Curriculum Design
SRI G.V.G VISALAKSHI COLLEGE FOR WOMEN (AUTONOMOUS)
Affiliated to Bharathiar University
B.Sc Information Technology
Scheme of Examination – CBCS & OBE Pattern
(For the Students admitted from the academic year 2021 – 2022 onwards)

Sem	Course Code	Course Title	Ins. Hrs/ Week	Dur. Hrs.	CIA Marks	ESE Marks	Total Marks	Credits
I	121TA1/ 121MY1/ 121HD1/ 121FR1	Part I - Language I	6	3	50	50	100	**3**
	121EN1	Part II - English I	6	3	50	50	100	**3**
	121G01	Part III - Core I – C Programming	5	3	50	50	100	**5**
	121GP1	Core Practical I - C Programming	5	3	50	50	100	**3**
	121AG1	Allied I – Digital Principles & Computer Architecture	6	3	50	50	100	**4**
	121VEG	Part IV-Value Education Human Values and Gender Equity	2	2	50	-	50	**1**
II	221TA2/ 221MY2/ 221HD2/ 221FR2	Part I - Language II	6	3	50	50	100	**3**
	221EN2	Part II- English II	6	3	50	50	100	**3**
	221G02	Part III- Core II –C++ Programming with Data Structures	6	3	50	50	100	**6**
	221GP2	Core Practical II- C++ Programming with Data Structures	4	3	50	50	100	**2**
	221AS2/ 221AG2/ 221AK2/ 221AF2	Allied II-Discrete Mathematics	6	3	50	50	100	**4**
	221EVS	Part IV- Environmental Studies	2	2	50	-	50	**1**

III		**Part III**						
	321G03	Core III- Python Programming	5	3	50	50	100	**5**
	321S04/ 321G04/ 321K04	Core IV- Operating System	5	3	50	50	100	**5**
	321G05	Core V- Database Management System using MongoDB	4	3	50	50	100	**4**
	321GP3	Core Practical III- Programming with Python and MongoDB	5	3	50	50	100	**3**
	321AS3/ 321AG3/ 321AK3	Allied III- Operations Research	6	3	50	50	100	**4**
	321NTA	Part – IV - Non-Major Elective: Animation	2	2	50	-	50	**2**
	321GS1	Part – IV – Skill Enhancement Course I - Professional English for IT	3	3	100	-	100	**2**
	321NGA	Part IV- General Awareness - Information Security	**Self Study**	-	50	-	50	**Grade**
IV		**Part III**						
	421S06/ 421G06	Core VI- Computer Networks	5	3	50	50	100	**5**
	421G07	Core VII- Web Programming	4	3	50	50	100	**4**
	421S08/ 421G08	Core VIII- Software Engineering	5	3	50	50	100	**5**
	421GP4	Core Practical IV- Web Programming	5	3	50	50	100	**3**
	421AG4	Allied IV – Introduction to Artificial Intelligence	6	3	50	50	100	**4**
	421NGA	Part IV- General Awareness	2	2	50	-	50	**2**
	421GS2	Part IV- Skill Enhancement Course II: Creative Editing Tools	3	3	100	-	100	**2**
	421GA1/ 421GA2	Part V-Advanced Learners Course I – Enterprise Resource Planning / Online Course (MOOC)	-	3	-	100	100	**4***

		Part III						
V	521G09	Core IX- Programming with Java and Android	5	3	50	50	100	**5**
	521S10/ 521G10	Core X - Data Mining	5	3	50	50	100	**5**
	521G11	Core XI-Security in Information Technology	6	3	50	50	100	**5**
	521GP5	Core Practical V- Programming with Java and Android	5	3	50	50	100	**3**
	521SE1/ 521GE1/ 521KE1 521SE2/ 521GE2/ 521KE2 521SE3/ 521GE3/ 521KE3	Elective I – Introduction to IoT / Introduction to Data Science/ Trends in Computing	6	3	50	50	100	**5**
	521GS3	Part IV -Skill Enhancement Course III: Web designing using Word Press	3	3	100	-	100	**2**
	521NGO/ 521NGA	Part IV- General Awareness -Online MOOC or Swayam Courses/ Life Skills	**Self Study**	-	50	-	50	**Grade**
VI		Part III						
	621G12	Core XII- PHP Programming	5	3	50	50	100	**5**
	621G13	Core XIII- Geographical Information Systems	5	3	50	50	100	5
	621GP6	Core Practical VI -PHP Programming	5	3	50	50	100	3
	621SE4/ 621GE4/ 621KE4 621SE5/ 621GE5/ 621KE5 621SE6/ 621GE6/ 621KE6	Elective II- Big Data Analytics/ Mobile Computing/ Bioinformatics	6	3	50	50	100	**5**

VI	621GPV	Project and Viva Voce	6	3	50	50	100	5
	621GS4	Part IV: Skill Enhancement Course IV: Data Visualization Tools	3	3	100	-	100	2
	621NGA	Part IV- General Awareness –Professional Ethics	**Self Study**	-	50	-	50	**Grade**
	621EX1/ 621EX2/ 621EX3/ 621EX4/ 621EX5	Part V: Extension Activity NCC/NSS/YRC/RRC/Games	-	-	50	-	50	**2**
	621GA3/ 621KA3 621GA4	Part V:Advanced Learners Course II-Introduction to Robotics / Online Course (MOOC)	-	3	-	100	100	4*
		Total					**3800**	**140**

*Starred credits are treated as additional credits (Optional)

B.Sc. Information Technology
Semester I
(For the students admitted from the academic year 2021– 2022 onwards)

Course : Part III - Core I C Programming	Course Code : 121G01
Semester : I	No. of Credits: 5
No. of hours : 75	C:T:S 65: 5:5
CIA Max. Marks : 50	ESE Max. Marks : 50

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

Syllabus:

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 : 2,3,4)

Unit II	13 Hrs

Managing Input and Output Operations - Decision Making and Branching - Decision Making and Looping.
(Chapters : 5,6,7)

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 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 - Nesting of Functions - Recursion - The Scope, Visibility and Lifetime of Variables.
(Chapters : 8,9,10)

Unit IV	13 Hrs

Structures and Unions: Introduction - Defining a Structure - Declaring Structure Variables - Unions.

Pointers: Introduction, Understanding Pointers - Accessing the Address of a Variables - Declaring Pointer Variables - Initialization of Pointer Variables – Array of Pointers – Pointers as Function Arguments.
(Chapters : 11,12)

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 : 13,14)

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Programming in ANSI C	E.Balagurusamy	Tata McGraw Hill Education (India) Private Limited, New Delhi, 8th Edition, 2019.

Book for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	LetUs C	Yashavant Kanetkar	BPB Publications, First Edition , 2012.

E-Resources:

1. https://aspenlinoa.weebly.com/blog/ashok-n-kamthane-computer-programming-ebook.
2. https://www.pdfdrive.com/fundamentals-of-computer-programming-with-c-d18925361.html.

3. https://www.programiz.com/c-programming: Learn C Programming. The definitive Guide.
4. http://www.cprogramming.com/: C Programming and C++ Programming.

B.Sc. Information Technology
Semester I
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part III - Core Practical I - C Programming	Course Code : 121GP1
Semester : I	No. of Credits: 3
No. of hours : 75	T:P 10 : 65
CIA Max. Marks : 50	ESE Max. Marks : 50

(T:Tutorial, P:Practical)

Syllabus:

List of Programs: 65 Hrs
C Programming: 1. Program to calculate the sum of odd & even numbers.   2. Program to generate Fibonacci Series.   3. Write a program to find Even numbers from a List using While loop.   4. Write a program to find the Largest and Smallest elements in a Array.   5. Find out the Area of Rectangle using Function.   6. Create a program to Reverse Number to check if it is a Palindrome or Not.   7. Finding the number of Vowels, Consonants and white spaces in a string.   8. Write a program using Structure.   9. program to illustrate the concept of unions.   10. Comparing String using Conditional Statements.   11. Create a program to Iterate List of Strings using For Loop.   12. Program to Illustrate Pass by Reference and Pass by Value.   13. Program to Display its own source code as its output using File open().   14. Program creates a file & store information   15. Illustrate User Authentication.

E-Resources :
1. http://nptel.ac.in/courses/106105085/
2. http://raptor.martincarlisle.com/
3. https://scratch.mit.edu/
4. www.leetcode.com
5. www.thenewboston.com
6. www.codesdope.com

B.Sc. Information Technology
Semester II
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core II –C++ Programming with Data Structures	Course Code: 221G02
Semester: II	No. of Credits: 6
No. of hours : 90	C:T:S 75:10:5
CIA Max. Marks: 50	ESE Max. Marks:50

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

Syllabus:

Unit I	15 Hrs

Classes And Objects : Introduction – C Structures Revisited - Specifying a class – Defining member functions – C++ Program with class – Making an outside function inline - Nesting of member functions - Private member functions – Arrays within class – Memory allocations for objects – Static Data members – static member functions – Arrays of objects – Objects as function arguments – Friendly functions – Returning objects – Const member functions – Pointers to members – Local classes.
Constructors And Destructors : Introduction – Constructors – Parameterized constructors - Multiple Constructors in a class - Constructors with default arguments – Dynamic Initialization of objects – Copy constructor – Dynamic Constructor – Constructing two-dimensional arrays - Const Objects – Destructors.
Book 1: (Chapters : 5,6)

Unit II	15 Hrs

Operator Overloading and Type Conversion : Introduction – Defining Operator Overloading – Overloading unary operators – Overloading binary operators - Overloading binary operators using friends – Manipulation of strings using operators -Rules for overloading operators – Type Conversions. Inheritance: Extending Classes : Introduction – Defining derived classes – Single inheritance – Making a private member inheritable – Multilevel inheritance – Multiple inheritance – Hierarchical inheritance – Hybrid inheritance – Virtual base classes - Abstract classes – Constructors in derived classes – Member classes: Nesting of classes.
Book 1 : (Chapters :7,8)

Unit III	15 Hrs

Pointers, Virtual Function and Polymorphism: Introduction – Pointers – Pointers to objects – This Pointer – Polymorphism – Pointers to derived classes – Virtual functions – Pure virtual functions – Virtual constructors and destructors. Working with Files: Sequential input and output operations – updating a file:Random access – Error handling during file operations – Command-line arguments. Exception Handling: Introduction – Basics of exception handling – Exception handling mechanism. Manipulating Strings: Introduction - Creating (string) objects – Manipulating string objects – Relational operations – String Characteristics – Accessing characters in strings – Comparing and swapping.
Book 1:(Chapters : 9,11,13,15)

Unit IV	15 Hrs

Introduction and Overview: Introduction - Basic Terminology: Elementary Data Organization - Data Structures. Arrays, records and pointers: Introduction-Linear Arrays- Sorting: Bubble Sort - Searching; Linear Search - Binary Search. Linked Lists: Introduction - Linked Lists - Representation of Linked List in Memory - Traversing a Linked List - Insertion into a Linked List - Deletion from a Linked List.

Stacks, queues, Recursion: Introduction – Stacks - Array Representation of Stacks - Quick sort, an applications of stacks- Towers of Hanoi - Queues.
(Book 2: Chapters : 1,4,5,6)

Unit V	15 Hrs

Trees: Introduction- Binary Trees - Representing Binary Trees in Memory - Binary Search Trees - Searching and Inserting in Binary Search Trees - Deleting in a Binary Search Trees - AVL Search Trees. Graphs and their Applications: Introduction - Graph Theory Terminology - Sequential Representation of graphs; adjacency matrix; path matrix .Sorting and Searching: Insertion Sort - Selection Sort - Merging - Merge Sort.

File Structures: Introduction: Secondary storage device - Definitions and Concepts - Physical Structure of Hard Disk - File Operations - File Organization: Sequential file Organization - Indexed Sequential File Organization – Direct File Organization - External Sorting: External Merge Sort – Multi- way merge sort.
(Book 2: Chapters : 7,8,9)
(Book 3: Chapter : 6)

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I, II & III	Object Oriented Programming with C++	E.Balagurusamy	McGraw Hill Education (India) Private Limited,7e (Seventh Edition) Copyright@ 2018
IV & V	Data Structures	G A VijayalakshmiPai	Tata McGraw Hill Education Private Limited, New Delhi, 22 Reprints 2012.
V	Data Structures	R.Venkatesan, S.Lovelyn Rose	Wiley India Private Limited, New Delhi, First Edition, 2015.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Object-Oriented Programming in C++	Rajesh K.Shukla	Wiley India Pvt.Ltd, Reprint 2016.
2.	Data Structures	Seymour Lips Chutz	Tata McGraw Hill Education Pvt. Ltd., 21st Reprint, 2012.
3.	Data Structures	S.K.ManjuBargavi	Sams Publishers Private Limited, Chennai, First Edition, 2012.

E-Resources:
1. https://www.tutorialspoint.com/cplusplus/index.htm
2. https://www.learncpp.com/
3. https://www.tutorialspoint.com/cplusplus/cpp_overview.htm

4. https://www.geeksforgeeks.org/cpp-tutorial/
5. http://lib.mdp.ac.id/ebook/Karya%20Umum/Dsa.pdf.
6. http://www.portcity.edu.bd/ELibrary/CSE/DatastructurewithC.pdf
7. https://www.pdfdrive.com/principles-of-data-structures-using-c-and-c-e19847224.html

B.Sc. Information Technology
Semester II
(For the Students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core Practical II - C++ Programming with Data Structures	Course Code: 221GP2
Semester: II	No. of Credits: 2
No. of hours: 60	P : T 52 : 8
CIA Max. Marks: 50	ESE Max. Marks: 50

(P: Practical , T: Tutorial)

Syllabus:

List of Programs: 52 Hrs
1. Program to implement the concept of creating class and object.   2. Program to implement the concept of friend function to find the greatest number among given three numbers.   3. Program to implement the concept of function overloading to find the area of the circle.   4. Program to implement the concept of constructor to perform the sum of two numbers.   5. Program to implement the concept of copy constructor to perform the arithmetic operations of given numbers.   6. Program to implement the concept of multiple Inheritance for creating Student Details.   7. Program to implement the concept of Hierarchical inheritance for creating employee Details.   8. Program to implement the concept of pointers to objects for creating student mark sheet.   9. Program to implement the concept of I/O file operations in file.   10. Program to implement the operation of reading and writing a file in single file.   11. Program to implement the concept of Stack operations.   12. Program to implement the concept of Queue operations.   13. Program to implement the concept of Linked List.   14. Program to implement the bubble sort for given set of numbers.   15. Program to implement the Quick sort for given set of numbers.   16. Program to implement the concept of Towers of Hanoi.   17. Program to implement the concept of Binary search.   18. Program to implement the concept of evaluation of expression.

B.Sc. Information Technology
Semester III
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III- Core III- Python Programming	Course Code: 321G03
Semester: III	No. of Credits: 5
No. of hours : 75	C:T:S 65:5:5
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I: **13 Hrs**

Python Basics: Introduction, Data Types in Python, Mutable versus Immutable, Type Casting (also called Type Conversion) in Python,-Input to a Python Program.
Operators in Python: Introduction Assignment (and reassignment), Overview of Operators.
Flow Control: Using 'if'-While Loop-for Loop- range Function.
(Chapters:2,3,6)

Unit II: **13 Hrs**

.   Lists: Introduction- Some basic concepts of Lists- Creating, Traversing and Slicing Lists -List Functions and Methods- Nested Lists and Using them as matrix.
Directories: Introduction- Basics of Dictonary-1- Basic concepts-2- Dictionary Functions and Methods- Dictionary Methods.
Tuples: Introduction- Some basic concepts regarding Tuples-some Additional Topics.
(Chapters:8,9,10)

Unit III: **13 Hrs**

Strings: Introduction- Creating, Initializing and Accessing Elements of a string- Traversing a String- String Operations- Difference between Functions, Methods and Attributes-String Functions versus String Methods- A Short Note on String Module.
Functions: Introduction- Need of Functions- Basics of Functions- defining your own functions and function syntax- Passing variables in Function Call- Function Arguments- some special functions.
 Regular Expression: Introduction-basic concepts of regular Expressions-Special Characters, Groups of Characters and Anchors- Understanding Re Module- Some Important methods of the ReModule.
(Chapters:7,4,5,11

Unit IV: **13 Hrs**

  Object-Oriented Programming with Python: Introduction, basic concepts of Object-Oriented Programming- OOP concepts related specifically to Python- some common "Built in" Attributes and Methods of a Python Modules and classes.

  Inheritance and Namespace: Introduction- Basics of Inheritance in Python- Single Inheritance- Multiple Inheritance,- Concept of Namespace.

(Chapters:13,14)

Unit V: **13 Hrs**

  File Operations in Python: Introduction- basics of file Operations in Python- Reading and Writing a File- Some more Advanced concepts in File Operations- some useful Methods of the OS Module- Writing small scripts for Inserting Data in a File.

  Python Exceptions: Introduction- basic concepts of Exceptions in Python- User-defined Exceptions-Built-in Exceptions. SymPy:Sets in SymPy: FiniteSet- Interval- EmptySet- Intersection- Union-ConditionSet-Complement-ImageSet-Set Operations in SymPy.

(Chapters:15,16,19)

Book for study:

Unit	Name of the Book	Authors	Publisher with Edition
1-V	Python Programming	Anurag Gupta , G.P.Biswas	McGraw Hill,2019.

Books for Reference:

S.No.	Name of the Book	Authors	Publishers with Edition
1.	Core Python Applications Programming	Wesley J. Chun	Pearson India Education Sevices Pvt.Ltd,2020.
2.	Think Python: How to Think Like a Computer Scientist	Allen B. Downey	2nd edition, Updated for Python 3, Shroff/O'Reilly Publishers, 2016
3.	An Introduction to Python – Revised and updated for Python 3.2	Guido van Rossum and Fred L. Drake Jr	Network Theory Ltd., 2011

E-Resources :

  1 "The Python Tutorial", http://docs.python.org/release/3.0.1/tutorial/
  2 Beginning Perl, https://www.perl.org/books/beginning-perl/
  3 http://spoken-tutorial.org
  4 https://starcertification.org/Certifications/Certificate/python

Course: Part III – Core Practical III- Programming with Python and MongoDB	Course Code:321GP3
Semester: III	No. of Credits: 3
No. of hours :75	P:T 65:10
CIA Max. Marks: 50	ESE Max. Marks:50

(P: Practical, T: Tutorial)

Syllabus:

List of Programs: 65 Hrs
Python 1. Write a python program that displays the following information: Your name, Full address Mobile number, College name, Course subjects. 2. Write a python program to find the largest three integers using if-else and conditional operator. 3. Write a python program that asks the user to enter a series of positive numbers (The user should enter a negative number to signal the end of the series) and the program should display the numbers in order and their sum 4. Write recursive functions for GCD of two integers. 5. Write recursive functions for the factorial of positive integer 6. Write recursive functions for Fibonacci Sequence up to given number n. 7. Write a python program to sort a given sequence: String, List and Tuple. 8. Write a python program to make a simple calculator. 9. Write a python program to find the sum of array of numbers. 10. Write a python program to find the distance between two points. 11. Write a python program for Inheritance. 12. Write a python program to slice a given list. 13. Write a python program to count the number of words. 14. Write a python program to copy a file. **MongoDB** 1. Program to implement MongoDB Create & Insert Database 2. Program to implement MongoDB Query Document 3. Program to implement MongoDB Query Modification 4. Program to implement Search Text using MongoDB 5. Program to implement MongoDB Replication 6. Program to implement MongoDB Indexing

B.Sc. Information Technology
Semester III
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part IV – Non Major Elective :Animation	Course Code: 321NTA
Semester: III	No. of Credits: 2
No. of hours : 30	P:T 26:4
CIA Max. Marks: 50	ESE Max. Marks: -

(P: Practical, T: Tutorial)

Syllabus:

List of Programs	26 Hrs

List of Programs   **26 Hrs**

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.

B.Sc. Information Technology
Semester IV
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III- Core VII - Web Programming	Course Code: 421G07
Semester: IV	No. of Credits: 4
No. of hours : 60	C:T:S 52:4:4
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I:	10 Hrs

Introduction to Programming: Introducing a Programming Language - High-Level Language - Low-Level Language - Converting Source Code to Machine Language Code - Explaining Program Development Cycle.Introducing .NET Framework 4.0 and Visual Studio 2010: Exploring the Benefits of .NET Framework - Exploring the versions of .NET Framework - Explaining .NET framework 4.0 Architecture - Exploring New Features of .NET Framework 4.0 - Installing, Opening and Exploring Visual Studio 2010 - Introducing the key enhancements in Visual Studio 2010 IDE – Developing Applications in Visual Studio 2010.

VISUAL BASIC 2010: Getting Started with Visual Basic 2010: New features of Visual Basic 2010 - Visual Basic 2010 Keywords - Operators - Operator precedence - Data types in Visual Basic 2010 - Visual Basic Statements – Variables – Constants – Arrays – Enumerations.
(Chapters : 1,2)

Unit II:	10 Hrs

Windows Forms: Introducing the Form class - Performing common form operations - Creating Message boxes - Creating Input Boxes - Creating Dialog boxes - Handling events - Adding comments to the code.Windows Forms Controls-I: Introducing the control class - Label - Textbox – Button – RadioButton - CheckBox - Combobox - Listbox - GroupBox Panel - Picturebox - Timer - ProgressBar. Windows Forms Controls-II: Toolstrip – Menustrip – Statusstrip - Working with Dialog Boxes.
(Chapters : 2,3,4)

Unit III:	12 Hrs

Windows Presentation Foundation: Exploring the improvements in WPF 4.0 - Explaining WPF 4.0 Architecture - Describing types of WPF Applications - Exploring WPF 4.0 Designer - Using XAML in WPF - Working with WPF controls - Working with resources and styles.

LINQ in Visual Basic 2010: Creating a simple LINQ Query - Working with standard query operators - Implementing LINQ to ADO.NET - Using anonymous types in queries - Using lambda expressions in LINQ Queries - Exploring parallel LINQ.
(Chapters : 5,7)

Unit IV:	10 Hrs

Introduction to ASP.NET 4.0: Exploring versions of ASP.NET - Describing benefits of ASP.NET - Exploring new features in ASP.NET 4.0 - Exploring ASP.NET 4.0 web applications - Explaining ASP.NET 4.0 provider model - Explaining ASP.NET 4.0 coding models - Implementing code sharing - Compiling an ASP.NET 4.0 web application - Understanding dynamic compilation in ASP.NET 4.0

Standard Controls: Introducing the web control class - Label - Textbox - Button - Image button - Listbox - Radiobutton - Checkbox - Table - Wizard - Calendar – AdRotator Control. Navigation Controls: Working with the SiteMapPath control - Working with the Menu control - Working with the TreeView Control.
(Chapters : 1,2,3)

Unit V:	10 Hrs

Validation Controls: Introducing the BaseValidator class - RequiredFieldValidator - RangeValidator - RegularExpressionValidator - CompareValidator - CustomValidator – ValidationSummary.Login Controls: Creating a User Account in ASP.NET 4.0 - Login - LoginName - LoginView -LoginStatus - Passwordrecovery - Configuring the web.config File for Password Recovery. Database Controls: Working with ADO.NET - Introducing data source - Working with Data-Bound controls.

(Chapters : 4,5,6)

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I -V	.NET 4.0 PROGRAMMING Course Kit	Vikas Gupta	Dreamtech Press, 2014.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Visual Basic .NET Programming Bible	Bill Evjen,JasonBeres,	Wiley India(P) Ltd,NewDelhi.Reprint 2012
2.	.NET 4.5 programming	Kogent Solutions Inc	BLACK BOOK", Dreamtech press 2013.

E-Resources :

1.http://csharp-video-tutorials.blogspot.comp

2.http://file.allitebooks.com/20150526/Practical%20Database%20Programming%20with %20Visual%20Basic.NET,%202nd%20Edition.pdf

3.https://www.visualchart.com/ContentManagement/Development/Manuals/EN/vbN et_programming.pdf

B.Sc. Information Technology
Semester IV
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III – Core Practical IV - Web Programming	Course Code: 421GP4
Semester: IV	No. of Credits: 3
No. of hours : 75	P: T 65 : 10
CIA Max. Marks: 50	ESE Max. Marks: 50

(P: Practical, T: Tutorial)

Syllabus : VB.NET   **65 Hrs**
1. Implement the Font application using VB.Net.
2. Develop the Notepad application using VB.Net.
3. Create a program for the application of Simple Calculator using VB.Net.
4. Write a code for the Manipulate of file such as Read and Write operations.
5. Display the Student details and calculate total, average, Grade using database connectivity.
6. Write a simple program that displays an appropriate message when the illegal operation is performed using error handling technique in VB.Net.

#ASP.Net
1. Design a website for employee payroll calculation. Get basic pay as input from the user and to display the net and gross pay by calculating allowances and deductions
2. Create a website for job seeker registration and to get the user data as input. Validate the data using validator controls and display the welcome page.
3. Create a webpage that contains ad rotator control with key word filter concept.
4. Design a webpage that can perform file uploading using the file upload control and store the file in a temporary folder.
5. Design a website to verify the user login and password using data base connectivity.
6. Write a code to receive an user feedback using a form and store it in a database.

B.Sc. Information Technology
Semester V
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core IX - Programming with Java and Android	Course Code: 521G09
Semester: V	No. of Credits: 5
No. of hours : 75	C:T:P: 65:5:5
CIA Max. Marks: 50	ESE Max. Marks:50

(C: Contact hours, T: Tutorial, P: Practical)

Syllabus:

Unit I: **12 Hrs**
Overview of Java Language: Introduction - Simple Java program -Java program structure - Java tokens- Java Statements - Java Virtual Machine -. Constants ,Variables and Data types - Operators and Expressions. Decision Making and Branching.
Book 1 : (Chapters: 3,4,5,6)

Unit II: **13 Hrs**
Decision Making and Looping: The While statement-the do Statement - The for Statement - Jumps in loops - labeled loops - Classes, Objects and Methods- Arrays, Strings and Vectors.
Book 1 : (Chapters :7,8,9)

Unit III:	14 Hrs

Interfaces: Multiple Inheritance – Packages: Putting classes together - Multi Threaded Programming - Managing Errors and Exceptions- Applet Programming.
Book 1 : (Chapters:10,11,12,13,14)

Unit IV:	13 Hrs

Graphics programming using AWT, Swing and Layout Manager - Managing Input /Output Files in JAVA: Introduction – concept of streams – Stream classes – Byte Stream classes- Character Stream classes- Using streams – Other Useful I/O classes – Using the File class – I/O Exceptions – creation of files – Reading / Writing characters/ Bytes – Handling primitive data types – Random Access Files – Java Database Connectivity.

Book 1 : (Chapters: 15,16,18)

Unit V:	13 Hrs

Getting started with Android Programming: What is Android-Obtaining the required tools-Creating your first android application - Getting to know the android user interface – Designing your user interface with views : using basic views -Displaying pictures and menus with views : Using image views to display pictures – using menus with views.
(Book 2: Chapter 1,3,5,8)

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I-IV	Programming With JAVA	E. Balagurusamy	McGraw Hill Education(India) Private Limited, 6th Edition, 2019
V	Beginning Android 4 application development	Wei-Meng-Lee	Wiley,2016.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Introduction to Programming in Java	Robert Sedgewick & Kevin Wayne	Addison Wesley 2017
2.	Beginning Android Programming with Android Studio	J.F.Dimarzio	Wrox Publications 2017
3.	Java All-in-One For Dummies , 4th Edition	Doug Lowe	John Wiley & Sons, Inc., Hoboken, New Jersey

E-Resources :
1. https://www.pdfdrive.com/java-programming-e22050114.html
2. https://www.programiz.com/java-programming

3. https://www.javatpoint.com/java-tdutorial
4. https://www3.ntu.edu.sg/home/ehchua/programming/java/J4a_GUI_2.html
5. https://www.geeksforgeeks.org/student-grade-calculator-using-java-swing/
. 6. http://www.developer.android.com
7. http://developer.android.com/guide/components/fundamentals.html

B.Sc. Information Technology
Semester V
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core XI - Security in Information Technology	Course Code: 521G11
Semester: V	No. of Credits: 5
No. of hours : 90	C:T:S 75:10:5
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I:	15 Hrs

Information Security Overview: The Importance of Information Protection-The Evolution of Information Security-Justifying Security Investment-Security Methodology, How to Build a Security Program-The Impossible Job-The Weakest Link-Strategy and Tactics, Business Processes vs. Technical Controls.Risk Analysis: Threat Definition-Types of Attacks-Risk .Analysis.Secure Design Principles: The CIA Triad and Other Models-Defense Models- Zones of Trust- Best Practices for Network Defense.
(Chapters:1,2,4)

Unit II:	15 Hrs

Authentication and Authorization: Authentication-Authorization Encryption: A Brief History of Encryption-Symmetric-Key Cryptography-Public Key Cryptography-Public Key Infrastructure..Storage Security: Storage Security Evolution-Modern Storage Security-Risk Remediation-Best Practices.Database Security: General Database Security Concepts-Understanding Database Security Layers-Understanding Database-Level Security-Using Application Security- Database Backup and Recovery-Keeping Your Servers Up to Date-Database Auditing and Monitoring.
(Chapters:7,10,11,12)

Unit III: **15 Hrs**

Secure Network Design: Introduction to Secure Network Design, Performance-Availability-Security.Network Device Security: Switch and Router Basics-Network Hardening.Firewalls: Overview, The Evolution of Firewalls-Core Firewall Functions-Additional Firewall Capabilities-Firewall Design.Wireless Network Security: Radio Frequency Security Basics- Data-Link Layer Wireless Security Features- Flaws, -and Threats- Wireless Vulnerabilities and Mitigations-Wireless Network Hardening Practices and Recommendations-Wireless Intrusion Detection and Prevention-Wireless Network Positioning and Secure Gateways.

(Chapters: 13,14,15,17)

Unit IV: **15 Hrs**

Intrusion Detection and Prevention Systems: IDS Concepts-IDS Types and Detection Models-IDS Features-IDS Deployment Considerations-Security Information and Event Management (SIEM).Voice over IP (VoIP) and PBX Security: Background-VoIP Components-VoIP Vulnerabilities and Countermeasures-PBX-TEM: Telecom Expense Management.Operating System Security Models: Operating System Models-Classic Security Models- Reference Monitor- Trustworthy Computing-International Standards for Operating System Security.

(Chapters:18,19,20)

Unit V: **15 Hrs**

Virtual Machines and Cloud Computing: Virtual Machines-Cloud Computing.
Secure Application Design: Secure Development Lifecycle-Application Security Practices-Web Application Security-Client Application Security-Remote Administration Security. Physical Security: Classification of Assets-Physical Vulnerability Assessment-Choosing Site Location for Security-Securing Assets: Locks and Entry Controls-Physical Intrusion Detection.

(Chapters:24,26,34)

Book for Study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	The Complete Reference: Information Security	Mark Rhodes-Ousley	McGraw-Hill publisher, 2nd Edition 2013

Books for Reference:

S.No	Name of the Book	Authors	Publishers with Edition
1.	Essential Cybersecurity Science	Josiah Dykstra	O'Reilly publisher, 5th Edition 2017
2.	Principles of Computer Security: CompTIA Security+ and Beyond	Wm.Arthur Conklin, Greg White	McGraw-Hill publisher, 2nd Edition 2010

E-Resources :
1. http://www.dataminingbook.info
2. https://www.pdfdrive.com/data-mining-d24225501.html
3. http://file.allitebooks.com/20150714/Data%20Mining-20Theories,%20Algorithms,%20and%20Examples.pdf

B.Sc. Information Technology
Semester V
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core Practical V- Programming with Java and Android	Course Code: 521GP5
Semester: V	No. of Credits: 3
No. of hours : 75	P: T 65:10
CIA Max. Marks: 50	ESE Max. Marks: 50

(P-Practical, T - Tutorial)

Syllabus:

List of Programs: 65 Hrs
1. Write a program to calculate the factorial using recursion.
2. Create a program to reverse the string using arrays.
3. Create a program for calculator using Switch Case.
4. Write a program to calculate the electricity bill using inheritances.
5. Write a program to perform the arithmetic operation using Method Overloading.
6. Write a program to create an employee payroll processing using packages.
7. Create a program to perform the keyboard events in an applet.
8. Create a program for drawing bar charts using an applet.
9. Write a program to use the check boxes controls in AWT.
10. Create a student database using JDBC connectivity.
11. Develop a simple android application that changes font color and size of the text.
12. Create and send notifications using android.
13. Develop an android program to change the background of your activity.
14. Write an android code to change the image displayed on the screen.
15. Develop a mobile application to create a simple menu.
16. Build a simple android application for sending and receiving SMS message.

B.Sc. Information Technology
Semester VI
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core XII - PHP Programming	Course Code: 621G12
Semester: VI	No. of Credits: 5
No. of hours : 75	C:T:S:65:5:5
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I:	13 Hrs

The Absolute Basics Of Coding In PHP: Mixing PHP and HTML-Introducing Variables and Operators–Using PHP Variables.
(Chapters: 4,5,6)

Unit II:	13 Hrs

Displaying Dynamic Content - Sending E-Mail - Using File System - Uploading Files to Website.
(Chapters: 7,8,9,10)

Unit III:	13 Hrs

Getting To Know Your MySQL Database: Establishing a Connection and Poking Around- Creating a Database Table- Inserting Data into the Table- Selecting and Displaying Data.
(Chapters: 11,12,13,14)

Unit IV:	13 Hrs

User Authentication And Tracking : Database-Driven User Authentication- Using Cookies- Session Basics
(Chapters: 15,16,17)

Unit V:	13 Hrs

Creating Your Own Contact Management System: Planning Your System- Adding Contacts -Modifying Contacts - Deleting Contacts - Working with Contacts
(Chapters:18,19,20,21,22)

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	PHP 6 Fast and Easy Web Development	Julie Meloni, Matt Telles	1st Edition, Cengage Learning IndiaEdition,2008.

Books for Reference:

Unit	Name of the Book	Authors	Publishers with Edition
1	PHP6	JulieMeloni,MattTelles,	CengageLearningIndiaEdition,2009
2	Beginning PHP and MySQL	W.JasonGilmore	Novice to Professional, Fourth Edition,2011.
3	Head First PHP and MySQL	Lynn Beiyhley and Michael Morrison	"O'Reilly media Inc., 2010.

E-Resources :

1. https://www.pdfdrive.com/core-php-programming-using-php-to-build-dynamic-web sites- d21390536.html.
2. www.freebookcentre.net/web-books-download/PHP-Reference-Beginner-to-Intermediate-PHP-5.html.
3. http://file.allitebooks.com/20160521/PHP%20and%20MySQL-%20Create%20-%20Modify%20- %20Reuse.pdf

B.Sc. Information Technology
Semester VI
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III – Core Practical VI - **PHP Programming**	Course Code:621GP6
Semester: VI	No. of Credits: 3
No. of hours :75	P:T 65:10
CIA Max. Marks: 50	ESE Max. Marks:50

(P: Practical, T: Tutorial)

Syllabus:

List of Programs	65 Hrs

1. Write a PHP program to find the factorial of a number using forms.
2. Write a PHP program to design a login form using Conditional Statements.
3. Write a PHP program to design a visiting card.
4. Design a simple web page to generate multiplication table for a given number using PHP.
5. Design a web page that should compute one's age on a given date using PHP.
6. Write a PHP program to download a file from the server.
7. Write a PHP program to store the current date and time in a COOKIE and display 'Last Visited' date and time on the web page.
8. Write a PHP program to store page views count in SESSION, to increment count on each refresh and to show the count on web page.
9. Write a PHP program to design a calendar for the current year.
10. Write a PHP Program to create a time table for the current semester.
11. Develop a PHP program to display student information using MYSQL table.
12. Develop a PHP program to design a college application form using MYSQL table

B.Sc Computer Science /Information Technology/ BCA
Course Designed by Department of Computer Applications
Semester VI
(For the students admitted during the academic year 2021 – 2022 onwards)

Course: Part III - Elective II Bioinformatics	Course Code: 621SE6/621GE6/621KE6
Semester: VI	No. of Credits: 5
No. of hours: 90	C: T -75:15
CIA Max. Marks: 50	ESE Max. Marks: 50

(C: Contact hours, T: Tutorial)

Syllabus:

Unit I:	15 Hrs

Introduction- What is Bioinformatics? - Goals - Scope - Applications - Limitations - New themes.

Introduction to Biological Databases - Types of Databases - Biological Databases - Pitfalls of Biological Databases - Information Retrieval from Biological Databases.

Unit II:	15 Hrs

Database Similarity Searching: Unique Requirements of Database Searching- Heuristic Database Searching - Basic Local Alignment Search Tool (BLAST) - FASTA - Comparison of FASTA and BLAST - Database Searching with the Smith–Waterman Method.

Multiple Sequence Alignment: Scoring Function – Exhaustive Algorithm – Heuristic Algorithm – Practical Issues.

Unit III:	15 Hrs

Protein Structure Basics: Secondary Structures - Tertiary Structures - Determination of Protein Three-Dimensional Structure - Protein Structure Database.

Protein Secondary Structure Prediction - Secondary Structure Prediction for Globular Proteins - Secondary Structure Prediction for Transmembrane Proteins.

Protein Tertiary Structure Prediction - Methods - Homology Modeling - Threading and Fold Recognition - Ab Initio Protein Structural Prediction.

Unit IV:	15 Hrs

Genomic Mapping and Mapping databases: Genomic Map Elements - Types of Maps - Complexities and Pitfalls of Mapping - Data Repositories.

Information Retrieval from Biological Databases: Integrated Information Retrieval: The Entrez System Sequence Database Beyond NCBI - Medical Databases.

Unit V:	15 Hrs

Predictive Methods using DNA Sequences: GRAIL - FGENEH/FGENES - MZEF - GENSCAN - PROCRUSTERS - How do well the methods work?

Expressed Sequence Tags (ESTs): What is an EST? - EST Clustering - ESTs and Gene Discovery - The Human Gene Map - Gene Prediction in Genomic Map - Assessing Levels of Gene Expression Using ESTs.

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I – III	Essential Bioinformatics.	JIN XIONG Texas A&M University	Cambridge University Press 2012.
IV – V	Bioinformatics – A Practical guide to the Analysis of Genes and Protein.	Andreas D. Baxevanis, B.F. Francis Ouellette	A John Wiley & Sons, inc., Publications 2nd Edition.

Books for Reference:

S. No	Name of the Book	Authors	Publishers with Edition
1.	Bioinformatics Basics. Applications in Biological Science and Medicine by	Hooman H. Rashidi and Lukas K.Buehler	CAC Press 2019.
2.	Bioinformatics	David Mount	CSH Publications, 2000.
3.	Introduction to Bioinformatics	Attwood T.K and Parry-Smith	Addison Wesley Longman, 1999.

E-Resources:

1. http://www.aun.edu.eg/molecular_biology/Procedure%20Bioinformatics22.23-4-2015/Xiong%20-%20Essential%20Bioinformatics%20send%20by%20Amira.pdf
2. https://doc.lagout.org/science/0_Computer%20Science/2_Algorithms/Algorithms%20on%20Strings%2C%20Trees%2C%20and%20Sequences%20%5BGusfield%201997-05-28%5D.pdf
3. http://www.ru.ac.bd/wp-content/uploads/sites/25/2019/03/410_04_Baxevanis_Bioinformatics_-a-practical-guide-to-the-analysis-of-genes-and-proteins-Wiley.pdf

B.Sc. Information Technology
Semester VI
(For the students admitted from the academic year 2021– 2022 onwards)

Course: Part III -Project and Viva Voce	**Course Code : 621GPV**
Semester: VI	**No. of Credits : 5**
No. of hours : 90	**P:T 75:15**
CIA Max. Marks: 50	**ESE Max. Marks : 50**

(P:Practical , T:Tutorial)

B.Sc. Information Technology/BCA
Course Designed by Department of Information Technology
Semester VI
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part V- Advanced Learners Course II - Introduction to Robotics	**Course Code: 621GA3/621KA3**
Semester: VI	**No. of Credits : 4***
No. of hours : -	**-**
CIA Max. Marks: -	**ESE Max. Marks: 100**

*self-study course

Syllabus:

Unit I:

Fundamentals:Introduction-What is Robot?-Classification of Robots-What is Robotics?-History of Robotics-Advantages And Disadvantage of Robots-Robot Components-Robot Degrees Of Freedom-Robot Joints-Robot Coordinates-Robot Reference Frames-Programming Modes-Robot Characteristics-Robot Workspace-Robot Languages-Robot Applications-Other Robots And Applications-Social Issues.Robot Kinematics: Position Analysis:Introduction-Robots As Mechanisms-Matrix Representation-Homogeneous Of Transformations-Representation Of Transformations-Inverse Of Transformation Matrices.

(Chapters:1,2)

Unit II

Differential Motions And Velocities:Introduction- Differential Relationships-Jacobian- Differential Motions Of A Frame- Interpretation Of The Differential Change-Differential Changes Between Frames - Differential Motions Of A Robot And Its Hand Frame-Calculation Of The Jacobian-How To Release The Jacobian And The Differential Operator- Inverse Jacobian.Dynamic Analysis And Forces:Introduction - Lagrangian

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Mechanics: A Short Overview- Effective Moments Of Inertia- Dynamic Equations For Multiple –Degree-Of-Freedom Robots- Static Force Analysis Of Robots- Transformation Of Forces And Moments Between Coordinate Frames.

(Chapters:3,4)

Unit III

Trajectory Planning:Introduction-PathVs.Trajectory- Joint-Space vs Cartesian Space Desriptions-Basics Of Trajectory Planning-Joint –Space Trajectory Planning-Cartesian –Space Trajectories - Continuous Trajectory Recording.Actuators:Introduction-Characteristics Of Actuating Systems- Comparison Of Actuating Systems- Hydraulic Devices-Pneumatic Devices-Electric Motors.

(Chapters:5,6)

Unit IV

Sensors: Introduction- Sensor Characteristics- Position Sensors- Velocity Sensors-Acceleration Sensors-Force And Pressure Sensors - Torque Sensors- Microswitches-Light And Infrared Sensors- Touch And Tactile Sensors-Proximity Sensors- Range-Finders-Sniff Sensors-Vision Systems- Voice Recognition Devices-Voice Synthesizes-Remote Center Compliance(RCC) Device.

(Chapter:7)

Unit V
Image Processing And Analysis With Vision Systems: Introduction-Image Processing Versus Image Analysis-Two-And Three-Dimensional Image -Types-What is an image-Acquisition Of Images- Digital Camera- Digital Images- Binary Morphology Operations-Gray Morphology Operations-Image Analysis- Object Recognition By Features- Depth Measurement With Vision System-Specialized Lighting.Fuzzy Logic Control: Introduction- Fuzzy Control: What Is Needed-Crisp Values Vs. Fuzzy Values-Fuzzy Sets: Degrees Of Membership And Truth- Fuzzification-Fuzzy Inference Rule Base-Defuzzification- Simulation Of Fuzzy Logic Controller-Applications Of Fuzzy Logic In Robotics. **(Chapters:8,9)**

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Introduction to Robotics Analysis, Systems, Applications	SaeedB.Niku	PHI Learning Private Limited.New Delhi.2009.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Mobile Robotics	Paul Michael Newman	October 2003, Version 1.00
2.	Satoru Goto	Robot Arms	Janeza Trdine 9, 51000 Rijeka, Croatia

E – Resources:
1. https://ocw.mit.edu/courses/mechanical-engineering/2-12-introduction-to-robotics-fall-2005/
2. https://nptel.ac.in/courses/107/106/107106090/

B.Sc. Information Technology
Semester I
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part III – Allied I Digital Principles & Computer Architecture	Course Code : 121AG1
Semester : I	No. of Credits: 4
No. of hours : 90	C:T:P 75:10:5
CIA Max. Marks : 50	ESE Max. Marks : 50

(C: Contact hours, T: Tutorial, P: Practical)

Syllabus:

Unit I	15 Hrs

Binary Systems: Binary Numbers – Number Base Conversions – Octal and Hexadecimal Numbers – Complements – Binary Codes – Binary Storage and Registers. Boolean Algebra and Logic Gates: Basic Theorems and Properties of Boolean Algebra – Digital Logic Gates.

Simplification of Boolean Functions: The Map Method – Two and Three Variable Maps – Four Variable Maps -Product of Sums Simplification.
(Book 1 : Chapters 1,2,3)

Unit II	15 Hrs

Combinational Logic: Adders – Subtractors. Combinational Logic with MSI and LSI: Decoders – Multiplexers.

Sequential Logic: Flip Flops. Register-Transfer Logic: Arithmetic, Logic and Shift Microoperations - Instruction Codes.
 (Book 1 : Chapters 4,5,6,8)

Unit III	15 Hrs

Register Transfer and Microoperations: Register Transfer Language _ Register Transfer – Bus and Memory Transfers. Arithmetic Logic Shift Unit – Hardware Description Languages. Central Processing Unit: Introduction – General Register Organization – Stack Organization – Instruction Formats – Addressing Modes.
 (Book 2 : Chapters 4,8)

Unit IV	15 Hrs

Computer Arithmetic: Addition and Subtraction-Multiplication Algorithms-Division Algorithms. Input-Output Organization: Peripheral Devices-Input-Output Interface-Asynchronous Data Transfer-Modes of Transfer.
(Book 2: Chapters 10,11)

Unit				**15 Hrs**

Unit V   **15 Hrs**

Memory Organization: Memory Hierarchy-Main Memory-Auxiliary Memory-Associative Memory-Associative Memory- Cache Memory. Multiprocessors: Characteristics of Multiprocessors-Interconnection Structures - Interprocessor Arbitration-Interprocess Communication and Synchronization.

(Book 2 :Chapters 12,13)

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I & II	Digital Logic and Computer Design	M. Morris Mano	Pearson India Education Services Pvt. Ltd., 2016
III ,IV & V	Computer System Architecture	M Morris Mano	Pearson Education 3rd Edition.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Computer Systems Architecture	Aharon Yadin	CRC Press 2016
2.	Digital Fundamentals	Thomas L. Floyd	Pearson Education, Eleventh Edition, 2014.

B.Sc. Information Technology
Semester III
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part III - Core V - Database Management System using MongoDB	Course Code : 321G05
Semester : III	No. of Credits: 4
No. of hours : 60	C:T 52:8
CIA Max. Marks : 50	ESE Max. Marks : 50

(C: Contact hours, T: Tutorial)

Syllabus:

Unit I   **10 Hrs**

Introduction to MongoDB: Introduction- Getting Started – Documents – Collections – Databases – Getting and starting MongoDB – Introduction to the MongoDB Shell – Data Types-Using the MongoDB Shell – Creating , Updating and Deleting Documents.

(Chapters : 1,2,3)

Unit II   **10 Hrs**

Querying – Introduction to find – Query Criteria – Type Specific Queries - $ Where Queries –Cursors – Database Commands – Designing your Application : Indexing – Introduction to Indexing – Using explain () and hint() – When Not to Index – Types of Indexes – Index Administration.

(Chapters : 4,5)

Unit III	10 Hrs

Special Index and Collection Types: Capped Collections – Time to Live Indexes - Full Text Indexes – Geospatial Indexing – Sorting files with GridFS – Aggregation – Application Design.

(Chapters : 6,7,8)

Unit IV	11 Hrs

Replication: Setting up a Replica Set : Introduction to Replication – A one minute test setup - Configuring a Replica Set – Changing your Replica Set Configuration –How to Design a Set - Member Configuration Options – Components of Replica Set – Connecting to replica set from your Application.

(Chapters : 9,10,11)

Unit V	11 Hrs

Sharding: Introduction to Sharding – Configuring Sharding –Choosing a shard Key – Taking Stock of your Usage – Picturing Distributions – Shard Key Strategies – Shard key rules and guidelines – Controlling Data Distribution – Application Administration: Data Administration.

(Chapters 13,14,15,18)

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I -V	MongoDB The definitive guide	Kristina Chodorow	O'Reilly Media, Inc.,,Second Edition,2013

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	MongoDB in Action.	Kyle Banker	Manning Publications Co,2016
2.	MongoDB Applied Design Patterns	Rick Copeland	O"Reilly Media Inc,First Edition,2013

B.Sc. Computer Science / Information Technology
Semester IV
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core VI - Computer Networks	Course Code: 421S06 / 421G06
Semester: IV	**No. of Credits: 5**
No. of hours : 75	**C:T :S 65:5:5**
CIA Max. Marks: 50	**ESE Max. Marks: 50**

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

Syllabus:

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. **(Chapter : 1)**	

Unit II:	13 Hrs
The Physical Layer: Guided Transmission Media-Wireless Transmission – The Public Switched Telephone Network: Structure of the Telephone System –Trunks and Multiplexing – Switching. **(Chapter : 2)**	

Unit III:	13 Hrs
The Data Link Layer: The Data Link Layer Design Issues: Services Provided to the Network Layer-Framing-Error Control-Flow Control- Error Detection and Correction: Error Correcting Codes-Error Detecting Codes - Elementary Data Link Protocols: A Utopian Simplex Protocol-A Simplex Stop-and-Wait Protocol for an Error-Free Channel - A Simplex Stop-and-Wait Protocol for a Noisy Channel. **(Chapter : 3)**	

Unit IV:	14 Hrs
The Network Layer: Network Layer Design Issues: Store-and-Forward Packet Switching, Services Provided to the Transport Layer - Routing Algorithms: Shortest Path Routing – Flooding - #Distance Vector Routing - #Link State Routing - Hierarchical Routing - Broadcast Routing. **(#-Simulation tools)** **(Chapter : 5)**	

Unit V:	13 Hrs
The Transport Layer: The Transport Service - Elements of Transport Protocols: Addressing - Connection Establishment - Connection Release-Error Control and Flow Control. The Application Layer: DNS –The Domain Name System- Electronic Mail. Network Security: Public Key Algorithms. **(Chapters : 6,7,8)**	

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Computer Networks	Andrew S. Tanenbaum,David J.Wetherall	Dorling Kindersley India Pvt.Ltd. Third Impression, 2013

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Computer Networking and the Internet	Fred Halsall, Lingana Gouda Kulkarni	Pearson Education, Edition-2011
2.	Data Communication and Networking	Behouz A.Forouzan	McGraw-Hill Education, Fifth Edition 2013.

E-Resources :
1. https://www.pdfdrive.com/fundamentals-of-computer-networking-and - inter networking - d16587595.html
2. http://file.allitebooks.com/20150523/Computer%20Networks,%205th%20Edition.pdf
3. http://file.allitebooks.com/20170302/Introduction%20to%20Computer%20Networking.pdf

B.Sc. Computer Science / Information Technology
Semester IV
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part III - Core VIII – Software Engineering	**Course Code : 421S08/421G08**
Semester : IV	**No. of Credits : 5**
No. of Hours: 75	**C:T : 65:10**
CIA Max. Marks: 50	**ESE Max. Marks: 50**

(C: Contact Hours, T: Tutorial)

Syllabus:

Unit I:Software Development Process: 13 Hrs   Introduction: What is Software? -Characteristics of Software -Evolution of Software for Business -Paradigm shift in Programming Techniques -Core Aspects of Software Engineering -Salient Features of Software Development. Software Development Process: Software Processes -Software Development Life cycle Models -Waterfall Model -The "V" Model -Prototyping Model -The Iterative waterfall Model -The Spiral Model -Process Standards. Software Requirement Engineering: Requirement Engineering Process, Inception, Elicitation and Elaboration -Negotiation -Requirement Validation -Structure of SRS -Characteristics of the RE Process. **[Book 1: Chapters: 1,2,3]**

Unit II: Software Design Approaches: 13 hrs   Different Approaches to SAD -Overview of the FO Approach -Overview of the OO Approach -Comparison of OOAD with SSAD. Structured Analysis: Introduction to Structured Analysis -Data Flow Diagram -Process Specification -Data Dictionary -Entity Relationship Model -State Transition Diagram. Structured Design: Structured Design Methodologies -Coupling and Cohesion -Structure Chart -Mapping DFD into a Structure Chart -Data Design -Detail Design -HIPO Documentation. **[Book 1: Chapters: 4,5,6]**

Unit III: Object-oriented Concepts and Principles: **13 Hrs**

Relationships -Some More Concepts -Modeling Techniques -The Unified Approach to Modeling -Unified Modeling Language. User Interface Design: Types, Characteristics, Textual and Graphical User Interface -Widget Based GUI -User Interface Design. Coding and Documentation: Coding Standards and Guidelines -Software Documentation -Documentation Standard and Guidelines -CASE tools. Software Project Estimation: Software Project Parameters -Project Estimation Techniques -Classification of Software Projects-Constructive Cost Estimation Model -COCOMO II.
[Book 1: Chapters: 7,10,11,14]

Unit IV: Software Project Management: **13 Hrs**

Introduction to Software Project Management -Project Planning -Work Breakdown Structure -Project Scheduling -Execution, Monitoring and Control -Risk Management -Configuration Management. Software Quality Management: The concept of Quality -Evolution of Quality Management-Some Thoughts of Quality Gurus -Process Quality Models -Quality Assurance -Process Improvement and Six Sigma -Process Standard: ISO 9000 and ISO 12207 -Capability Maturity Model. Web Engineering: General Web Characteristics -Web Engineering Process -Web Design Principles -Web Metrics -Mobile Web Engineering -Web Engineering Security.
[Book 1: Chapters: 15,16,17]

Unit V: Software testing process: **13 hrs**

Psychology of Testing -Verification and Validation -Testing Team and Development Team -Cost of Quality -Characteristics of Test Engineers -Why testing is difficult -Levels of Testing. Types of testing: White box testing-Black box testing. Win runner-Load Runner.
[Book 2: Chapters: 2,4,7]

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I –IV	Software Engineering	Bruce R. Maxim, Roger S. Pressman	Indian Edition 2019. 8th Edition.
V	Software Testing Tools	Dr.K.V.K.K.Prasad	Dream Tech Press, New Delhi, Edition 2012.

Books for Reference:

S.No	Name of the Book	Authors	Publishers with Edition
1.	Software Testing (An Insight)	Hitesh Gupta	International Book House Pvt. Ltd., 1st Edition 2012.
2.	Software Engineering: A Practitioner's Approach	Roger S. Pressman	Tata McGraw Hill International Edition 2005.

Course: Part V - Advanced Learners Course I	Course Code: 421GA1
Enterprise Resource Planning	
Semester: IV	**No. of Credits: 4***
No. of hours : -	**C:T:P:S ----**
CIA Max. Marks: -	**ESE Max. Marks: 100**

(C: Contact T:Tutorial, P:Practical , S:Seminar)

*Self-Study Course

 Syllabus:

Unit I:
        Enterprise Resource Planning: An Introduction-Introduction to Enterprise Resource Planning-A Brief History of ERP-Evolution of ERP- What is ERP?-What is ERP Systems, ERP Software?-Components of ERP-Need for ERP-Characteristics of ERP- Features of ERP-Benefits of ERP-Risk Governance Issues in an ERP-Tangible and Intangible Benefits of ERP-Advantages of ERP System-Disadvantages of ERP System-ERP vs Traditional Information Systems-Procurement process for ERP Package-Types of E-Procurement. Business Functions and Business Processes-Development of ERP Systems.
(Chapters : 1,2,3)

Unit II
        ERP   and   related   technologies: Introduction   to   Business   process reengineering(BPR)-Objectives of BPR-What is Business Process Reengineering-Elements of Business Re-Engineering-Challenges in a BPR-Critical Success and Failure Factors of BPR-Management Information System-Decision Support System-Executive Information Systems-Manufacturing Execution Systems-Data Warehousing-Data Mining-On-Line Analytical Processing-Supply Chain Management.
(Chapter : 4)

Unit III
        ERP Functional Modules: Functional Modules of ERP Software- ERP Implementation Life Cycle-Introduction-Objectives of ERP Implementation- Different Phases of ERP .
Implementation-Marketing Information Systems and Sales Order process in ERP: Introduction to Marketing Information System- Importance and Features of Marketing Information System- Sales and Distribution in ERP-Sales Order Process in ERP. Customer Relationship Management: Introduction-Importance of Customer Relationship Management-Challenges of CRM-Characteristics of Customer Relationship Management-Benefits of CRM-Uses of CRM-CRM Software.
(Chapters : 5,6,7,8)

Unit IV
SAP: An Introduction-What is SAP?-Why SAP is used-Examples of Servers-Network Communication-SAP Basics. Production and SCM Information System: Sales forecasting-Materials Requirements Planning-Material Requirement Planning in SAP ERP. Accounting in ERP-Human Resource Process in ERP. **(Chapters : 9,10,11,12)**

Unit V
Management by Objectives-Overview of System Packages: SAP AG-BAAN COMPANY –Oracle Corporation-PEOPLESOFT- JD.Edwards World Solution Company-QAD. Extended ERP. **(Chapters : 13,14,15)**

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I -V	Enterprise Resource Planning	Dr.P.Rizwan Ahmed	Printed and Published by Margham Publicaions,Chennai. First Published 2015.Reprint 2016.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Enterprise Resource Planning	Dr.Ashim Raj Singla	Cengage Learning India Pvt.Ltd.Second Edition,2016.
2.	Enterprise Resource Planning A Managerial Perspective	Veena Bansal	Dorling Kindersley(India) Pvt.Ltd,first impression 2013.

E-Resources :
1. https://taniadiglesias.files.wordpress.com/2013/04/brian_j-carroll_lean_ performance _erp_project_management_2008.pdf
2. https://www.pdfdrive.com/production-planning-and-control-with-sap-erp-d5869999.html
3. https://www.kobo.com/us/en/ebook/enterprise-resource-planning-2.

B.Sc. Computer Science / Information Technology
Semester V
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Core X Data Mining	Course Code: 521S10/ 521G10
Semester: V	No. of Credits: 5
No. of hours : 75	C:T 65:5:5
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I: **13 Hrs**

Introduction: What is Data Mining? – Motivating Challenges – The Origins of Data Mining – Data Mining Tasks. Data: Types of Data – Data Quality – Data Preprocessing – Measures of Similarity and Dissimilarity: Basics – Similarity and Dissimilarity between Simple Attributes – Dissimilarities between Data Objects – Similarities between Data Objects.

(Book 1: Chapters: 1, 2)

Unit II: **13 Hrs**

Classification: Basic Concepts, Decision Trees, and Model Evaluation: Preliminaries – General Approach to Solving a Classification Problem – Decision Tree Induction. Classification:Alternative Techniques: Rule-Based Classifier – Nearest-Neighbor Classifiers – Bayesian Classifiers.

(Book 1: Chapters 4, 5)

Unit III: **13 Hrs**

Association Analysis: Basic Concepts and Algorithms: Problem Definition – Frequent Item set Generation – Rule Generation – Compact Representation of frequent Item sets – Alternative Methods for Generating Frequent Item sets – FP-Growth Algorithm – Evaluation of Association Patterns – Effect of Skewed Support Distribution.

(Book 1: Chapter 6)

Unit IV: **13 Hrs**

Cluster Analysis: Basic Concepts and Algorithms: Overview – K-means – Agglomerative Hierarchical Clustering – DBSCAN. Cluster Analysis: Additional issues and Algorithms: Density–Based Clustering: Grid–Based Clustering – DENCLUE: A Kernel–Based Scheme for Density Based Clustering – Graph–Based Clustering – Chameleon: Hierarchical Clustering with Dynamic Modeling – Scalable Clustering Algorithms – BIRCH – CURE.

(Book 1: Chapters: 8, 9)

Unit V: **13 Hrs**

Data Mining Trends and Research Frontiers: Other Methodologies of Data Mining: Statistical Data Mining-Views on Data Mining Foundations- Visual and Audio Data Mining. Data Mining Applications: Data Mining for Financial Data Analysis- Data Mining for Retail and Telecommunication Industries- Data Mining in Science and Engineering- Data Mining for Intrusion Detection and Prevention- Data Mining and Recommender Systems. Data Mining and Society: Ubiquitous and Invisible Data Mining- Privacy, Security, and Social Impacts of Data Mining. Data Mining Trends. **Case Study**: Which Technologies are used -Issues in Data Mining

(Book 2: Chapters: 13)

Books for study:

Unit	Name of the Book	Authors	Publishers with Edition
I -IV	Introduction to Data Mining	Pang - NingTan, MichaelSteinbach, VipinKumar	Pearson India Education Services Pvt. Ltd., first Impression 2016
V	Data Mining Concepts and Techniques	Jiawei Han, MichelineKamber,JianPei	Elsevier –Third Edition.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1	Data Mining	VikramPudi, P. RadhaKrishna	Oxford University press, Fourth Impression.
2	Data Mining Introductory and Advanced Topics	Margaret H.Dunham	Pearson India Education Services Pvt. Ltd., eighth Impression

E-Resources :
1. http://www.dataminingbook.info
2. https://www.pdfdrive.com/data-mining-d24225501.html
3. http://file.allitebooks.com/20150714/Data%20Mining-20Theories,%20Algorithms,%20and%20Examples.pdf

B.Sc. Computer Science / Information Technology/ B.C.A.
Course Designed by Department of Information Technology
Semester V
(For the Students admitted from the academic year 2021 – 2022 onwards)

Course: Part III-Elective I – Introduction to Data Science	Course Code:521SE2/521GE2/521KE2
Semester: V	No. of Credits: 5
No. of hours : 90	C:T:S 75:10:5
CIA Max. Marks: 50	ESE Max. Marks:50

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

Syllabus:

Unit I: **15 Hrs**

Data science in Big DataWorld: Benefits and uses of data science and big data – Facts of data – The data science process – The big data ecosystem and data science – An introductory working example of Hadoop.

The Data Science Process: Overview of the data science process – Step 1: Defining research goals and creating a project character – Step 2: Retrieving data – Step 3: Cleansing, Integrating and Transforming data – Step 4: Exploratory Data Analysis – Step 5: Build the Models – Step 6: Presenting finding and building applications on top of them.

 (Chapters : 1,2)

Unit II   **15 Hrs**

Machine Learning: What is machine learning and why should you care about it? – The Modeling process – Types of machine learning – Semi-supervised learning.

Handling Large Data on a Single Computer: The problems you face when handling large data – General techniques for handling large volumes of data –General Programming tips for dealing with LargeData Sets– Case study 1: Predicting malicious URLs – Case study 2: Building a recommender system inside a database.

(Chapters : 3,4)

Unit III   **15 Hrs**

First Steps in Big Data: Distributing data storage and processing with frameworks – Case study: Accessing risk when loaning money. Join the NoSQL Movement: Introduction to NoSQL – Case study: What disease is that?

(Chapters : 5,6)

Unit IV   **15 Hrs**

The Rise of Graph Databases: Introducing connected data and graph databases – Introducing Neo4j: a Graph Database – Connected data example: A Recipe recommendation engine.   Text Mining and Text Analytics: Text mining in the real world – Text mining techniques – Case study: Classifying reddit posts.

(Chapters :7 , 8)

Unit V   **15 Hrs**

Data Visualization to The End User: Data visualizations options – Cross filter, the JavaScript map reduce library – Creating an interactive dashboard with dc.js – Dashboard development tools.

(Chapter : 9)

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I -V	Introducing Data Science BIG DATA, MACHINE LEARNING, AND MORE, USING PYTHON TOOLS	DAVY CIELEN ARNO D. B. MEYSMAN MOHAMED ALI	Manning Publications Co,2016.

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1	Data Science from Scratch	Joel Grus	O'Reilly Publisher,2nd Edition, May 2019
2	Big Data Analytics: A Practitioner's Approach	V. Bhuvaneswari, T. Devi	Sci-Tech Publications, 2016.

E-Resources:

1. https://builtin.com/data-science
2. https://www.w3schools.com/datascience/ds_introduction.asp
3. https://www.w3schools.com/datascience/ds_database.asp
4. https://www.w3schools.com/datascience/ds_python.asp
5. https://www.udacity.com/course/intro-to-data-science--ud359

https://www.tutorialspoint.com/python_data_science/index.htm

B.Sc. Computer Science /Information Technology/ BCA
Course Designed by Department of Information Technology
Semester VI
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part III - Elective II - Mobile Computing	Course Code: 621SE5/621GE5/621KE5
Semester: VI	No. of Credits: 5
No. of hours : 90	C:T:S 75:10:5
CIA Max. Marks: 50	ESE Max. Marks: 50

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

Syllabus:

Unit I: 15 Hrs
Basics of Communication Technologies: 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: **16 Hrs**
     MAC Protocols: 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: **15 Hrs**
     Mobile Internet Protocol: 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: **14 Hrs**
     Wireless Sensor Networks: 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	PHI learning Private Ltd. Second Edition

Book for Reference:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Mobile Computing – Technology,Applications and Service Creation	Asoke K Talukder, Hasan Ahmed and Roopa R Yavagal	Tata Mcgraw Hill Second Edition, Ninth Reprint 2016

E-Resources :
1. https://searchmobilecomputing.techtarget.com
https://www.tutorialspoint.com/mobile_computing/mobile_computing_overview.html

B.Sc. Information Technology
Semester III
(For the students admitted from the academic year 2021 – 2022 onwards)

Course : Part IV – Skill Enhancement Course I : Professional English for IT	Course Code : 321GS1
Semester : III	No. of Credits: 2
No. of hours : 45	C:T:P 38:3:4
CIA Max. Marks :100	ESE Max. Marks :

(C: Contact hours, T: Tutorial, P: Practical)

Syllabus:

Unit I	7 Hrs

Communication Process: Concept, nature and significance of communication process - Types of communication - Verbal and non-verbal communication -Barriers to communication. **Case Study** : Compose an E-Mail – Build any Conversation.
(Chapters : 1,2,4,5)

Unit II	8 Hrs

Basic Communication Skills: Introduction to communication skills: Oral Presentation - Reading - Listening and note – taking skills. **Case Study**: Create an e-Content – Video on Self – Introduction – Create a Presentation – Create a variety of charts – Read the passage and answer the questions – Listening a Video and answer the questions-Adapt one method of note – taking. **(Chapters :6,7)**

Unit III	8 Hrs

Technical Skills for Effective Communication: Technical and scientific writing/reporting –Forms of scientific and technical writing. **Case Study**: Write a report for conducting a webinar – Write an article about your hobby – Write an article about any emerging technology concepts-Write a news script for press.
(Chapters 9,10)

Unit IV	8 Hrs

Technical Skills for Effective Communication: Precis writing/Abstracting/Summarizing-Curriculum Vitae/Resume Writing. **Case Study**: Write an abstract for a proposed project – Create Your Resume – Summarize any Movie.
(Chapters 13,14)

Unit V	7 Hrs

Oral Communication and Organizational Skills: Individual/group presentations; Group discussion – Organizing seminar and conferences. Case **Study**: Group Discussion on emerging trends – Deliver address on welcome speech and vote of thanks- Present the paper on emerging trends. **(Chapters 16,17)**

Book for study:

Unit	Name of the Book	Authors	Publishers with Edition
I - V	Communication Skills	S. K. Jha, Meena Malik	Agrimoon.com

Books for Reference:

Serial No	Name of the Book	Authors	Publishers with Edition
1.	Essentials of Business Communication	Guffey, Mary E. & Loewy, D	Cengage Learning, 2015
2.	Professional English	Raman, Meenakshi, and Sangeeta Sharma	Oxford University Press, 2019.

E-Resources :
1. https://www.researchgate.net/publication/301351158_Advanced_Skills_for_Communication_in_English_Book_I
2. https://galgotiacollege.edu/assets/pdfs/study-material/Notes-english.pdf

B.Sc. Information Technology
Semester IV
(For the students admitted from the academic year 2021-2022 onwards)

Course: Part IV Skill Enhancement Course II – Creative Editing Tools	Course Code: 421GS2
Semester: IV	No. of Credits: 2
No. of hours : 45	P:T 38:7
CIA Max. Marks: 100	ESE Max. Marks: -

(P: Practical , T: Tutorial)

Syllabus:

List of Programs 38 Hrs
Image Editor: 1. Design an image using GIF Animation.   2. Design a Invitation for Inter-collegiate meet using 3D text.   3. Create an advertisement by using Clone stamp tools.   4. Design a Boucher using Paint Tools.   5. Design a prospectus for college.   6. Create a simple animation using Layers   **Animation Tool:** :   7. Draw a Honey bee using Different Shapes.   8. Draw a Cartoon image using Different layers.   9. Design a Program for Animating an Image.   10. Create a Mask layer Using Blend Method.   11. Create Automatic Animation using converters.   12.Import a PNG image and move it on timeline.

B.Sc. Information Technology
Semester V
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part IV-Skill Enhancement Course III - Web designing using Word Press	Course Code: 521GS3
Semester: V	No. of Credits: 2
No. of hours :45	P:T 38:7
CIA Max. Marks: 100	ESE Max. Marks: -

(P: Practical, T: Tutorial)

Syllabus:

List of Programs:	38 Hrs

List of Programs:

1. Create a Dashboard using WordPress.
2. Create a site in WordPress.
3. Create a theme using WordPress.
4. Design a program for posting information in WordPress..
5. Design a web page using WordPress.
6. Design a program for Media Settings.
7. Design and build your own first WordPress theme.
8. Create a program for Organizing WordPress Content
9. Design a page and make WordPress text Formatting.
10. Create Menus in WordPress

B.Sc. Information Technology
Semester VI
(For the students admitted from the academic year 2021 – 2022 onwards)

Course: Part IV: Skill Enhancement Course IV: Data Visualization Tools	Course Code:621GS4
Semester: VI	No. of Credits: 2
No. of hours : 45	T:P 7:38
CIA Max. Marks: 100	ESE Max. Marks: -

(T:Tutorial, P : Practical)

Syllabus:

List of Programs	38 Hrs
1. Working with Discrete and continuous fields.	
2. Working with Bar chart.	
3. Working with Line Chart	
4. Working with Symbol Map	
5.Working with Density Map.	
6. Building your Dashboard.	
7. Filtering the dates.	
8. Working with Tree Map	
9. Creating and editing table calculations	
10. Use Different Type formatting.	
11. Use Tooltips.	
12. Use Jittering in Circle Chart.	
13. Creating and Editing Calculation.	
14. Use Function and Operators.	
15. Adding Value to Visualization	