

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
 Affiliated to Bharathiar University
Department of Computer Science
B.Sc. Computer Science
 Scheme of Examination - CBCS Pattern
 (For the students admitted during the academic year 2017-2018 onwards)

Sem	Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
				Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
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
		Part III						
	117S01	Core I - C Programming	3	3	25	75	100	4
	117S02	Core II - Computer Fundamentals and Digital Logic	3	3	25	50	75	3
	117SP1	Core Practical I - C Programming	4	3	40	60	100	4
	117AS1	Allied I - Basic Mathematics and Statistics	6	3	25	75	100	4
	117EVS	Part IV - Environmental Studies	2	2	50	-	50	2
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
		Part III						
	217S03	Core III - C++ Programming	3	3	25	75	100	4
	217S04	Core IV - Data Structures	3	3	25	50	75	3
	217SP2	Core Practical II - C++ Programming	4	3	40	60	100	4
	217AS2	Allied II - Discrete Mathematics	6	3	25	75	100	4
	217VEC	Part IV - Value Education	2	2	50	-	50	2

III		Part III						
	317S05	Core V- Operating System	5	3	25	50	75	3
	317S06	Core VI- Visual Programming	4	3	25	50	75	3
	317S07	Core VII-Relational Database Management System	5	3	25	75	100	4
	317SP3	Core Practical III - Visual Programming and RDBMS	5	3	40	60	100	4
	317AS3	AlliedIII-Operations Research	6	3	25	75	100	4
	317NDT	Part IV - Non Major Elective	2	2	50	-	50	2
	317SS1	Part IV - Skill Enhancement Course I: Web Technology - Web Development	3	3	75	-	75	3
IV		Part III						
	417S08	Core VIII- Java Programming	4	3	25	75	100	4
	417S09	Core IX- Computer Graphics with Multimedia	5	3	25	50	75	3
	417S10	Core X-Software Engineering	5	3	25	50	75	3
	417SP4	Core Practical IV - Java Programming and Computer Graphics	5	3	40	60	100	4
	417AS4	Allied IV- Principles of Accountancy	6	3	25	75	100	4
	417NGA	Part IV- General Awareness & Information Security	2	2	50	-	50	2
	417SS2	Part IV - Skill Enhancement Course II: Web Technology - Web Graphics	3	3	75	-	75	3
417ALS	Advanced Learners Courses I- Client Server Technologies	-	3	-	100	100	4*	
V		Part III						

	517S11	Core XI- Computer Networks	6	3	25	75	100	4
	517S12	Core XII- PHP with MySQL	5	3	25	50	75	3
	517S13	Core XIII- Data Mining	5	3	25	50	75	3
	517SP5	Core Practical V - PHP with MySQL	5	3	40	60	100	4
	517SE1/ 517GE1/ 517KE1 517SE2/ 517GE2/ 517KE2	Elective I- Information Storage and Mangement/ Compiler Design	6	3	25	75	100	4
	517SS3	Part IV - Skill Enhancement Course III: Web Technology- Web Animation	3	3	75	-	75	3
		Part III						
	617S14	Core XIV - Cloud Computing	5	3	25	50	75	3
	617S15	Core XV- Linux and Shell Programming	5	3	25	50	75	3
	617SP6	Core Practical VI - Linux and Shell Programming	5	3	40	60	100	4
	617SE3/ 617GE3/ 617KE3 617SE4/ 617GE4/ 617KE4	Elective II - Basics of IoT/ Mobile Computing	6	3	25	75	100	4
	617SPV	Project & Viva Voce	6	3	25	75	100	4
	617SS4	Part IV- Skill Enhancement Course IV: Web Technology - Javascript Programming	3	3	75	-	75	3
	617EX1/ 617EX2/ 617EX3/ 617EX4/ 617EX5	Part V- Extension activity NCC/ NSS/ YRC/ RRC/ Games	-	-	50	-	50	2
	617ALS	Advanced Learners Courses II- Web Services	-	3	-	100	100	4*

***Starred credits are treated as additional credits (Optional)**

**Employability Courses
B.Sc Computer Science
Semester I**

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

Course:Part III - Core Practical I C Programming	Course Code: 117SP1
Semester: I	No. of Credits: 4
No. of hours : 60	T:P - 8:52
CIA Max. Marks: 40	ESE Max. Marks: 60

(T: Tutorial, P:Practical)

Course Objectives:

- To develop the programming skills using the fundamentals of C Language.
- To implement programs using the usage of arrays, structure, functions, pointers and file systems.

Syllabus:

List of Programs:	(52 hrs)
<ol style="list-style-type: none"> 1. Write a program to find out sum of n numbers. 2. Program to check whether the candidate is eligible to vote or not. 3. Program to find Biggest of three numbers. 4. Program to check whether the given number is Prime or Not. 5. Program to find the factorial of the given number. 6. Program to generate a Fibonacci series. 7. Program to check whether the given number is Armstrong. 8. Check whether given year is leap year or not. 9. Write a program to Construct Pyramid of digits. 10. Program to illustrate Swapping of two numbers. 11. #Check whether the given string is Palindrome or not. 12. #Program to perform String Operations. 13. #Create a program for Employee details using structures. 14. #Program to illustrate Pointers. 15. #Program to receive a file name and the names of employees as command line argument and Write the text to the file. <p>[# GVGCS Spoken Tutorial]</p>	

**B.Sc Computer Science
Semester II**

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

Course:Part III - Core Practical II C++ Programming	Course Code: 217SP2
Semester: II	No. of Credits: 4

No. of hours : 60	T:P - 8:52
CIA Max. Marks: 40	ESE Max. Marks: 60

(T:Tutorial, P:Practical)

Course Objectives:

- To strengthen their problem solving ability by applying the characteristics of an object-oriented approach.
- To enhance the ability of logical thinking and implementing the concepts and techniques.

Syllabus:

List of Programs:	(52 hrs)
<ol style="list-style-type: none"> 1. Program to read a set of numbers using arrays from the standard input device and to sort them in ascending order. 2. #Program to perform overload Functions add(), sub() and multiply() that handle different data types. 3. #Program to find the area of Circle, Rectangle and Square by using Inline Functions. 4. Program to implement Call by reference. 5. Program to demonstrate Employee details using classes and array of objects. 6. #Program to display the student details using Constructor and Destructor. 7. Program using Single Inheritance. 8. Program for Payroll processing using Multiple Inheritance. 9. Program using virtual functions and pointers. 10. #Program to illustrate the concept of Templates. 11. #Program to illustrate the concept of Friend Function. 12. Program to implement Stack Operation. 13. Program to implement Queue Operations. 14. Program to implement Binary Search. 15. Program to implement Bubble Sort. 	
[# GVGCS Spoken Tutorial]	

B.Sc. Computer Science

Semester III

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

Course: Part III - Core Practical III Visual Programming and RDBMS	Course Code:317SP3
Semester: III	No. of Credits: 4
No. of hours : 75	T:P - 10:65
CIA Max. Marks: 40	ESE Max. Marks:60

(T: Tutorial, P: Practical)

Course Objectives:

- To impart knowledge on the architecture of RDBMS and improve the programming skill through visual basic.
- To program using DDL and DML commands and PL/SQL language.

Syllabus:

List of Programs:	(65 hrs)
Visual Basic:	
<ol style="list-style-type: none"> 1. Write a Program to create a Window Using Event Handling. 2. Write a Program to create a student mark details using conditional statements. #3. Write a Program to design a Calculator with Various Arithmetic Operators. #4. Create a program to develop an Application for loading a Picture using Drive, Directory & File List Box controls. 5. Write a Program for Text Manipulations. 6. Design a form to display the List of Product by declaring Array. #7. Create a program using menu editor (New, Open, Save, Close, Color, Font & Font size) #8. Create a program using Windows Common Controls. 9. Create a program using Constructors. #10. Write a program to create an object and add a Color Property. 11. Develop an Application for Employee Payroll System using ADO.NET. 12. Create a Web Application for any Organization using ASP.NET. 	
RDBMS Programming:	
<ol style="list-style-type: none"> 1. Create an employee table using DML commands and perform logical operations. 2. Perform the queries using transaction commands. 3. Write a program for inventory with constraints and perform the following clause. <ol style="list-style-type: none"> a. Select Clause b. Where Clause c. Order by clause 4. Write a program for student database and perform the following operations <ol style="list-style-type: none"> a. Arithmetic Operation b. Group Function 5. Perform queries by using character and date functions. 6. Perform a query for Joins. 7. Write a PL/SQL program for Employee Payroll. 8. Write a PL/SQL program for Student Database and Calculate Total, Average, Result. 	
[#GVGCS Spoken Tutorial]	

B.Sc Computer Science Semester IV

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

Course : Part III - Core Practical IV Java Programming Computer Graphics	Course Code: 417SP4
Semester: IV	No. of Credits: 4
No. of hours : 75	T:P - 10:65
CIA Max. Marks: 40	ESE Max. Marks: 60

(T: Tutorial, P: Practical)

Course Objectives:

- Enables the students to be familiar with the main features of Java language and be able to debug and test Java programs.
- Develop a simple software application using the object oriented approach.
- Understand how to work with 2D and animation effects.
- Work with the graphics, multimedia facility and gain a sound knowledge in animation.

Course Outcomes: On completion of the Course the student will be able to

CO	Statement	Bloom's Taxonomy level
CO1	Gain Knowledge of the structure and model of the Java programming language.	R
CO2	Create packages and interfaces in a Java program.	A
CO3	Implement the various graphics drawing algorithms, 2D-3D transformations and clipping techniques.	A
CO4	Compile computational development of graphics with mathematics and to provide in-depth knowledge of display systems, image synthesis, shape modeling of 3D images.	U
CO5	Provide the knowledge about the basic concepts related to Multimedia including data standards, algorithms and application software.	R
CO6	Construct a Java class based on a UML class diagram and Perform a test plan to validate a Java program.	A

R-Remembrance, U –Understanding, A-Apply

Syllabus:

List of Programs:	(65 hrs)
Java Programming:	
<ol style="list-style-type: none"> 1. Program to calculate area and perimeter of a rectangle using classes and objects. 2. Program to implement Interfaces. 	

3. Preparation of Mark list using Inheritance.
4. Program to implement Employee Payroll processing using packages.
5. Program using Multithreading.
6. Generate Pyramid using Synchronized method in multithreading.
7. Program using try and catch for Exception Handling.

#8. Generating advertisements using Applets.

#9. Program to draw human face using Graphics Class.

10. Count the number of words, characters, digits, alphabets, special characters and white spaces in a file.

Computer Graphics:

1. Implement the Simple Transformations using 2D.(Translation, Rotation, Scaling).

2. Write a program to draw a line using DDA algorithm.

3. Create a program for implementing the Polygon clipping.

4. Create an animation with the following features using text.

(WELCOME) Letters should appear one by one *. The fill color of the text should change to a different color after the display of the full word.

#5. Write a program to move a car with sound effect.

#6. Write a program to merge the circle and square.

#7. Simulate the Bouncing of a ball within four walls and on steps.

[#GVGCS Spoken Tutorial]

B.Sc. Computer Science Semester V

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

Course: Part III - Core Practical V PHP with MySQL	Course Code: 517SP5
Semester: V	No. of Credits: 4
No. of hours : 75	T:P - 10:65
CIA Max. Marks: 40	ESE Max. Marks: 60

(T: Tutorial, P: Practical)

Course Objectives:

- To give good practical knowledge of how to write successful PHP code utilizing a MySQL database.
- To gain the PHP programming skills needed to successfully build interactive, data-driven sites.
- To provide the knowledge necessary to design and develop dynamic, database-driven Web pages using PHP.
- To Work with regular expressions, handle exceptions, and validate data.

Syllabus:

List of programs:	(65 hrs)
<ol style="list-style-type: none"> 1. Design a program in PHP to demonstrate the message passing between forms. 2. Create a PHP program for automatically generating register number for students. 3. Write a PHP program for form validation. 4. #Design a blog in PHP for gift shop. 5. #Write a PHP program to design a digital resume. 6. #Design a webpage for calculating BMI using Functions in PHP. 7. Write a PHP program to check the given number is Armstrong or not using Exceptions. 8. Create a form with one text field and submit buttons for string length, string reverse and uppercase, lowercase, string replace. Display the result accordingly. 9. Write a Menu-Driven program to implement a calculator which performs only addition, subtraction, multiplication and division using switch case. 10. #Develop a PHP program for designing a College ID Card. 11. #Create a login form for users using Cookies and Sessions. 12. Develop a PHP program for calculating results of the students using MySQL. 13. Create a PHP program to generate grocery bill using MySQL. 14. Write a PHP program for calculating electricity bill using MySQL. 	
[# GVGCS Spoken Tutorial]	

**B.Sc Computer Science
Semester VI**

(For the students admitted during the academic year 2017 – 2018 and onwards)

Course: Part III - Core XIV Cloud Computing	Course Code: 617S14
Semester: V	No. of Credits: 3
No. of hours : 75	C:T:S:A -65:5:3:2
CIA Max. Marks: 25	ESE Max. Marks: 50

(C: Contact hours, T: Tutorial, S: Seminar, A: Assignment)

Course Objectives:

- To understand the key dimensions of the challenge of Cloud Computing.
- To learn about the cloud environment, fundamentals and essentials of Cloud Computing.
- It helps the students to form sound foundation of the Cloud Computing so that they are able to start using and adopting Cloud Computing services and tools in their real life scenarios.
- To give skills and knowledge to understand how Cloud Computing can enable transformation, business development and agility in an organization.

Syllabus:

Unit I: Fundamental Cloud Computing:	(12 hrs)
Understanding Cloud Computing: Origins and Influences – Basic Concepts and Terminology	

– Goals and Benefits – Risks and Challenges. **Fundamental Concepts and Models:** Roles and Boundaries – Cloud Characteristics – Cloud Delivery Models – Cloud Deployment Models.
[Chapters: 3, 4]

Unit II: Cloud-Enabling Technology: (11 hrs)

Broadband Networks and Internet Architecture – Data Center Technology – Virtualization Technology – Web Technology – Multitenant Technology – Service Technology. Fundamental Cloud Security: Basic Terms and Concepts – Threat Agents – Cloud Security Threats – Additional Considerations.
[Chapters: 5, 6]

Unit III: Cloud Computing Mechanisms: (15 hrs)

Cloud Infrastructure Mechanisms: Logical Network Perimeter – Virtual Server – Cloud Storage Device – Cloud Usage Monitor – Resource Replication – Ready-Made Environment. **Specialized Cloud Mechanisms:** Automated Scaling Listener – Load Balancer – SLA Monitor – Pay-Per-Use Monitor – Audit Monitor – Failover System – Hypervisor – Resource Cluster – Multi-Device Broker – State Management Database. **Cloud Management Mechanisms:** Remote Administration System – Resource Management System – SLA Management System – Billing Management System. Cloud Security Mechanisms: Encryption – Hashing – Digital Signature – Public Key Infrastructure (PKI) – Identity and Access Management (IAM) – Single Sign-On (SSO) – Cloud-Based Security Groups – Hardened Virtual Server Images.
[Chapters: 7, 8, 9, 10]

Unit IV: Cloud Computing Architecture: (14 hrs)

Fundamental Cloud Architectures: Workload Distribution Architecture – Resource Pooling Architecture – Dynamic Scalability Architecture – Elastic Resource Capacity Architecture – Service Load Balancing Architecture – Cloud Bursting Architecture – Elastic Disk Provisioning Architecture – Redundant Storage Architecture. **Advanced Cloud Architectures:** Hypervisor Clustering Architecture – Load Balanced Virtual Server Instances Architecture – Non-Disruptive Service Relocation Architecture – Zero Downtime Architecture – Cloud Balancing Architecture – Resource Reservation Architecture – Dynamic Failure Detection and Recovery Architecture – Bare-Metal Provisioning Architecture – Rapid Provisioning Architecture – Storage Workload Management Architecture.
[Chapters: 11, 12]

Unit V: Specialized Cloud Architectures: (13 hrs)

Direct I/O Access Architecture – Direct LUN Access Architecture – Dynamic Data Normalization Architecture – Elastic Network Capacity Architecture – Cross-Storage Device Vertical Tiering Architecture – Intra-Storage Device Vertical Data Tiering Architecture – Load Balanced Virtual Switches Architecture – Multipath Resource Access Architecture – Persistent

Virtual Network Configuration Architecture – Redundant Physical Connection for Virtual Servers Architecture – Storage Maintenance Window Architecture. **Working With Clouds: Cloud Delivery Model Considerations: Cloud Delivery Models:** The Cloud Provider Perspective - **Cloud Delivery Models: The Cloud Consumer Perspective.** **Cost Metrics and Pricing Models:** Business Cost Metrics – Cloud Usage Cost Metrics – Cost Management Considerations. **Service Quality Metrics and SLAs:** Service Quality Metrics – SLA Guidelines. [Chapters: 13, 14, 15, 16]

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Cloud Computing Concepts, Technology & Architecture	Thomas Erl, Zaigham Mahmood and Ricardo Puttini	Pearson India Education Services Pvt Ltd Publication, Fifth Impression, 2017.

Books for Reference:

S.No	Name of the Book	Authors	Publishers with Edition
1.	Fundamentals of Cloud Computing	A. Kannammal	Cengage Learning India Pvt. Ltd, 2015
2.	Cloud Computing Unleashing Next Gen Infrastructure to Application	Dr. Kumar Saurabh	Third Edition, Wiley India Pvt. Ltd, 2014.

**B.Sc. Computer Science
Semester VI**

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

Course: Part III - Core Practical VI Linux and Shell Programming	Course Code: 617SP6
Semester: VI	No. of Credits: 4
No. of hours: 75	T:P - 10:65
CIA Max. Marks: 40	ESE Max. Marks:60

(T: Tutorial, P: Practical)

Course Objectives:

- To familiarize students with the Linux environment.
- To learn the fundamentals of shell scripting/programming.
- To be knowledgeable enough about basic Linux shell scripting and successfully read / write bash shell scripts.
- To combine UNIX/Linux tools using features such as filters, pipes and redirection.

Syllabus:

List of Programs:	(65 hrs)
1. Write a shell script using the following file commands: rm, cp, cat, mv, cmp, wc, split, diff, locate, clear.	

2. Write a program to perform arithmetic operations using basic shell commands.
 3. Write a shell script to show the following system configuration :
 - a. Current shell, home directory, Operating System type, current Path setting, current working directory.
 - b. Currently logged user and his log name.
 - c. Show currently logged number of users, show all available shells.
 4. #Write a shell script to show the CPU information like processor type, speed and memory information.
 5. #Write a shell Script using pipes, Redirection and tee commands.
 6. #Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
 7. #Write a shell script to implement the filter commands.
 8. Write a shell script to swap the given two numbers.
 9. Write a shell script to find the sum of the individual digits of a given number.
 10. Write a shell script to print the multiplication table of the given argument using for loop.
 11. Write a shell script for following commands.
Ionice, Ip, Ifconfig, Isusb, netcat, kmod, kill.
 12. #Install/update a package in Debian Software.
- [# GVGCS Spoken Tutorial]

Entrepreneurship Courses
B.Sc Computer Science / Information Technology/ BCA
Semester VI

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

Course: Part III - Elective II Basics of IoT	Course Code: 617SE2/617GE2/617KE2
Semester: VI	No. of Credits: 4
No. of hours:90	C:T:S:A - 75:6:6:3
CIA Max. Marks: 25	ESE Max. Marks:75

(C: Contact hours, T: Tutorial, S: Seminar, A: Assignment)

Course Objectives:

- To enumerate IoT architecture and decision framework.
- To identify various IoT networking protocols, those are mainly used to develop communication solutions.
- To examine data analytics on the collected sensor data and to use prediction algorithms to get useful insights.

Course Outcomes: On completion of the Course the student will be able to

CO	Statement	Bloom's Taxonomy level
CO1	Comprehend the core concepts, background technologies and sub-domains of IoT.	R
CO2	Explain IoT devices using sensors, micro controllers and communications interface.	U
CO3	Discuss various application layer protocol and web services architecture for combining various components of IoT ecosystems.	U
CO4	Interpret API and commercial architectures, industrial platforms and services.	U
CO5	Utilize IoT technologies, design and tools.	A
CO6	Built knowledge in industrial automation and real world design constraints.	A

R-Remembrance U –Understanding A-Apply

Syllabus:

Unit I: The Internet of Things:	(15 hrs)
An Overview: The Flavour of the Internet of Things – The “Internet” of “Things” – The Technology of the Internet of Things – Enchanted Objects – Who is Making the Internet of Things?	
Design Principles for Connected Devices: Calm and Ambient Technology – Magic as Metaphor – Privacy – Web Thinking for Connected Devices – Affordances. Internet Principles: Internet Communications: An Overview – IP Addresses – MAC Addresses – TCP and UDP Ports – Application Layer Protocols.	
Unit II: Thinking About Prototyping:	(15 hrs)
Sketching – Familiarity – Costs versus Ease of Prototyping – Prototypes and Production – Open Source versus Closed Source – Tapping into the Community.	
Prototyping Embedded Devices: Electronics – Embedded Computing Basics – Arduino – Raspberry Pi – BeagleBone Black – Electric Imp – Other Notable Platforms.	
Unit III: Prototyping the Physical Design:	(15 hrs)
Preparation – Sketch, Iterate and Explore – Nondigital Methods – Laser Cutting – 3D Printing – CNC Milling – Repurposing/Recycling.	
Prototyping Online Components: Getting Started with an API – Writing a New API – Real-Time Reactions – Other Protocols.	
Unit IV: Techniques for Writing Embedded Code:	(15 hrs)
Memory Management – Performance and Battery Life – Libraries – Debugging.	

Business Models: A Short History of Business Models – The Business Model Canvas – Who Is the Business Model For? – Models – Funding an Internet of Things Startup – Lean Startups.

Unit V: Moving to Manufacture: (15 hrs)

What Are You Producing? – Designing Kits – Designing Printed Circuit boards – Manufacturing Printed Circuit Boards – Mass-Producing the Case and Other Fixtures – Certification – Costs – Scaling Up Software.

Ethics: Characterizing the Internet of Things – Privacy – Control – Environment – Solutions.

Book for study:

Unit	Name of the Book	Authors	Publisherswith Edition
I - V	Designing the Internet of Things	Adrian McEwen, Hakim Cassimally	Wiley, Reprint 2017.

Book for Reference:

S.No	Name of the Book	Author	Publisherswith Edition
1	The Internet of Things Connecting Objects to the Web	HakimaChaouchi	Wiley India Pvt. Ltd., Reprint 2017

B.Sc Computer Science/ Information Technology/ BCA

Semester VI

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

Course: Part III - Elective II Mobile Computing	Course Code: 617SE4/617GE4/617KE4
Semester: VI	No. of Credits: 4
No. of hours: 90	C:T:S:A -75:6:6:3
CIA Max. Marks: 25	ESE Max. Marks: 75

(C: Contact hours, T: Tutorial, S: Seminar, A: Assignment)

Course Objectives:

- To impart fundamental concepts in the area of mobile computing.
- To provide a computer systems perspective on the converging areas of wireless networking, embedded systems, and software.
- To design and implement mobile applications and realize the role of wireless protocols in shaping the future Internet.
- To develop skills of finding solutions and building software for mobile computing applications.

Syllabus:

Unit I:Basics of Communication Technologies:	(15 Hrs)
Mobile Handsets, Wireless Communications, and Server Applications – Cell Phone	

System.Types of Telecommunication Networks – Computer Networks – Traditional LAN – LAN Architecture – Components of a Wireless Communication System – Architecture of a Mobile Telecommunication System – Wireless Local Area Networks(WLANs) – Bluetooth Technology – Introduction to Mobile Computing and Wireless Networking.
[Chapters: 1, 2]

Unit II:MAC Protocols: (16 Hrs)

Properties Required of MAC Protocols – **Wireless MAC Protocols:** Some Issues – A Taxonomy of MAC Protocols – Fixed Assignment Schemes – Random Assignment Schemes – Reservation-based Schemes – The 802.11 MAC Standard – MAC Protocols for ad-Hoc Networks – Cognitive Radio ad-hoc Network – Mobile Transport Layer.
[Chapters: 3, 5]

Unit III:Mobile Internet Protocol: (15 Hrs)

Mobile IP – Packet Delivery – Overview of Mobile IP –Desirable Features of Mobile IP – Key Mechanism Used in Mobile IP – Route Optimization –Dynamic Host Configuration Protocol (DHCP) – Mobile Ad Hoc Networks.
[Chapters: 4, 7]

Unit IV: Wireless Sensor Networks: (14 Hrs)

WSN vs MANET–Applications – Architecture of the Sensor Node – Challenges in the Design of an Effective WSN – Characteristics of Sensor Networks – WSN Routing Protocols - Target Coverage – Clustered Wireless Sensor Networks – Operating Systems for Mobile Computing.
[Chapters: 8, 9]

Unit V: (15 Hrs)

Mobile Databases – **Mobile Application Development and Protocols:** Mobile Devices as Web Clients – WAP – J2ME – Android Application Development – **Mobile Commerce:**Applications of M-Commerce – Business-to-Business (B2B) Applications – Structure of Mobile Commerce – Pros and Cons of M-Commerce – Mobile Payment Systems – Security Issues.
[Chapters: 6, 10, 11]

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Fundamentals of mobile computing	Prasant Kumar Pattnaik and Rajib Mall	Seventh Printing, Second Edition, 2017.

Book for Reference:

S.No	Name of the Book	Authors	Publishers with Edition
1.	Mobile Computing –	Asoke K Talukder,	Second Edition, Ninth

Technology, Applications and Service Creation	Hasan Ahmed and Roopa R Yavagal	Reprint 2016
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**Skill Development Courses
B.Sc Computer Science
Semester III**

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

Course: Part IV - Skill Enhancement Course I: Web Technology - Web Development	Course Code: 317SS1
Semester: III	No. of Credits: 3
No. of hours : 45	T:P -7:38
CIA Max. Marks: 75	ESE Max. Marks: --

(T: Tutorial, P: Practical)

Course Objectives:

- To understand the importance of the web as a medium of communication.
- To learn the languages of the web such as HTML and CSS.
- To develop the skills in analyzing the use of a web site.

Syllabus:

List of programs:	(38 hrs)
<ol style="list-style-type: none"> 1. Design a page with elements, Tags and basic structure of HTML files. 2. Create a basic and advanced text formatting. 3. Create a use of multimedia components (Image, Video & Sound) in HTML document. 4. Design a webpage using Document Layout. 5. Create a webpage using List. 6. Design a webpage using Tables. 7. Create a webpage program using hyper link. 8. Design a webpage using Frames. 9. Create a webpage using Forms and Controls. 10. Create a web page to design the bio-data. 11. Design the webpage in CSS-Internal style sheet. 12. Design the webpage in CSS-External style sheet. 	

**B.Sc Computer Science
Semester IV**

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

Course: Part IV - Skill Enhancement Course II Web Technology - Web Graphics	Course Code:417SS2
Semester: IV	No. of Credits: 3

No. of hours : 45	T:P - 7:38
CIA Max. Marks: 75	ESE Max. Marks: --

(T: Tutorial, P: Practical)

Course Objectives:

- To provide the basics of Image Editing tools and its applications.
- To provide a hands on training about the tools Gimp and Scribus.

Syllabus:

List of programs:	(38 hrs)
<ol style="list-style-type: none"> 1. Create a program to design a 3D Text. 2. Create a program to manipulate the text and Image. 3. Create a program to render (Cut Out) An Image. 4. Create a program to wrap text around an image. 5. Create a program for Customized Image Shape. 6. Design a Logo for the Website. 7. Create a program to design a Banner for the Website. 8. Design the Background effects for website. 9. Create an Invitation and upload it on the website. 10. Design the sample Website Templates. 11. Design a brochure for College Advertisement and upload it on the website. 12. Create a program to prepare the e-Certificate for online course. 	

B.Sc Computer Science Semester V

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

Course: Part IV - Skill Enhancement Course III: Web Technology - Web Animation	Course Code:517SS3
Semester: V	No. of Credits: 3
No. of hours : 45	T:P - 7:38
CIA Max. Marks: 75	ESE Max. Marks: --

(T: Tutorial, P: Practical)

Course Objectives:

- This course gives introductory knowledge about web animation tool and its application areas.
- It helps the students to capable of doing animation and its effect.
- It support to Publishing a Animation Movie.
- It helps the user to create forms to bind data and to stream video easily using predefined components.

Syllabus:

List of programs:	(38 hrs)
1. Draw a Butterfly using Oval tool, Circle tool and Pencil tool and add it to a webpage.	
2. Design an animated logo for the webpage.	
3. Create a banner in animation tool for the webpage.	
4. Design a star rotation animation and add it to the webpage.	
5. Create an animated button for the webpage.	
6. Create a Basic Animation and add it to a webpage.	
7. Design a File Export to test your button on browser.	
8. Create an animation text for the webpage.	
9. Design a webpage with cartoon effects.	
10. Create a football animation and add it to the webpage.	
11. Create a webpage with hand drawn animation.	
12. Design a web animated greeting card.	

B.Sc Computer Science Semester VI

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

Course: Part IV - Skill Enhancement Course IV: Web Technology - Java Script Programming	Course Code:617SS4
Semester: VI	No. of Credits: 3
No. of hours: 45	T:P -7:38
CIA Max. Marks: 75	ESE Max. Marks: --

(T: Tutorial, P: Practical)

Course Objectives:

- To design effective web pages using JavaScript.
- To learn the fundamental programming concepts and syntax of the JavaScript programming language.
- To understand the manipulation and validation of Form elements.
- To familiar with common libraries and tools that are used in web application development.

Syllabus:

List of programs:	(38 hrs)
1. Develop the concept of JavaScript characteristics, common JavaScript programming.	
2. Be acquainted with Jump-starting JavaScript, Objects, Methods, Events, Program Flow, and Jumping Right in, Running Scripts.	
3. Develop the concept of Java Script writing basics.	
4. Working with using Names, Objects and Methods.	

5. Adding an image changer using Java Script.
6. Call a function with arguments using Java Script.
7. Create a Basic Webpage with JavaScript.
8. Develop the concept of adding interactivity to web pages
9. Working with Dynamic Web Pages
10. Generate Java Scripting Forms
11. Write a program to redirect, popup and print function in JavaScript.
12. Create validation Form in JavaScript.

B.Sc Computer Science Semester III

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

Course: Part IV - Non Major Elective - Desktop Publishing	Course Code:317NDT
Semester: III	No. of Credits: 2
No. of hours: 30	T:P - 3:27
CIA Max. Marks: 50	ESE Max. Marks: --

(T: Tutorial, P: Practical)

Course Objectives:

- To understand the basics of Image Editing tool and its applications.
- To enlighten the students with the knowledge of Gimp and Scribes.
- Provides the students to work and edit the images.

Syllabus:

List of programs:	(27 hrs)
Image Editing: (Gimp Tool)	
<ol style="list-style-type: none"> 1. Design a 3D Text. 2. Create a program to use the Light And Shadow Filter. 3. Create a program to Render (Cut Out) An Image. 4. Create a program to use the Layer mask. 5. Design an Invitation. 6. Design a magazine wrapper. 	
Image Graphics: (Scribus Tool)	
<ol style="list-style-type: none"> 1. Create a program to manipulate the text and Image. 2. Create a program to wrap text around an image. 3. Design the brochure for College Advertisement. 4. Create a program for Customized Image Shape. 5. Create a program to prepare the News letter. 6. Create a program to design the Post Card. 	

Curriculum Design
Sri G.V.G Visalakshi College for Women (Autonomous)
 Affiliated to Bharathiar University
Department of Computer Science
M.Sc. Computer Science
 Scheme of Examination - CBCS Pattern
 (For the students admitted during the academic year 2017-2018 onwards)

Sem	Course Code	Course Title	Ins. Hrs/ Week	Examination				Credits
				Dur. Hrs	CIA Marks	ESE Marks	Total Marks	
I	17MS01	Core I- Advanced Java Programming	5	3	25	75	100	4
	17MS02	Core II- Object Oriented Analysis and Design with UML	5	3	25	75	100	4
	17MS03	Core III- Data Mining and Warehousing	5	3	25	75	100	4
	17MS04	Core IV- Software Project Management	5	3	25	75	100	4
	17MSP1	Core Practical I- Advanced Java Programming	4	3	40	60	100	4
	17MSE1/ 17MSE2	Elective I- Enterprise Resource Planning/ Parallel Processing	6	3	25	75	100	4
II	17MS05	Core V- Python Programming	4	3	25	75	100	4
	17MS06	Core VI- Software Testing	4	3	25	75	100	4
	17MS07	Core VII- Internet of Things	5	3	25	75	100	4
	17MS08	Core VIII- Design and Analysis of Algorithms	4	3	25	75	100	4
	17MSP2	Core Practical II- Python Programming	3	3	40	60	100	4
	17MSP3	Core Practical III- Software Testing	2	3	40	60	100	4
	17MSE3/ 17MSE4	Elective II- Embedded Systems / Network Security and Cryptography	6	3	25	75	100	4
	17MGCS	Cyber Security	2	2	50	-	Grade	Grade
	17MSA1	Advanced Learners Courses I-Nano Computing	-	3	-	100	100	4*

III	17MS09	Core IX- Wireless Communication	5	3	25	75	100	4
	17MS10	Core X- Digital Image Processing	5	3	25	75	100	4
	17MS11	Core XI- Android Programming	4	3	25	75	100	4
	17MS12	Core XII- Big Data Analytics	5	3	25	75	100	4
	17MSP4	Core Practical IV- Digital Image Processing	3	3	40	60	100	4
	17MSP5	Core Practical V- Android Programming	2	3	40	60	100	4
	17MSE5/ 17MSE6	Elective III-Soft Computing / Data Compression	6	3	25	75	100	4
IV	17MSPV	Project and Viva Voce	-	-	100	150	250	10
	17MSA2	Advanced Learners Courses- II- Wireless Sensor Networks	-	3	-	100	100	4*

***Starred credits are treated as additional credits (Optional)**

Employability Courses
M.Sc Computer Science
Semester I

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

Course: Core Practical I - Advanced Java Programming	Course Code:17MSP1
Semester: I	No. of Credits: 4
No. of hours : 60	T:P - 8:52
CIA Max. Marks: 40	ESE Max. Marks:60

(T:Tutorial, P: Practical)

Course Objectives:

- Learn the basic concepts of Object Orientation and how to handle in Java.
- An overview of database access and details for managing information using the JDBC.
- Addresses how to use Remote Method Invocation.
- A presentation of Enterprise JavaBeans and how to use it.

Syllabus:

List of Programs:	(52 hrs)
<ol style="list-style-type: none"> 1. Program to implement RPC under Client-Server environment. 2. Create a program to add a class into a Package. 3. Program to display a text message using RMI. 4. Program to perform File handling operations. 5. Create a program to filter the list using Streams. 6. Program to create Employee Database and prepare Employee Payroll using JDBC. 7. Program to Asynchronous and Synchronous Communication. 8. Program to find out the creation time and the last-accessed time for a session using Session Tracking. 9. Design an Online Application program using Swing. 10. Program to Check the User Name and Password using Swing. 11. Program for displaying product list along with their prices and then allow user to buy any one from them with required quantity. 12. Create a list of vegetables if you click on one of the items of the list items would be displayed in text box. 13. Program to implement JTable. 14. Create a simple program using JavaBean. 	

M.Sc Computer Science
Semester I

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

Course: Elective I - Parallel Processing	Course Code:17MSE2
Semester: I	No. of Credits: 4
No. of hours : 90	C:T:S:A - 75:7:5:3

CIA Max. Marks: 25

ESE Max. Marks: 75

(C:Contact hours, T:Tutorial, S:Seminar, A: Assignment)

Course Objectives:

- It helps to explore the current state-of-the-art in Parallel Computing.
- It deals with the use of parallel processing for multi-objective optimization.
- This course is designed to build the parallel programs, which actually shows the performance improvement.

Syllabus:

Unit I: Introduction: (15 hrs)

Why Parallel Processing? - Laws of Caution- Shared Memory Multiprocessing - Distributed Memory - Using Parallelism - Tools and languages. **Parallel Processing Architecture:** Introduction - Parallelism in sequential machines- Abstract model of parallel computer - Multiprocessor architecture - Pipelining - Array processors.

[Chapters: 1,2]

Unit II: Programmability Issues: (15 hrs)

Introduction - Operating system support - Types of Operating systems - Parallel programming models - Software tools - Data dependency analysis - Shared memory programming: Introduction - Shared memory programming - General model of shared memory programming - Process model under UNIX.

[Chapters: 3,4,5]

Unit III: Message passing model: (15 hrs)

Thread - based implementation - Distributed computing I - **Message passing model:** Introduction - Message passing model - General model - Programming model - PVM.

[Chapters: 6,7]

***Unit IV: Distributed Computing II: (15 hrs)**

Remote procedure call: Introduction - Parameter passing - Locating the server - Semantics in the presence of failures - security - Problem areas - java Remote method Invocation - DCE - Developing application in DCE. Using Parallelism Effectively.

[Chapters: 8,9]

Unit V: Algorithms for parallel machines: (15 hrs)

Introduction - Speedup, complexity and cost - Histogram computation - parallel reduction - Quadrature problem - matrix multiplication - parallel sorting algorithms - solving Linear Systems - Probabilistic algorithms - Map_reduce model of parallelism - Is Superlinear speedup possible. Distributed databases.

[Chapters: 10,14]

***Starred unit is a self study unit.**

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I-V	Introduction to Parallel Processing	M.Sasikumar, Dinesh Shikhare and P.RaviPrakash	PHI Learning Private Ltd, Second Edition, 2014

Books for Reference:

S.No	Name of the Book	Authors	Publisherswith Edition
1	Parallel Programming with Intel Parallel Studio XE	Stephen Blair-Chappell and Andrew Stokes	Springer - VerlagNewYork, Inc, 2012
2	An Introduction to Parallel Programming	Peter Pacheco	Elsevier Inc, 2011

M.Sc Computer Science Semester II

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

Course: Core Practical II - Python Programming	Course Code:17MSP2
Semester: II	No. of Credits: 4
No. of hours : 45	T:P - 7:38
CIA Max. Marks: 40	ESE Max. Marks: 60

(T: Tutorial, P: Practical)

Course Objectives:

- To learn about the usage of functions for structuring Python programs.
- To learn about the concept of threading.
- To understand about the GUI and Web programming.

Syllabus:

List of Programs:	(38 hrs)
<ol style="list-style-type: none"> 1. Program to implement the Classes. 2. Program to implement Conditional Functions. 3. Program to implement Iterators Functions. 4. Program to implement Generators. 5. Program to Create a File and its mode. 6. Program to perform file operations. 7. Program to implement Exceptions. 8. Program to implement Command line arguments. 9. Program to implement Closures. 10. Program to implement Threads. 11. Program to implement GUI Programming. 12. Program to implement Web Programming. 	

M.Sc Computer Science Semester II

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

Course: Core Practical III - Software Testing	Course Code:17MSP3
Semester: II	No. of Credits: 4
No. of hours : 30	T:P - 3:27
CIA Max. Marks: 40	ESE Max. Marks: 60

(T:Tutorial, P: Practical)

Course Objectives:

- To understand the essential characteristics of tool used for test automation.
- To describe strategies for generating system test cases.
- To identify the various design strategies for problem solving using web testing.
- To learn about the usage of testing factors using bug tracking and test management tool.

Syllabus:

List of Programs:	(27 hrs)
<ol style="list-style-type: none">1. Write programs in C Language to demonstrate the working of the following constructs:<ol style="list-style-type: none">i) do...whileii) while....doiii) if...elseiv) switchv) for2. If a program written in C language for Matrix Multiplication fails, then introspect the causes for its failure and write down the possible reasons for its failure.3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.4. Write the test cases for any known application (e.g. Banking application).5. Create a test plan document for any application (e.g. Library Management System).6. Study of any testing tool (e.g. Win runner).7. Study of any web testing tool (e.g. Selenium).8. Study of any bug tracking tool (e.g. Bugzilla, bugbit).9. Study of any test management tool (e.g. Test Director).10. Study of any open source-testing tool (e.g. Test Link).	

M.Sc Computer Science Semester II

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

Course: Elective II - Network Security and Cryptography	Course Code:17MSE4
Semester: II	No. of Credits: 4
No. of hours : 90	C:T:S:A - 75:5:5:5

CIA Max. Marks: 25

ESE Max. Marks: 75

(C:Contact hours, T:Tutorial, S:Seminar, A: Assignment)

Course Objectives:

- This course provides an introduction to the fundamental principles of cryptography and its applications on the network security domain.
- To make the students to understand the principles of encryption algorithms, conventional and public key cryptography.
- To evaluate the security of communication systems, networks and protocols based on a multitude of security metrics.
- To understand the various key distribution and management schemes

Syllabus:

Unit I: Classical Encryption Techniques: (15 hrs)

Symmetric Cipher Model - Substitution Techniques: Caesar Cipher - Monoalphabetic Ciphers - Playfair Cipher - Hill Cipher - Polyalphabetic Ciphers - one-Time Pad. Transposition Techniques - Steganography. **Block Ciphers and the Data Encryption Standard:** Traditional Block Cipher Structure: Stream Ciphers and Block Ciphers - The Feistel Cipher - The Data Encryption Standard - A DES Example -Block Cipher Design Principles.

[Chapters: 1,2]

Unit II: Advanced Encryption Standard: (15 hrs)

AES Structure - AES Transformation Functions. **Block Cipher Operation:** Multiple Encryption and Triple DES - Electronic Code Book - Cipher Block Chaining Mode - Cipher Feedback Mode - Output Feedback Mode - Counter Mode.

[Chapters: 4,5]

Unit III: Pseudorandom Number Generation and Stream Ciphers: (15 hrs)

Principles of Pseudorandom Number Generation - Pseudorandom Number Generators - Pseudorandom Number Generation Using a Block Cipher - Stream Ciphers. **Public-Key Cryptography and RSA:** Principles of Public-Key Cryptosystems - The RSA Algorithm.

[Chapters: 6,8]

***Unit IV: Cryptographic Hash Functions: (15 hrs)**

Applications of Cryptographic Hash Functions - Two Simple Hash Functions - Hash Functions Based on Cipher Block Chaining - Secure Hash Algorithm (SHA) - SHA-3. **Message Authentication Codes:** Message Authentication Requirements - Message Authentication Functions - Requirements for Message Authentication Codes - **MACs Based on Hash Functions:**HMAC - **MACs Based on Block Ciphers:**DAA and CMAC. **Digital Signatures:** Properties, Attacks and Forgeries, Digital Signature Requirements, Direct Digital Signature - Elliptic Curve Digital Signature Algorithm.

[Chapters: 10,11,12]

Unit V: Key Management and Distribution:	(15 hrs)
Distribution of Public Keys - Public-Key Infrastructure. User Authentication: Remote User-Authentication Principles - Remote User-Authentication Using Symmetric Encryption - Personal Identity Verification. Transport-Level Security: Transport Level Security - HTTPS Secure Shell (SSH). Wireless Network Security: Wireless Security - Mobile Device Security. IP Security: IP Security Overview - IP Security Policy. [Chapters: 13,14,15,16,18]	

***Starred unit is a self study unit.**

Book for study:

Unit	Name of the Book	Author	Publishers with Edition
I-V	Cryptography and Network Security - Principles and Practice	William Stallings	Pearson Education, Sixth Edition, 2015

Books for Reference:

S.No	Name of the Book	Authors	Publisherswith Edition
1	Cryptography and Network Security	AtulKahate	Tata McGraw Hill Education, Third Edition, 2013
2	Cryptography and Network Security	Behrouz A. Forouzan	Tata McGraw Hill Education, 2016
3	Network Security and Management	Brijendra Singh	PHI Learning Private Ltd, 3e, 2015

**Entrepreneurship Courses
M.Sc Computer Science
Semester I**

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

Course: Elective I - Enterprise Resource Planning	Course Code:17MSE1
Semester: I	No. of Credits: 4
No. of hours : 90	C:T:S:A -75:7:5:3
CIA Max. Marks: 25	ESE Max. Marks: 75

(C:Contact hours, T:Tutorial, S:Seminar, A: Assignment)

Course Objectives:

- To know the real time information about business field strategies.
- To modernize and integrate business processes and systems.

Syllabus:

Unit I: Enterprise Resource Planning:	(15 hrs)
Enterprise Resource Planning: An Introduction - Defining Enterprise Resource Planning - ERP As Departmental, Corporate and Inter Organizational IS - Functional modules in ERP System -	

ERP modules - Evolution of ERP systems - Characteristics of ERP - Process integration with ERP systems - Benefits of ERP Applications - Technology behind ERP system - implementation costs - Challenges faced during ERP implementation - some important facts about ERP implementation-Examples of ERP implementation in India.

[Chapter: 1]

Unit II: Extended ERP services:

(15 hrs)

Defining extended ERP - Supply Chain Management (SCM) - Business Intelligence (BI) and ERP - ERP and E-Commerce. **Cloud ERP:** Understanding Cloud computing - Types of cloud - Cloud computing forecasts and market estimates - **Cloud ERP:** A feasible option for medium-size business.

[Chapters: 2,3]

Unit III: ERP Market and vendors:

(15 hrs)

ERP Market- ERP vendors - Service-Oriented Architecture - **ERP package Features:** Comparison and selection criteria - **ERP packages:** The Big players. Business Process Re-engineering and ERP: Defining Business process Re-engineering - Enterprise redesign principles - Business process re-engineering(Process Innovation) versus Total Quality Management (Process Improvement) - BPR and change management - Different approaches in BPR implementation - methodology for BPR implementation - Role of IT in BPR - BPR and ERP systems - BPR success/failure factors - BPR implementation cases.

[Chapters: 4,5]

***Unit IV: Planning for ERP:**

(15 hrs)

Planning for ERP implementation - Understanding organizational requirements - Understanding economic and strategic justification - Analyzing Project scope and broad implementation approach - Determining resources - comprehending top management commitment - Realizing organizational commitment to change and implementation - matching business process with the right ERP systems - Creating a budget for ERP implementation - Selecting the right ERP package - Preparing organizations for ERP implementation. **Implementation of ERP:** Designs of ERP systems - ERP implementation approaches - ERP implementation Life Cycle - **Examples:** ERP implementation Life Cycle.

[Chapters: 6,7]

Unit V: Managing ERP Projects:

(15 hrs)

Risk/Failure factors in ERP implementation - Examples of ERP failure - **Mitigating implementation Risks:** Critical success factors - management and complexity of large-scale ERP projects - Training users to use ERP systems - Evaluating ERP projects. **ERP:Going Live and Post Implementation:** preparing to Go live - strategies for migration to new ERP systems - Go-Live performance surprises - managing ERP after go live - maintenance of ERP system.

Expanding ERP boundaries: Service-Oriented architecture - Enterprise Application Integration
 - Application service provider model for ERP implementation.
 [Chapters: 8,9,10]

***Starred unit is a self study unit.**

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I-V	Enterprise Resource Planning	Dr.Ashim Raj Singla	Engage Learning India Pvt. Ltd., Second Edition,2016

Books for Reference:

S.No	Name of the Book	Authors	Publisherswith Edition
1	Enterprise Resource Planning	Dr.P.Rizwan Ahmed.	Margham Publications, Chennai, 2016
2	Enterprise Resource Planning - A Managerial Perspective	VeenaBansal	Dorling Kindersley (India) Pvt. Ltd, Licensees of Pearson Education in South Asia, 2013

**M.Sc Computer Science
Semester II**

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

Course: Core VII - Internet of Things	Course Code:17MS07
Semester: II	No. of Credits: 4
No. of hours : 75	C:T:S:A - 65:2:5:3
CIA Max. Marks: 25	ESE Max. Marks: 75

(C:Contact hours, T:Tutorial, S:Seminar, A: Assignment)

Course Objectives:

- To introduce the current vision of the Internet of Things and its impact on the real world.
- To understand the challenges that must be overcome before IoT can be deployed.
- To provide an appreciation for the standardization of IoT protocols that is necessary for IoT to become reality.

Syllabus:

Unit I: Introduction to the Internet of Things:	(13 hrs)
Introduction - History of IoT - About objects / things in the IoT - The identifier in the IoT - Enabling technologies of IoT - About the Internet in IoT. Radio Frequency Identification Technology: Introduction- Principle of RFID - Components of RFID system - Issues. [Book 1: Chapters: 1,2]	

Unit II: Wireless Sensor Networks:	(13 hrs)
Technology: History and context-The node-Connecting nodes-Networking nodes-Securing Communication-Standards and Fora. Power Line Communication Technology:	

Introduction: Overview of existing PLC technologies and standards-Architectures for Home network applications-Internet of things using PLC technology.
[Book 1: Chapters: 3,4]

Unit III: RFID Applications and Related Research Issues: (13 hrs)
Introduction-Concepts and terminology- RFID applications-Ongoing research projects. RFID Deployment for Location and Mobility Management on the Internet: Introduction-Background and related work-Localization and handover management relying on RFID-Technology considerations-Performance evaluation.
[Book 1: Chapters: 5,6]

***Unit IV: Prototyping the Physical Design: (13 hrs)**
3D Printing-Repurposing /Recycling. Prototyping Online Components: Getting Started with API-Writing New API-Real-Time Reactions -Other Protocols. **Techniques for Writing Embedded Code:** Memory Management-Performance and Battery Life-Libraries- Debugging.
[Book 2: Chapters: 5,6,7,8]

Unit V: From Prototype to Reality: (13 hrs)
Business Models: A Short History of Business Models -The Business Model Canvas-Who is the Business Model For?-Models-Finding an Internet of Things Startup-Learn Startups. Moving to Manufacture: Certification-Costs. Ethics.
[Book 2: Chapters: 9,10,11]

***Starred unit is a self study unit.**

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I-III	The Internet of Things Connecting Objects to the Web	HakimaChaouchi	Wiley India Pvt. Ltd., Reprint 2017
IV,V	Designing the Internet of Things	Adrian McEwen, Hakim Cassimally	Wiley India Pvt. Ltd., Reprint 2017

Book for Reference:

S.No	Name of the Book	Authors	Publisherswith Edition
1.	From Machine-to-Machine to the Internet of Things Introduction to a New Age of Intelligence	Jan Holler, VlasiosTsiatsis,Catherine Mulligan,StamatisKarnouskos, Stefan Avesand, David Boyle	Elsevier Ltd First Published 2014

Skill Development Courses
M.Sc Computer Science
Semester III

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

Course: Core Practical IV - Digital Image Processing	Course Code:17MSP4
Semester: III	No. of Credits: 4
No. of hours : 45	T:P - 7:38
CIA Max. Marks: 40	ESE Max. Marks: 60

(T:Tutorial, P: Practical)

Course Objectives:

- This papers aims to implement the practical aspects of Image processing and its applications.
- To gain the practical knowledge about the color image processing and its enhancement.
- It provides the implementation of Image processing and its segmentation procedure.

Syllabus:

List of Programs:	(38 hrs)
<ol style="list-style-type: none"> 1. Write a program for Histogram Display and Equalization. 2. Create a Program for Contrast Stretching. 3. Write a Program to Sharpen an image. 4. Create a Program to process an Image Enhancement mechanism. 5. Write a Program for Color Processing. 6. Write a Program for Compressing an Image. 7. Perform a program using Morphological Image Processing. 8. Write a Program for Image Segmentation. 9. Write a Program for Edge Detection algorithm. 10. Write a Program to classifying the various object of an image. 	

M.Sc Computer Science
Semester III

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

Course: Core Practical V - Android Programming	Course Code:17MSP5
Semester: III	No. of Credits: 4
No. of hours : 30	T:P -3:27
CIA Max. Marks: 40	ESE Max. Marks: 60

(T:Tutorial, P: Practical)

Course Objectives:

- Know the components and structure of mobile application development frameworks for Android and based mobiles.
- Understand how to work with various mobile application development frameworks.
- Learn the basic and important design concepts and issues of development of mobile applications.
- Understand the capabilities and limitations of mobile devices.

Syllabus:

List of Programs:	(27 hrs)
<ol style="list-style-type: none">1. Develop an application that uses GUI components, Font and Colors.2. Develop an application that uses Layout Managers and event listeners.3. Write an application that draws basic graphical primitives on the screen.4. Develop an application using database.5. Create an application that implements Multi-threading.6. Develop a native application that uses GPS location information.7. Implement an application that writes data to the SD card.8. Implement an application that creates an alert upon receiving a message.9. Design a mobile application that creates alarm clock.10. Develop a native calculator application.	