merchandize Management:- Implications (Finance, Marketing, Warehousing And Logistic Store Operations) – Process (Developing The Sales Forecast Determining The Merchandize Requirements, Merchandize Control, Assortment Planning, Range Plan And The Model Stock Plan) – Tools Used For Merchandise Planning.

Unit III

Implementation Of Merchandise Plans**: -** Gathering Information, Selecting And Interacting With Merchandise Sources, Evaluation, And Negotiation, Concluding Purchases, Receiving And Stocking Merchandise, Reordering Re-Evaluation

Unit IV

Pricing In Retailing**:** The Concept Of Retail Price – Elements Retail Price – Determination Of The Retail Price – Retail Pricing Policies And Strategies – Adjustment To Retail Price – Consumer And Retail Pricing – The Government And Retail Pricing.

Unit V

Developing A Retail Price Strategy**:** Retail Objectives And Pricing, Overall Objectives And Pricing, Specific Pricing Objectives, Broad Price Policy – Price Strategy, Demand, Cost And Competition Oriented Approaches To Strategy, Integration Of The Approaches To Price Strategy – Price Adjustment.

Books for Reference:

Barry Berman and Joel R. Evans: Retail Management, Pearson Education
(Singapore), Pvt. Ltd., New Delhi, 2002

Swapna Pradhan : Retailing Management, Text and cases,
Tata Mc Graw- Hill Publishing Company
Ltd., Delhi, 2006

Gibson G. Vedamani : Retail Management, Jaico Publishing
House, Kolkata, 2005

B.A Economics with Logistics and Freight Management
Semester V
Skill Based Course III - Retail Business Management 512TS3
(For the candidates admitted during the academic year 2012-2013 and 2013-14 only)
Credits: 3 **Hours:38**
Preamble:

The course would enable the students
• to know the essential spheres of management
• to understand the ethical aspects of management

Module I:

Human Resource Management – Identification of Various Roles in the Organisation – Recruitment and Selection – Training – Motivation – Evaluation of performance. (8 Hours)

Module II:

Retail Store Operations: Retail store – Meaning – Responsibilities of Store Managers – Elements/ Components of retail operations. (7 Hours)

Module III:

Financial aspects of retail- The concept of retail economics- Measures of Financial Performance – Evaluation of retail operations – Strategic Profit Model. (7 Hours)

Module IV:

      Retail Management and Information System- Role and Importance of Information Technology in retail – factors affecting in the use of technology – Application of technology in retail – e- commerce or e-tailing (The internet as a retail opportunity)

                                                                               (8 Hours)

Module V:

      Role of retail marketing- Retail Marketing mix – The STP Approach. Ethics in Retail Management: Ethical Values – Social Responsibility – Ethical values in relation to customers, community and general public, employees, business partners and share holders- Consumerism.

                                                                               (8 Hours)

Books for Study:

Swapna Pradhan   : Retail Management - (Text and Cases), Tata McGraw-Hill
                         Publishing Co. Ltd., New Delhi, 2008.

Books for Reference:

Barry Berman and   : Retail Management - A Strategic Approach, Prentice Hall
Joel R Evans   of India (P) Ltd., New Delhi, 2007.
Chetan Bajaj,   : Retail Management, Oxford University Press ,2005.
Rajnish Tuli,
Nidhi V.Srivastva   : Retail Management, Functional Principles and Practices, Jaico
Gibson G Vedamani   Publishing House, Delhi

B.A. Economics with Logistics and Freight Management
Semester VI
Skill Based Course IV - Retail Store Planning and Design Layout 612TS4
(For the candidates admitted during the academic year 2014-2015 and onwards)

Credits: 3   **Hours: 38**

Preamble:

The course helps

- to learn location planning and types of location.
- to develop the skill of planning and designing a retail store.

Module I:

      Store Planning – Location planning- Types of location – Site selection- Retail Location Theories – Location Assessment Procedures.   (5 Hours)

Module II:

      Store Design – Importance – Exterior store design – Interior store design (Space Planning)   (5 Hours)

Module III:

      Store Layouts – Types – Chief considerations in Layout Selection – The Planogram – Visual merchandising- Methods of Display.   (5 Hours)

Module IV:

      Store design and the retailing image mix- parameters to judge floor space management – Rules for successful space management – The Store Façade.   (5 Hours)

Module V:

      Practical- Field Visit, Report preparation.   (18 Hours)

(Note: Questions must be taken from the First four modules only)

Books for Study:

Swapna Pradhan   : Retail Management - (Text and Cases), Tata McGraw-Hill
                         Publishing Co. Ltd., New Delhi, 2008.

Books for Reference:
Barry Berman and   : Retail Management - A Strategic Approach, Prentice Hall
Joel R Evans   of India (P) Ltd., New Delhi, 2007.
Chetan Bajaj,   : Retail Management, Oxford University Press ,2005.
Rajnish Tuli,
Nidhi V.Srivastva   : Retail Management, Functional Principles and Practices, Jaico
Gibson G Vedamani   Publishing House, Delhi

B.A Economics with Logistics and Freight Management
Semester VI
Part III- Elective II –Total Quality Management   612TE2
(For the candidates admitted during the academic year 2012-2013 and onwards)
Credits: 4   Hours: 75
Preamble:
This Course aims to
- provide knowledge about the basic concepts of Total Quality Managment
- acquire adequate knowledge and skills in TQM Tools and Techniques
- Gives knowledge about the Quality System and Environmental Management system

Module I:
    Introduction to Quality- Definition of Quality- Six basic concepts- Dimensions of Quality- Quality Planning- Quality Cost- Analysis of Quality Costs. (10 hours)
Module II
    Definition of Total Quality Management- elements- principles of TQM- Leadership concept- Deming's 14 points for Top management- Ten strategies for top management- TQM tools and techniques- barriers to TQM implementation.(14 hours)
Module III
    Customer satisfaction- Understanding the customer- customer perception of Quality -customer complaints- customer feedback- using customer complaints and feed back.   (14 hours)
Module IV
    The seven tools of TQM- concept of six- sigma- work of six sigma- sig sigma implementation- advantages- new seven management tools- Bench- marking- reasons to bench- marking- process- benefits of bench-marking.   (14 hours)
Module V
    Quality system- need- ISO 9000 Quality System- benefits- importance of 9000certification- Environmental Management System: concepts of ISO 14001- requirement of ISO 14001- benefits of EMS.   (13 hours)

Text Book:
B.Senthi Arasu & J.Praveen Paul :Total Quality Management (2nd Edition),
                                SCITECH Publications (India) Pvt. Ltd., Chennai 2007
Reference Books
 Subburaj Ramasamy   : Total Quality Management,
                                Tata Mc-Graw HillPublishers,New Delhi, 2010.
S.Bhaskar   : Total Quality Management,
                                 Anuradha Agencies, Sankar Printers, Chennai,2004

B.Sc., Mathematics (Computer Applications)
Semester wise Distribution with Scheme of Examination
[For students admitted during the academic year 2014-2015 and onwards]

Sem	Course	Credit	Duration of Exam (Hrs)ESE	CIA	ESE	Total
				Marks		
I	Part I: Language I	3	3	25	75	100
	Part II: English I	3	3	25	75	100
	Part III:					
	Core I: Algebra and Calculus	4	3	25	75	100
	Core II: Differential Equations and Laplace Transforms	4	3	25	75	100
	Allied I : PC Software Practical	5	3	40	60	100
	Part IV : Environmental Studies	2	-	50	-	50
II	Part I: Language II	3	3	25	75	100
	Part II: English II	3	3	25	75	100
	Part III :					
	Core III: Analytical Geometry	4	3	25	75	100
	Core IV: Programming in C	3	3	25	75	100
	Core Practical I: Programming in C	1	3	20	30	50
	Allied II: Mathematical Statistics	5	3	25	75	100
	Part IV: Value Education	2	-	50	-	50
	Advanced Learner's Course I: Database Management System	3*	3	-	100	100
III	Part III:					
	Core V: Programming in C++	3	3	25	75	100
	Core Practical II :Programming in C++	2	3	20	30	50
	Core VI: Numerical Methods	3	3	25	75	100
	Core VII: Statics	4	3	25	75	100
	Allied III: Physics I	4	3	15	60	75
	Part IV: Non-Major Elective Course	2	-	75	-	75
	Skill Based Course: Graph Theory – I	3	-	100	-	100

Sem	Course	Credit	Duration of Exam (Hrs)ESE	CIA	ESE	Total
IV	Part III: Core VIII: Operations Research	4	3	25	75	100
	Core IX: Trigonometry, Vector Calculus and Fourier Series	4	3	25	75	100
	Core X: Visual Basic	3	3	25	75	100
	Core Practical III :Visual Basic	1	3	20	30	50
	Core XI: Dynamics	4	3	25	75	100
	Allied IV: Physics II	4	3	15	60	75
	Allied IV: Physics Practical	2	3	20	30	50
	Part IV: General Awareness	2	-	75	-	75
	Skill Based Course Graph Theory - II	3	-	100	-	100
	Advanced Learner's Course II: Software Engineering	3*	3	-	100	100
	Part V: Extension activity	1	-	50	-	50
V	Part III: Core XII : Real Analysis	4	3	25	75	100
	Core XIII: Abstract Algebra	4	3	25	75	100
	Core XIV: Discrete Mathematics	4	3	25	75	100
	Core XV: Java Programming	3	3	25	75	100
	Core Practical IV : Java Programming	1	3	20	30	50
	Elective I: Mathematical Cryptography	5	3	25	75	100
	Part IV: Skill Based Course Graph Theory - III	3	-	100	-	100
VI	Part III: Core XVI : Fuzzy Mathematics	4	3	25	75	100
	Core XVII : Complex Analysis	4	3	25	75	100
	Core XVIII: Linear Algebra	4	3	25	75	100
	Elective II : Programming with Oracle SQL*Plus & Matlab Practical	5	3	40	60	100
	Project & Viva voce	5	-	50	50	100
	Part IV: Skill Based Course Graph Theory IV: Model Presentation	3	-	100	-	100
	Advanced Learner's Course III: Programming with ASP.NET	3*	3	-	100	100

Semester I - Part III-Allied I -PC SOFTWARE PRACTICAL   114ADP
[For students admitted during the academic year 2014-15 and onwards]
                                                                                        Total: 75 hours

1. Write a letter for applying the post of Lecturer to the Principal and perform the following :
   - Font Size - 12
   - Font Style - Times New Roman
   - Line spacing - 1.5
   - Page setup (margin)
   - Text color - Black
   - Center heading - 14 size
   - Underline a text
   - Bullets/Numbering

2. Write a document report for pollution and perform the following:
   - Insert Header
   - Insert page number and using footers
   - Find and replace
   - Cut, copy and paste.

3. Preparation of a class timetable using MS Word.
4. Preparation of a chart for student name versus subject marks using MS Word.
5. Preparation of an information letter about the college reopening date to the students using Mail merge.
6. Designing an application using Macros in MS Word.
7. To link an excel worksheet into word document by inserting the marks of the students.
8. Preparation of student mark sheet using Excel.
9. Preparation of payroll for employees using Excel.
10. Drawing a chart using Excel with the details of student names and marks of 3subjects.
11. Designing a presentation for college inaugural functions using MS PowerPoint.
12. To draw an organizational chart with minimum three hierarchical levels using MS PowerPoint.
13. Designing the advertisement campaign using MS PowerPoint.
14. Displaying various departments and courses offered in our college using Power Point.
15. Preparation of the teaching slides using Power Point.
16. Design presentation slides for a product of your choice. The slides must include name, type of product, characteristics, special features, price, special offer etc.
17. Creating a database for employee details and generates a report for pay slip using MS Access.
18. Creating a database maintaining stock in a shop with field's serial number (Primary Key), Name of Product, Product code, Quantity and Price.
19. Creating a database for customer information and generate a report with the customer names in ascending order.
20. Creating data entry for product details like receipt, issue, date of purchase using MS-Access.

   Course Designed by   : K. KARTHIKA
   Course Reviewed by : A.ANIS FATHIMA
   Course checked by   : A.ANIS FATHIMA

Semester IV/ Semester II

Part III –Allied IV/II-MATHEMATICAL STATISTICS   414AM4 /214AD2

[For students admitted during the academic year 2014-15 and onwards]

Preamble   **Total : 75 Hours**

　　　　Mathematical Statistics is widely employed as a highly valuable tool in the analysis of problems in natural, physical and social sciences.

The topics included in the syllabus help the students

- to know about the random variables and their different distributions
- to understand about the characteristics of distributions
- to determine different sampling distributions
- to estimate the population parameters using sample statistics
- to test the hypothesis in order to extend the sample inference to the population.

Module I   **(15 Hours)**

　　Random variables: Function of a random variable – Two dimensional random variable –Definitions- Marginal probability distribution – Conditional probability distribution – Independent random variables.

　　Variance: Tchebechev's inequality - Moments and Moment Generating Functions.

　　Chapter 2(Pages 2.13 - 2.35), Chapter 4(Pages 4.21 – 4.26), Chapter 5

Module II   **(15 Hours)**

　　Conditional Expectation.Correlation: Correlation - Sample Correlation

　　Chapter 7, Chapter 8(Pages 8.1- 8.48)

Module III   **(15 Hours)**

　　Normal Distribution – Uniform Distribution –Exponential Distribution – Gamma Distribution – *Beta Distribution*.

　　Chapters 16, 17, 18, 19, 20

Module IV   **(15 Hours)**

　　Functions of Random Variables-Sampling Distributions- Chi Square ,t, F Distributions.

　　Chapters 21, 22.

Module V   **(15 Hours)**

　　Estimation.

　　Chapter 23

Book for Study

　　P.R. Vittal, Mathematical Statistics , Margham Publishers, First Edition (2010).

　　　　　　　Course Designed by : P.PADMAVATHI

　　　　　　　Course Reviewed by : N.JEYANTHI

　　　　　　　Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics (CA)

Semester III

Part IV –Non Major Elective Course I Practical: WEB DESIGNING   314NWD

[For students admitted during the academic year 2014-15 and onwards]

Total : 26 Hours

1. A program to create an E-mail ID and send a mail to another person at a time.
2. Program to create a resume using basic tags in HTML.
3. Designing a timetable using HTML tags.

4. Program to display image using image tags.
5. Write a HTML code using List tags.
6. Program to implement Frames.
7. Program of Image Link to another web page.
8. Program to display an Advertisement.
9. Program to design a college Website.
10. Program to Input Information of E-Mail Id.

Course Designed by   : K.KARTHIKA
Course Reviewed by : R.VIDHYA
Course Checked by   : A.ANIS FATHIMA

B.Sc. Mathematics/Mathematics (CA)
Semester III
Part IV-Skill Based Course Graph Theory - I – INTRODUCTORY CONCEPTS
314MS1/314DS1
[For students admitted during the academic year 2014-15 and onwards]

	Total : 38 hours

Module I   **(8Hours)**

Graphs: Graphs and Subgraphs – Vertex Degrees – Paths and Cycles.
Chapter 2(Sections 2.1-2.3)

Module II   **(7 Hours)**

Graphs: Regular and bipartite graphs. Eulerian and Hamiltonian Graphs: Exploring and Travelling.
Chapter 2(Sections 2.4)   Chapter 3(Sections 3.1)

Module III   **(8 Hours)**

Eulerian and Hamiltonian Graphs: Eulerian Graphs-Hamiltonian Graphs.
Chapter 3(Sections 3.2, 3.3)

Module IV   **(7 Hours)**

Digraphs: Digraphs and Subdigraphs- Vertex Degrees- Paths and Cycles.
Chapter 4(Sections 4.1-4.3)

Module V   **(8 Hours)**

Matrix Representations: Adjacency Matrices- Walks in graphs and Digraphs- Incidence Matrices.
Chapter 5(Sections 5.1-5.3)

* **Proof of the theorems are not included.**

Book for Study:

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer-First Indian Reprint 2007.

Course Designed by   : N.JEYANTHI
Course Reviewed by   : N.RAJESWARI
Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (CA)
Semester IV
Part IV-Skill Based Course: GRAPH THEORY II – PATHS AND TREES 414MS2/414DS2
(For students admitted during the academic year 2014-15 and onwards) Total : 38 Hours

Module I   **(8 Hours)**

Tree Structures: Mathematical Properties of Trees – Spanning Trees – Rooted Trees.
Chapter 6(Sections 6.1 – 6.3)

Module II (8 Hours)

Counting Trees: Counting Labelled Trees – Counting Binary Trees.
Chapter 7(Sections 7.1,7.2)

Module III (8 Hours)

Greedy Algorithms: Minimum Connector Problem – Travelling Salesman Problem.
Chapter 8(Sections 8.1,8.2)

Module IV (7 Hours)

Path Algorithms: Fleury's Algorithm – Shortest Path Algorithm.
Chapter 9(Sections 9.1, 9.2)

Module V (7 Hours)

Paths and Connectivity: Connected Graphs and Digraphs – Menger's Theorem for
Graphs-Some analogues of Menger's theorem.
Chapter 10(Sections 10.1-10.3)
* **Proof of the theorems are not included.**

Book for Study

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer-
First Indian Reprint 2007.

Course Designed by   : N.JEYANTHI
Course Reviewed by :N.RAJESWARI
Course Checked by   :A.R.THILAGAVATHI

B.Sc., Mathematics / Mathematics (CA)
Semester VI / V
Part III-Elective I - MATHEMATICAL CRYPTOGRAPHY   614ME2 / 514DE1
[For candidates admitted during the academic year 2014-2015 and onwards]

75 Hours

Preamble

Information security has gained practical importance due to the rapid growth of electronic
communication. Cryptography helps us to solve the problems in information security. The syllabus is
framed with two main objectives.

- To make the students understand the significance of number theory in Cryptography and
  theoretical Computer Science.
- To give them the basic knowledge in Cryptography.

Module I (15 Hours)

An introduction to Cryptography: Simple substitution ciphers- *Divisibility and greatest common
divisors- Modular arithmetic- Prime numbers, unique factorization and finite fields- Powers and
primitive roots in finite fields- Symmetric and asymmetric ciphers.
Chapter I (Sections 1.1-1.5,1.7)

Module II (15 Hours)

Discrete Logarithms and Diffie Hellman: The birth of public key cryptography- THE discrete
logarithm problem- Diffie Hellman key exchange- The Elgamal public key cryptosystem-A collision
algorithm for the DLP- *The Chinese remainder theorem- The Pohlig-Hellman algorithm.
Chapter 2(Sections 2.1-2.4, 2.7-2.9))

Module III (15 Hours)

Integer factorization and RSA: Euler's formula and roots modulo pq -The RSA public key
cryptosystem - Primality testing- Pollard's p-1 factorization algorithm. -*Factorization via
difference of squares.
Chapter 3(Sections 3.1-3.2, 3.4 -3.6)

Module IV (15 Hours)

Integer factorization and RSA:Smooth numbers and sieves - The index calculus and discrete logarithms -Quadratic residues and quadratic reciprocity-*Probabilistic encryption.

Chapter 3(Sections 3.7-3.10)

Module V (15 Hours)

Elliptic curves and Cryptography: Elliptic curves-Elliptic curves over finite fields-The Elliptic curve discrete logarithmic problem-Elliptic curve cryptography-*The evolution of public key cryptography-Lenstra's elliptic curve factorization algorithm.

Chapter 5(Sections 5.1-5.4,5.6)

Note: Simple problems only

Book for Study

Jeffrey Hoffstein, Jill Pipher, Joseph H.Silverman, "An introduction to Mathematical Cryptography", Springer Undergraduate texts in mathematics, First Indian reprint 2011.

Course Designed by   :   R.ANGEL JOY

Course Reviewed by   : S.KALAISELVI

Course Checked by   : A.R.THILAGAVATHI

B.Sc. Mathematics/ Mathematics (CA)

Semester V

Part IV-Skill Based Course Graph Theory III – PLANAR GRAPHS

AND COLOURING OF GRAPHS   514MS3/514DS3

(For students admitted during the academic year 2014-15 and onwards)   Total : 38 hours

Module I (7 Hours)

Planarity : Planar graphs – Euler's formula

Chapter 11(Sections 11.1,11.2)

Module II (7Hours)

Planarity :Cycle Method for Planarity Testing – Kuratowski's Theorem – Duality.

Chapter 11(Sections 11.3-11.5)

Module III (8 Hours)

Vertex Colourings and Decompositions: Vertex Colourings – Algorithm for Vertex Colouring – Vertex Decompositions.

Chapter 12(Sections 12.1-12.3)

Module IV (8 Hours)

Edge Colourings and Decompositions : Edge Colourings – Algorithm for Edge Colouring – Edge Decompositions.

Chapter 13(Sections 13.1-13.3)

Module V (8 Hours)

Case Studies : Four Cubes Problem – Knight's Tour Problem – Gray Codes – Rotating Drum Problem – Ranking in Tournaments – Interval Graphs.

Chapter 2(Section 2.5), Chapter 3(Section 3.4), Chapter 4(Section 4.5),   Chapter 5(Section 5.4)

*Proof of the theorems are not included.

Book for Study:

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer-First Indian Reprint 2007.

Course Designed by   : N.JEYANTHI

Course Reviewed by   : N.RAJESWARI

Course Checked by   : A.R.THILAGAVATHI

Semester VI

Part III-Elective II-PROGRAMMING WITH ORACLE SQL* PLUS AND MATLAB

PRACTICAL   614DEP

[For students admitted during the academic year 2014-15 and onwards]   Total hrs: 75 Hours

1. i Creating a table

   ii.Inserting values in the table.

   iii.Performing select, update and delete operations in the table.

2. Adding fields and inserting necessary values in an existing table.

3. Creating and joining two tables and displaying all the information.

4. Creating a table and displaying the information in ascending/descending order.

5. PL/SQL block to display the details of an employee based on the specified conditions.

6. PL/SQL block for reversing a number-using trigger.

7. PL/SQL block to perform the splitting operation on a table using trigger or cursor.

8. PL/SQL block to print the Fibonacci series.

9. Raising an exception using PL/SQL block to perform specified operations in a table using cursor.

10. PL/SQL block to create a weekly report for employee details.

11. Solving a system of linear Equations.

12. Arithmetic operations on arrays.

13. Drawing 2D and 3D plots.

14. Finding derivatives and integrals of polynomials.

15. Creating a structure for an employee data base containing employee code, name, designation and salary.

16. A function subprogram to calculate the compound interest, given the initial amount, time period of deposit, rate of interest and time of compounding.

17. Program to process the applications for admission to an engineering college and to list the candidates eligible for admission based on the following conditions:

i.	Marks in Maths	≥ 60
ii.	Marks in Physics	≥ 55
iii.	Marks in Chemistry	≥ 55
iv.	Total marks	≥ 180

18. Creating inset figures.

19. Solving a first order Linear ordinary differential equation with given initial conditions.

20. Solving set of simultaneous linear ordinary differential equations.

Course Designed by   : K.KARTHIKA

Course Reviewed by : A.ANIS FATHIMA

Course Checked by   : A.ANIS FATHIMA

B.Sc. Mathematics/ Mathematics(CA)

Semester VI

Part IV-Skill Based Course IV - MODEL PRESENTATION

614MS4/614DS4

(For students admitted during the academic year 2014-2015 and onwards)

Preamble:

This Course is unique in the sense that it enables the students to understand the theoretical concepts and to apply them to construct Models in their area of study.This course is carried out as group project, thus enabling the student to learn to work as a team.

B.Sc Mathematics (Computer Applications)
Semester wise Distribution with Scheme of Examination
[For students admitted during the academic year 2012-2013 and onwards]

Sem	COURSE	Credit	Duration of Exam (Hrs)ESE	Maximum Marks		
				CIA	ESE	Total
I	Part I: Language I	3	3	25	75	100
	Part II: English I	3	3	25	75	100
	Part III:					
	Core I: Algebra and Calculus	4	3	25	75	100
	Core II: Differential Equations and Laplace Transforms	4	3	25	75	100
	Allied I : PC Software Practical	5	3	40	60	100
	Part IV: Environmental Studies	2	-	50	-	50
II	Part I: Language II	3	3	25	75	100
	Part II: English II	3	3	25	75	100
	Part III :					
	Core III: Analytical Geometry	4	3	25	75	100
	Core IV: Programming in C	3	3	25	75	100
	Core Practical I: Programming in C	1	3	20	30	50
	Allied II: Mathematical Statistics	5	3	25	75	100
	Advanced Learner's Course I: Database Management System	3*	3	-	100	100
	Part IV: Value Education	2	3	-	50	50
III	Part III:					
	Core V: Programming in C++	3	3	15	60	75
	Core VI: Vector Calculus, Trigonometry and Fourier series	4	3	25	75	100
	Core VII: Statics	4	3	25	75	100
	Core Practical II :Programming in C++	2	3	20	30	50
	Allied III: Physics I	4	3	15	60	75
	Part IV:					
	Skill Based Course I:Graph Theory I- Introductory Concepts	3	-	100	-	100
	Non-Major Elective Course	2	-	75	-	75

Sem	COURSE	Credit	Duration of Exam (Hrs)ESE	CIA	ESE	Total
IV	Part III:					
	Core VIII: Operations Research	4	3	25	75	100
	Core IX: Numerical Methods	4	3	25	75	100
	Core X: Dynamics	4	3	25	75	100
	Core XI: Visual Basic	3	3	15	60	75
	Core Practical III Visual Basic	1	3	20	30	50
	Allied IV: Physics II	4	3	15	60	75
	Allied IV: Physics Practical	2	3	20	30	50
	Advanced Learner's Course II: Software Engineering	3*	3	-	100	100
	Part IV:					
	Skill Based Course Graph Theory II – Paths and Trees	3	-	100	-	100
	General Awareness	2	-	75	-	75
	Part IV: Extension Activities	1	-	-	-	50
V	Part III:					
	Core XII : Real Analysis	4	3	25	75	100
	Core XIII: Complex Analysis I	4	3	25	75	100
	Core XIV: Abstract Algebra	4	3	25	75	100
	Core XV: Java Programming	4	3	15	60	75
	Core Practical IV: Java Programming	2	3	20	30	50
	Elective I: Mathematical Cryptography	4	3	15	60	75
	Part IV:					
	Skill Based Course Graph theory III – Planar Graphs and Colouring of Graphs	3	3	25	75	100
VI	Part III:					
	Core XVI: Fuzzy Mathematics	4	3	25	75	100
	Core XVII: Complex Analysis II	4	3	25	75	100
	Core XVIII: Linear Algebra	4	3	25	75	100
	Elective II: Programming with Oracle SQL*Plus	4	3	25	75	100
	Elective III: Programming with Oracle SQL*Plus & Matlab Practical	3	3	25	75	100
	Advanced Learner's Course III: Programming with ASP.NET	3*	3	-	100	100
	Project	3	-	-	100	100
	Part IV:					
	Skill Based Course IV: Model Presentation	3	3	40	60	100

Total Credits   :   140

Starred credits are treated as additional credits which are optional.
Non-Major Elective Course offered by the department – Web Designing
30% of the syllabus in each course should be taught using OHP, LCD & Seminars.

B.Sc. Mathematics/Mathematics (C.A)
Semester III
Part IV-Skill Based Course Graph Theory I -Introductory Concepts   312MS1/312DS1
(For students admitted during the academic year 2010-2011 and onwards)

Total : 38 Hours

Module I   **(8 Hours)**

Graphs: Graphs and Subgraphs – Vertex Degrees – Paths and Cycles.
Chapter 2(Sections 2.1-2.3)

Module II   **(8 Hours)**

Graphs: Regular and bipartite graphs. Eulerian and Hamiltonian Graphs: Exploring
and Travelling.
Chapter 2(Sections 2.4)   Chapter 3(Sections 3.1)

Module III   **(8 Hours)**

Eulerian and Hamiltonian Graphs: Eulerian Graphs-Hamiltonian Graphs.
Chapter 3(Sections 3.2, 3.3)

Module IV   **(7 Hours)**

Digraphs: Digraphs and Subdigraphs- Vertex Degrees- Paths and Cycles.
Chapter 4(Sections 4.1-4.3)

Module V   **(7 Hours)**

Matrix Representations: Adjacency Matrices- Walks in graphs and Digraphs-
Incidence Matrices.
Chapter 5(Sections 5.1-5.3)

*Statement of the theorems are only included.

Book for Study:

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer-
First Indian Reprint 2007.

Books for Reference:

1. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi, Tenth Reprint 2001.
2. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
4. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

Course Designed by   : Ms.R.ANGEL JOY
Course Reviewed by   : Ms.N.RAJESWARI
Course Checked by   : Ms.A.R.THILAGAVATHI

B.Sc. Mathematics (C.A)
Semester III

Part IV –Non Major Elective Course I Practical: Web Designing   311NWD
[For students admitted during the academic year 2012-13 and onwards] Total: 26 hours

11. Create an E-mail ID and send a mail to another person at a time.
12. Create a resume using basic tags in HTML.
13. Design a timetable using HTML tags.
14. Write a program using image and list tags.
15. Create a program to Move Items from List Box to Combo box.
16. Create a program of Image Link to another web page.
17. Create a program to display an Advertisement.

18. Create a program to design a college Website.
19. Create a program to Input Information of E-Mail Id.
20. Create a program to Display students result for given Roll number.

B.Sc. Mathematics/ Mathematics (C.A)
Semester IV
Part IV-Skill Based Course Graph Theory II - Paths and Trees 412MS2/ 412DS2
(For students admitted during the academic year 2012-2013 and onwards)

Module I (9 Hours)

Tree Structures: Mathematical Properties of Trees – Spanning Trees – Rooted Trees .
Chapter 6(Sections 6.1 – 6.3)

Module II (9 Hours)

Counting Trees: Counting Labelled Trees – Counting Binary Trees.
Chapter 7(Sections 7.1,7.2)

Module III (9 Hours)

Greedy Algorithms: Minimum Connector Problem – Travelling Salesman Problem.
Chapter 8(Sections 8.1,8.2)

Module IV (9 Hours)

Path Algorithms: Fleury's Algorithm – Shortest Path Algorithm.
Chapter 9(Sections 9.1,9.2)

Module V (9Hours)

Paths and Connectivity: Connected Graphs and Digraphs – Menger's Theorem for
Graphs-Some analogues of Menger's theorem.
Chapter 10(Sections 10.1-10.3)

* **Proof of the theorems are not included.**

Book for Study

Graphs And Applications- An Introductory Approach, Joan M.Aldous and Robin J.Wilson, Springer-
First Indian Reprint 2007.

Books for Reference

1. Frank Harary, Graph Theory, Narosa Publishing House, New Delhi,Tenth Reprint 2001.
2. John Clark,Derek Allan Holton, A First Look at Graph Theory, Allied Publishers Ltd,Reprint 1995.
3. Narsingh Deo, Graph Theory with Applications to Engineering and Computer Science,Prentice – Hall of India Private Ltd, New Delhi 2005.
4. Dieter Jungnickel, Graphs, Networks And Algorithms, Springer – Verlag Berlin Heidelberg, 2005.

Course Designed by   : Ms.R.ANGEL JOY
Course Reviewed by   : Ms.N.RAJESWARI
Course Checked by   : Ms.A.R.THILAGAVATHI

B.Sc Mathematics (CA)
Semester V
Part III – Elective I- Mathematical Cryptography 510DE1
[For students admitted during the academic year 2010-11 and onwards]

Preamble: **Total: 75 hours**

Information security has gained practical importance due to the rapid growth of electronic communication. Cryptography helps us to solve the problems in information security. The syllabus is framed with two main objectives.

- ❖ To make the students understand the significance of number theory in Cryptography and theoretical Computer science.
- ❖ To give them the basic knowledge in Cryptography.

Module I : (15 Hours)

Some topics in elementary Number Theory: Time estimates for doing arithmetic – Divisibility and the Euclidean Algorithm – Congruences – *Some applications to factoring.

Chapter I (Sections 1 – 4)

Module II : (15 Hours)

Cryptography: Some simple Crypto Systems – *Enciphering matrices.

Chapter III (Sections 1, 2)

Module III: (15 Hours)

Public key: The idea of Public key Cryptography – *RSA – Discrete Log.

Chapter IV (Sections 1 – 3)

Module IV: (15 Hours)

Public key: Knapsack – Zero knowledge protocols and oblivious transfer. Primality and factoring: Pseudo primes – *The rho method.

Chapter IV (Sections 4, 5)   Chapter V (Sections 1, 2)

Module V: (15 Hours)

Primality and factoring: Fermat factorization and factor bases – *The Continued fraction method – The quadratic Sieve method.

Chapter V (Sections 3 – 5)

Book for study:

Neal Koblitz, "A Course in Number Theory and Cryptography" – Graduate texts in Mathematics Springer – Second Edition, 2002 – Reprint.

Books for reference:

1. Ivan niven, Herbert S Zuckerman, "An introduction to the theory of numbers"

   Wiley eastern limited, Third edition, Sixth reprint, 1991.

2. Hans Delfs and Helmut knebl, "Introduction to Cryptography Principles and

   Applications" – Springer 2002.

Course Designed by   : Ms.S.KALAISELVI

Course Reviewed by   : Ms.N.RAJESWARI

Course Checked by   : Ms.A.R.THILAGAVATHI