ST. JOSEPH'S COLLEGE OF ARTS AND SCIENCE (AUTONOMOUS)
CUDDALORE - 1.

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

BOARD OF STUDIES

a. B.Sc. Computer Science(Page No: 02)

SYLLABUS

2023-2026

PG AND RESEARCH DEPARTMENT OF COMPUTER SCIENCE									
CURRICULUM TEMPLATE (2023 – 2026)									
a. B.Sc. Computer Science									
SEMESTER – I									
S.No.	**Part**		**Hours/ Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
1	I	Language -1	6	3	LT101A / LH101S / LF101	Tamil-I / Hindi-I / French-I	25	75	100
2	II	English – 1	6	3	LE101B	Communicative English -I	25	75	100
3	III	Core Theory – 1	6	5	CS101A	Python Programming	25	75	100
4	III	Core Practical – 1	3	3	CSP101A	Python Programming - Lab	25	75	100
5	III	Elective - I (Generic / Discipline Specific)	5	5	EMCS11A	Numerical Methods	40	60	100
6	III	Skill Enhancement Course – SEC-1 (NME - I)	2	2	NCS101	Office Automation	25	75	100
7	III	Foundation Course	2	2	FCS101	Problem Solving Techniques	25	75	100
Semester Total			**30**	**23**			**190**	**510**	**700**
SEMESTER – II									
S.No	**Part**		**Hours/ Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
9	I	Language -2	4	3	21LT02 / LH202S / LF202	Tamil-II / Hindi-II / French-II	25	75	100
10	II	English – 2	4	3	LE202B	Communicative English II	25	75	100
11	III	Core Theory – 3	4	3	CS203S	Programming in C++	25	75	100
12	III	Core Theory – 4	4	3	CS204S	Fundamentals of Data Structures	25	75	100
13	III	Core Practical – 2	3	2	CSP202S	Practical - Programming in C++	40	60	100
14	III	Allied -2	7	6	AMCS22A	Allied Mathematics– II	25	75	100
15	III	Naan Mudhalvan	2	2	EFE202	Effective English	100	-	100
16	IV	SEC – 2	2	2	EBT201 / EPD201A	Basic Tamil / Dynamics of Personality	25	75	100
Semester Total			**30**	**23**			**290**	**510**	**800**

S.No.	Part		Hours/ Week	Credit	Course Code	Course Title	Maximum Marks		
							CIA	ESE	TOTAL
17	I	Language -3	4	3	LT303A/ LH303S / LF303	Tamil-III / Hindi-III / French-III	25	75	100
18	II	English – 3	4	3	LE303A	Communicative English – III	25	75	100
19	III	Core Theory – 5	5	3	19CS305	Java Programming	25	75	100
20	III	Core Theory – 6	5	3	CS306S	Fundamentals of Algorithms	25	75	100
21	III	Core Practical – 3	3	2	19CSP303	Practical – JAVA Programming	40	60	100
22	III	Allied -3	6	6	ASCS31A	Statistical Methods for Computer Applications-I	25	75	100
23	IV	AEC – 1	3	2	EVS301S	Environmental Science	25	75	100
Semester Total			**30**	**22**			**190**	**510**	**700**
SEMESTER – IV									
S.No	**Part**		**Hours/ Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
24	I	Language -4	4	3	LT404A/LH404S/LF404	Tamil-IV / Hindi-IV / French-IV	25	75	100
25	II	English – 4	4	3	LE404A	Communicative English – IV	25	75	100
26	III	Core Theory – 7	5	3	19CS407	Internet Programming	25	75	100
27	III	Core Theory – 8	4	3	19CS408	Computer Architecture	25	75	100
28	III	Core Practical – 4	3	2	19CSP404	Practical - Internet Programming	40	60	100
29	III	Allied – 4	4	3	ASCS42A	Statistical Methods for Computer Applications – II	25	75	100
30	III	Allied Practical-1	2	1	ASCP401A	Allied Practical - Statistical Methods for Computer Applications	40	60	100
31	IV	NME	2	2	NBMBP401 NMTCE401	Modern Banking Practices (for A and C section) Maths for Competitive Examinations	25	75	100
32	IV	Naan Mudhalvan	2	2	CSAE403	Practical - Advanced Excel	100	-	100
Semester Total			**30**	**22**			**230**	**570**	**800**

SEMESTER – V									
S.No.	**Part**		**Hours/ Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
33	III	Core Theory – 9	6	5	CS509	Relational Database Management System	25	75	100
34	III	Core Theory – 10	5	5	CS510S	DOT NET Technologies	25	75	100
35	III	Elective – 1	6	4	19ECS51A	**Elective - I:** 1. Software Engineering*	25	75	100
					19ECS51B	2. Management Information System			
36	III	Elective – 2	5	4	19ECS52A	**Elective – II**: **1**. Data Communication and Networks*	25	75	100
					19ECS52B	2. Electronic Commerce			
37	III	Core Practical – 5	3	2	CSP505	Practical -Oracle	40	60	100
38	III	Core Practical – 6	3	2	CSP506S	Practical -DOT NET Technologies	40	60	100
39	IV	SEC Practical – 1	2	2	**NEW CODE**	Practical -Web Technology -WordPress **(Upskilling Course)**	40	60	100
Semester Total			**30**	**24**			**220**	**480**	**700**
SEMESTER – VI									
S.No	**Part**		**Hours/ Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
40	III	Core Theory – 11	6	5	19CS613	Operating System	25	75	100
41	III	Core Theory – 12	6	5	19CS614	Open Source Technologies-PHP	25	75	100
42	III	Elective – 3	5	4	New Code	Introduction to Artificial Intelligence *	25	75	100
					New Code	Introduction to Machine Learning			
43	III	Elective – 4	5	4	19ECS66A	Multimedia	25	75	100
					ECS66B	Big data Analytics*			
44	III	Core Practical – 7	3	2	CSP607S	Practical – Open Source Technologies-PHP	40	60	100
45	III	Core Practical – 8	3	2	JCS601	Mini Project	-	100	100
46	IV	Naan Mudhalvan	2	2	New Code	Practical - PBL – Web Based Project Development	100		100
Semester Total			**30**	**24**			**240**	**460**	**700**
47	V	Extension Activities	-	2					
Total Credits				**140**					

Extra Credit Course					
S.No	**Semester**	**PART**	**Credit**	**Course Code**	**Course Title**
1	III	VI	1	21CSF301	Field Visit / Field Project
2	IV	VI	1	21CSI501	Internship
3	V	VI	Credits will be transferred	ASCS51	SSC/SWAYAM/NPTEL

NME and Elective Courses Offered to other Departments									
SEMESTER – III									
S.No	**Part**		**Hours / Week**	**Credit**	**Course Code**	**Course Title**	**Maximum Marks**		
							CIA	**ESE**	**TOTAL**
1	IV	NME(B.Com.,BBA CA,BBM, English, Physics, Maths)	3	2	3N CS IT	Introduction To Information Technology	25	75	100
2	IV	Elective (Tamil)	7	5	19ETA31	Basics of Computers and its Applications	25	75	100
3	IV	NME (Maths Shift I)	3	2	NCSWD301	Fundamentals of Web Designing	25	75	100
4	IV	NME (English Shift II)	3	2	NCSIT301	Introduction To Information Technology	25	75	100
SEMESTER – IV									
5	IV	NME (Zoology Shift I and Chemistry Shift II)	3	2	NCSWD401	Fundamentals of Web Designing	25	75	100
6	IV	Naan Mudhalvan (B.A. Tamil Shift II)	2	2	New Code	Practical – Web Designing	100	-	100

Post Graduate and Research Department of Computer Science

a. B.Sc. COMPUTER SCIENCE

PROGRAMME OUTCOME (PO)
PO1: The Students find their footings in life through wholesome and integral education.
PO2: The Students are encouraged to climb the academic ladder by pursuing Post Graduate Education in different domain.
PO3: The Students are academically and technically equipped to steer the Nation along the path of progress and peace
PO4: The Students are trained to be Employable and Entrepreneurial Citizen of the Nation.
PO5: The Students are fortified intellectually, ethically and socially to face the challenges in life.
PROGRAMME SPECIFIC OUTCOME (PSO)
PSO1: Disciplinary knowledge
To acquire knowledge of mathematics and science with fundamentals of computer science to solve complex problems related to the field of Computer science.
PSO2: Design and Development
Ability to identify, formulate and analyze complex problems related to computer science and reaching a substantiated conclusion using mathematics and its applications
PSO3: Ethics
Ability to understand professional & ethical responsibility in the field of Computer Science.
PSO4: Environment Sustainability:
Understand the impact of the Computer professionals in societal and environmental contexts.
PSO5: ICT & Digital Literacy:

I B.Sc (CS)	PYTHON PROGRAMMING	CS101A
SEMESTER – I		HRS/WK-6
CORE – I		CREDIT – 5

Objective:

To understand the basic concepts of a Python Language and its Programming skills.

COURSE OUTCOMES (CO):

CO1: To make students understand the concepts of Python programming.

CO2: To know the flow of various control structures.

CO3: To have familiarity with function calling mechanism and string functions.

CO4: Determine the methods to create and manipulate Python programs by utilizing lists, dictionaries and tuples.

CO5: Identifying the commonly used operations involving file system.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: CS101S					TITLE OF THE PAPER: PYTHON PROGRAMMING				HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)				MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO 1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	4	4	3	4	4	3	4	4	3.6
CO2	4	4	4	4	4	3	4	3	3	4	3.7
CO3	4	4	3	3	4	4	4	3	4	4	3.7
CO4	4	4	3	3	4	4	3	3	4	3	3.5
CO5	4	3	4	3	3	4	4	4	4	4	3.7
Mean Overall Score											3.6

Result: The Score of this Course is 3.6(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT – I

Basics of Python Programming: History of Python-Features of Python-Literal-Constants-Variables - Identifiers–Keywords-Built-in Data Types-Output Statements – Input Statements-Comments – Operators-Expressions-Type conversions. **Python Arrays:** Defining and Processing Arrays – Array methods.

UNIT – II

Control Statements: Selection/Conditional Branching statements: if, if-else, nested if and if-elif-else statements. Iterative Statements: while loop, for loop. **Jump Statements:** break, continue and pass statements**.**

UNIT – III

Functions: Function Definition – Function Call – Variable Scope and its Lifetime-Return Statement. **Function Arguments**: Required Arguments, Keyword Arguments, Default Arguments and Variable Length Arguments- Recursion. **Python Strings:** String operations-Immutable Strings - Built-in String Methods and Functions - String Comparison.

UNIT – IV

Lists: Creating a list -Access values in List-Updating values in Lists-Nested lists -Basic list operations-List Methods. Tuples: Creating, Accessing, Updating and Deleting Elements in a tuple – Nested tuples– Difference between lists and tuples. **Dictionaries:** Creating, Accessing, Updating and Deleting Elements in a Dictionary – Dictionary Functions and Methods - Difference between Lists and Dictionaries.

UNIT – V

Python File Handling: Types of files in Python - Opening and Closing files-Reading and Writing files: write() and writelines() methods- append() method – read() and readlines() methods – with keyword – File methods - File Positions- Renaming and deleting files.

Textbooks

1. Reema Thareja, “Python Programming using problem solving approach”, First Edition, 2017, Oxford University Press.

2. Dr. R. Nageswara Rao, “Core Python Programming”, First Edition, 2017, Dream tech Publishers.

Reference Books

1. VamsiKurama, “Python Programming: A Modern Approach”, Pearson Education.

2. Mark Lutz, ”Learning Python”, Orielly.

3. Adam Stewarts, “Python Programming”, Online.

I B.Sc(CS)	PRACTICAL- PYTHON PROGRAMMING	CSP101A
SEMESTER – I		HRS/WK-3
CORE– Practical -I		CREDIT – 2

Objective:

To unleash the Programming skills in Python Language and Logic building capabilities.

COURSE OUTCOMES:

CO1: Be able to design and program Python applications.

CO2: Be able to create loops and decision statements in Python.

CO3: Be able to work with functions and pass arguments in Python.

C**O4:** Be able to build and package Python modules for reusability.

CO5: Be able to read and write files in Python.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: CSP101A					TITLE OF THE PAPER: Practical-Python Programming					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme specific Outcome.

PRACTICAL - PYTHON PROGRAMMING

1. Program using variables, constants, I/O statements in Python.
2. Program using Operators in Python.
3. Program using Conditional Statements.
4. Program using Loops.
5. Program using Functions.
6. Program using Arrays.
7. Program using Strings.
8. Program using Lists.
9. Program using Dictionaries.
10. Program for File Handling.

I B.Sc (CS)	PROGRAMMING IN C++	CS203S
SEMESTER – II		HRS/WK-4
CORE – III		CREDIT – 3

Objective:
To Learn the basic concepts of Object-Oriented Programming and C++ Programming skills.

Course Outcomes(COs):

CO1: To learn the basic concepts& principles of Object-Oriented programming
CO2: To understand the C++ Fundamentals and Functions
CO3: To build logic using C++ with class and objects and Constructor
CO4: To learn and implement Inheritance and its types
CO5: To Understand the concept of streams and file management in C++

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE: CS203S					COURSE TITLE: PROGRAMMING IN C++					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	2	4	4	4	4	4	4	3	3.5	
CO2	3	4	3	4	3	4	4	3	3	4	3.5	
CO3	3	4	3	3	4	4	4	3	4	4	3.6	
CO4	3	3	3	3	4	4	4	3	4	4	3.5	
CO5	4	4	3	3	3	4	4	3	4	4	3.6	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT–I **[10hrs]**

OOP'S: Principles of Object-Oriented Programming [OOP]: Evolution of C++ - Programming paradigms – Key concept of OOP – Advantages of OOP- Usage of OOP and C++ - Input and Output in C++ - Streams.

UNIT-II **[10hrs]**

C++ Fundamentals and Functions: Stream Classes-Unformatted console I/O Operations – Introduction to C++ - Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control structures in C++ pointers and arrays –Function in C++ - Main function– function prototyping –Parameters passing in Functions – Values Return by functions –Inline Functions –Function overloading.

UNIT-III **[15hrs]**

Object Manipulation and Polymorphism: Classes and objects; Constructors and Destructors; and Operator Overloading and type Conversion –Friend function.

UNIT-IV **[15hrs]**

Inheritance: Single Inheritance – Multilevel inheritance – Multiple inheritances – Hierarchical – Hybrid Inheritance - Virtual Base Class-Virtual Functions and Polymorphism

UNIT-V **[10hrs]**

Working with Files: Classes for File Stream Operation – Opening and Closing a File – End – of – File Detection – File Pointers-Updating a File – Error Handling during File Operation – Command-line Arguments.

Text Books:

1. Object Oriented Programming with C++, E.Balagurusamy, McGraw Hill Education,2013.
2. The C++ Programming Language: by Bjarne Stroustrup Special Edition2008
3. C++ Primer by Stanley B. Lippman, Josie Lajoie, and Barbara E. Moo, FifthEdition,2013.

Reference Books:

1. Object Oriented Programming with ANSI & Turbo C + +, Ashok N. Kamthane, Pearson Education,2003
2. Practical C++ Programming, by Steve Oualline, 1st Edition,2006
3. C++ Without Fear: A Beginner's Guide That Makes You Feel Smart by Brian R. Overland,2014

I B.Sc(CS)	FUNDAMENTALS OF DATA STRUCTURES	CS204S
SEMESTER – II		HRS/WK-4
CORE – IV		CREDIT – 3

Objective:
To Understand the Fundamentals of Data Structures and its algorithms.

Course Outcomes(COs):

CO1: To understand the Fundamental concepts in Data Structure and Arrays Structure.
CO2: To Learn the Stack and Queue operations and applications.
CO3: To gain knowledge about Linked List Concept and its applications.
CO4: To have knowledge about tree concept and ability to traverse trees.
CO5: To learn basics of graph and gain working knowledge about shortest path.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE:CS204S					COURSE TITLE:FUNDAMENTALS OF DATA STRUCTURES					HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	4	2	2	4	3.6	
CO2	4	4	4	4	4	4	4	2	2	4	3.6	
CO3	4	4	4	3	4	4	4	2	2	4	3.5	
CO4	4	4	4	4	4	3	4	2	2	4	3.5	
CO5	4	4	4	4	3	4	4	2	2	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT–I **[10hrs]**

Introduction to Data structure: Definition of a Data structure - Primitive and Composite Data types, Arrays, Operations on Arrays - Order Lists.

UNIT–II **[10hrs]**

Stacks and Queues: Stacks – Operation - Application of Stack - Infix to Postfix Conversion - Queues- Operations on Queues, Queue Applications - Circular Queue.

UNIT–III **[15hrs]**

Linked List: Singly Linked List - Representation of a Polynomial - Polynomial addition - Doubly Linked List.

UNIT–IV **[15hrs]**

Trees: Binary trees -Representation – Conversion of Forest to Binary tree - Tree Traversals.

UNIT–V **[10hrs]**

Graphs: Definition – Graph Representation - Types of Graphs - Shortest Path (Dijikistras Algorithm).

Text Books:

1. Fundamentals of "Data structures in C++" ,E. Horowitz, S.Sahni and Mehta – 2nd Edition, Galgotia Publication-2008.
2. Pascal plus Data Structures Algorithms and Advanced Programming, R.Kruse and N.Dale and S.C. Lily — Tata McGrawHill – New Delhi -1985.
3. Data Structures using C and C++ by Langsam, Augenstein and Tanenbaum, PHI/Pearson Education, 2nd Edition,2015.

Reference Books:

1. Introduction to the Design and Analysis of Algorithms, S.E Goodman and S.T. Hedetniemi, McGraw Hill, InternationalEdition-1977.
2. Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss, Pearson Education. 3rd Edition,2007.

I B.Sc(CS)	PRACTICAL- PROGRAMMING IN C++	CSP202S
SEMESTER - II		HRS/WK-3
CORE– Practical -II		CREDIT – 2

Objective:
To implement all object-oriented programming concepts using C++ and to implement different data structures techniques using C++ Programs.

Course Outcomes(COs):

CO1: To provide a sound understanding of the basic concepts of OOPs.
CO2: To equip the students with the knowledge of classes and objects
CO3: To understand the core concepts of Constructor and Inheritance
CO4: Ability to learn the concept of functions and Operator overloading
CO5: To learn the nuances of programming for data structures using C++ languages

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER II	COURSE CODE: CSP202S					COURSE TITLE:PROGRAMMING IN C++				HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	2	4	4	4	3	3	3	3.1
CO2	3	4	3	4	3	4	3	3	3	4	3.5
CO3	3	3	3	3	3	4	4	3	4	3	3.4
CO4	3	3	3	3	4	4	4	3	4	4	3.5
CO5	4	3	3	3	2	4	3	3	4	3	3.2
Mean Overall Score											3.3

Result: The Score of this Course is 3.3(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL - PROGRAMMING IN C++

1. Implementing class and Objects.
2. Implementing Inline function
3. Implementing Friend function.
4. Implementing Constructor and Destructor
5. Implementing Operator overloading
6. Implementing Inheritance.

DATA STRUCTURE USING C++

7. Implement PUSH, POP operations of stack using Arrays.
8. Implement add, delete operations of a queue using arrays.
9. Conversion of infix to postfix using stacks operations.
10. Binary tree traversals [In – order, Pre-order, and Post-order] using Recursion.

YEAR – II	JAVA PROGRAMMING	19CS305
SEMESTER - III		HRS/WK-5
CORE – V		CREDIT –3

Objective:
To understand the basic concepts of JAVA language in internet programming.

Course Outcomes(COs):

CO1: Understanding the principles and practice of object-oriented concepts and basic Java programs.
CO2: Knowledge of creating and using of Packages, Multithreading, Exception Handling
CO3: Design and implement Applet programming and AWT
CO4: Acquire knowledge of JDBC programming techniques in Java.
CO5: Learn to apply networking and RMI concepts through Java program.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE:19CS305					COURSE TITLE: JAVA PROGRAMMING					HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	2	3	3	4	4	4	4	4	4	3	3.5	
CO2	3	4	3	4	3	4	4	3	3	4	3.5	
CO3	3	4	3	3	4	4	4	3	4	4	3.6	
CO4	3	4	3	3	3	4	4	3	4	4	3.5	
CO5	4	4	3	3	3	4	4	3	4	4	3.6	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT –I **[10 hrs]**

Fundamentals of Java Language: Introduction to Java – Features of Java – Data Types – Arrays - Control Statements- Classes – Objects—Overloading method.

UNIT–II **[10 hrs]**

Packages, Interfaces and Exception Handling: Packages – Importing Packages – Interfaces – Exception Handling.

UNIT–III **[10 hrs]**

Thread : Life Cycle of Thread – Multithreading

Applets : Applet life cycle – creating simple applets- Loading and displaying images on applets- working with graphics

UNIT-IV: **[15 hrs]**

AWT :AWT controls –windows Fundamentals - layout managers

JDBC: JDBC Architecture – Connecting to a Database (MS Access) – SQL commands-select, insert, delete, update.

UNIT-V: **[15 hrs]**

NETWORKING: Networking Basics-URL- Inet Address – TCP/IP Sockets .

RMI : Introduction to RMI-RMI architecture - Example using RMI.

Text Books:

1. The Complete Reference, H. Schild, Tata McGraw-Hill publication, Fifth Edition , Jul2017.
2. JAVA: How to program, Paul J. Deitel, Harvey Deitel, Prentice Hall publication, tenth edition,2014.
3. Core Java, Volume II--Advanced Features, Cray S. Horstman , Prentice Hall publication 2019.

Reference Books:

1. The Java Programme Language ,Wesley, K. Arnold and J. Gosling, Addison Wesley publications,2013
2. "Guide to Java Programming", Peter Norton & William Stack, Techmedia Publications, New Delhi, First Edition,1997.

YEAR – II	FUNDAMENTALS OF ALGORITHMS	CS306S
SEMETER - III		HRS/WK-5
CORE – VI		CREDIT –3

Objective:
To enable learning of basic concepts of Algorithms and its Applications.

Course Outcomes(COs):

After learning this course, the students should be able to expose

CO1: Ability to understand fundamental of Algorithms.

CO2: Ability to know about Multistage Graph Work with Trees with examples.

CO3: Ability to understand the Basic Traversal and Search Techniques.

CO4: Ability to Work with Greedy method.

CO5: Ability to know the basic concept of Np Hard and Np Complete

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: CS306S					COURSE TITLE: FUNDAMENTALS OF ALGORITHMS					HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	5	3	2	5	3.9	
CO2	4	4	4	4	4	4	5	3	2	5	3.9	
CO3	4	4	4	4	4	4	5	3	2	5	3.9	
CO4	4	4	4	4	4	4	5	3	2	5	3.9	
CO5	4	4	4	4	4	4	5	3	2	5	3.9	
Mean Overall Score											3.9	

Result: The Score of this Course is 3.9(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[12hrs]**

Divide and Conquer: Introduction to Algorithm- Complexity analysis- Divide and Conquer - Strassen's Matrix Multiplication-Quick Sort-Merge sort- Binary Search-Finding Max and Min.

UNIT-II **[12hrs]**

Dynamic Programming: General method-multistage Graph-Traveling salesman problem

UNIT-III **[12hrs]**

Basic Traversal and Search Technique: Depth first search- Breadth first search- Back Tracking- Graph colorings.

UNIT-IV **[12 hrs]**

Greedy method: General Method - Shortest path- 0/1 Knapsack problem

UNIT-V **[12 hrs]**

Np Hard and Np Complete Problem: Basic concepts of Np-Hard and Np-Complete.

Text Books:

1. Computer Algorithms E.Horowitz. S.Sahni and S.Rajasekaran- - Galgotia Publication, Pvt.Ltd.,-2008.
2. Design and Analysis of Computer Algorithms by Alfred V. Aho, PearsonEducation,2004
3. Introduction to Algorithms, Third Edition by Thomas H. Cormen,2014

Reference Books:

1. G.Brassard and Brately -Fundamentals of Algorithm-PHI-1997.
2. Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss, Pearson Education, Second Edition,2007

YEAR – II	PRACTICAL - JAVA PROGRAMMING	19CSP303
SEMESTER– III		HRS/WK-3
CORE – Practical - III		CREDIT – 2

Objective:

To enable the students to learn the basic programs of JAVA and to make students to acquire the skill in JAVA programming.

Course Outcomes(COs):

CO1: To generate ability to Create simple packages.

CO2: Demonstrate the behavior of Multiple Inheritance.

CO3: Construct the program of Multithreading and Exception handling in Java.

CO4: Implement the GUI techniques (Applet and AWT).

CO5:Creating JDBC methods to establish connection with database and simple Networking && Java Bean programs.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: 19CSP303					COURSE TITLE: PRACTICAL- JAVA PROGRAMMING					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	3	2	3	4	4	4	3	3	3	3.3	
CO2	4	4	2	3	4	1	4	5	3	4	3.4	
CO3	4	3	2	4	4	2	4	2	4	4	3.3	
CO4	4	2	2	2	4	2	4	4	4	4	3.2	
CO5	4	4	2	3	4	2	4	3	3	3	3.2	
Mean Overall Score											3.3	

Result: The Score of this Course is 3.3(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL - JAVA PROGRAMMING

1. Finding area and Perimeter of a circle. Use Buffered Reader class.
2. Implementing and importing packages.
3. Implementing Interfaces-Arithmetic Manipulations
4. Exception Handling
5. Multithreading
6. Loading image onto applet
7. Implement an application for Arithmetic operation using AWT.
8. Create a database for storing and manipulating student mark list using AWT.
9. Write a program to send in two values to the server program and get back the result calculated using RMI
10. Incorporating circle symbol onto Bean box.

II B.Sc (CS)	INTERNET PROGRAMMING	19CS407
SEMESTER – IV		HRS/WK-5
CORE – VII		CREDIT – 3

Objective:
To enable the students to learn the concepts of Internet Programming.

Course Outcomes(COs):

CO1: To attain a basic knowledge about HTML and its tags
CO2: To Design and develop web pages using HTML
CO3: To Describe the basic JavaScript syntax and structures
CO4: To Understand the Document Object Model Forms in JavaScript
CO5: To Ability to identifying the basic suitable tags and CSS styles to design web pages and also to know the benefits of using XML.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CS407					COURSE TITLE: INTERNET PROGRAMMING					HOURS: 5	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	2	3	4	4	4	3	3	3	3.4	
CO2	4	4	2	3	4	4	4	3	3	3	3.4	
CO3	4	4	2	3	4	4	4	3	3	3	3.4	
CO4	4	4	2	3	4	4	4	3	2	3	3.3	
CO5	4	3	2	3	4	4	4	3	2	3	3.2	
Mean Overall Score											3.3	

Result: The Score of this Course is 3.3(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT-I **[10 Hrs]**

HTML: Introduction to HTML – List – Creating Table – Linking Document Frames – Graphics to HTML Doc.

UNIT-II **[10 Hrs]**

JavaScript: Introduction – Advantage of JAVA Script - JAVA Script Syntax – Data type – Variable – Array – Operator and Expressions – Looping Constructor – Function – Dialog Box.

UNIT-III **[15Hrs]**

JavaScript DOM Forms:

JSSS DOM-understanding objects in HTML-Browser objects-JavaScript forms: -Form objects- Built-in objects (String, Math, Date)-User defined objects.

UNIT-IV **[10 Hrs]**

DHTML

Cascading Style Sheets-Class-Using Span Tag-External style sheets-Using div tag-Layers

UNITV **[15Hrs]**

XML

XML: Basic XML- Document Type Definition- XML Schema DOM and Presenting XML, XML Parsers and Validation, XSL and XSLT Transformation

Text Books:

1. "Internet : The Complete Reference" by Margaret Levine Young- McGraw Hill Education - Millennium Edition – 1999.

2. "The Internet For Dummies" by John R. Levine , Carol Baroudi, and Margaret Levine Young, Wiley Publishing , Inc- 9th Edition-2003.

3. "How the Internet Works" by Michael Troller, Preston Gralla– Que Publisher - 8th Edition- 2006.

4." Internet – Complete Reference" by Margaret Levine Young - Tata McGraw-Hill Education Pvt. Ltd., - Second Edition – TMHEducation-2002.

5." Web Enable Commercial Application Development Using HTML, DHTML, Java Script, Pen CGI" by Ivan Bayross- BPB Publications,2000.

Reference Books

1." Internet – Complete Reference" by Margaret Levine Young - Tata McGraw-Hill Education Pvt. Ltd., - Second Edition – TMHEducation-2002.

2. "The Everyday Internet All-in-One Desk Reference For Dummies" by Peter Weverka- Wiley Publishing , Inc. - 3rd Edition –2005.

3. "HTML- The Complete Reference" by Thomas A.Powell -Third Edition, TMH,2002.

II B.Sc (CS)	COMPUTER ARCHITECTURE	19CS408
SEMESTER – IV		HRS/WK-4
CORE – VIII		CREDIT – 3

Objective:

To Learn and understand the main components of a computer system and the considerations in their design.

Course Outcomes(COs):

CO1: To know about registers and functions of data transfer.
CO2: To understand the function of Arithmetic Instruction Pipelining.
CO3: To understand the different algorithms used in architecture
CO4: To acquire knowledge about data transfer between peripheral devices.
CO5: To understand the memory types and organization.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CS408					COURSE TITLE:COMPUTER ARCHITECTURE			HOURS: 4	CREDITS: 3
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)				MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	4	3	4	3	4	4	3	4	3	3	3.5
CO2	4	4	3	3	4	4	3	4	4	4	3.7
CO3	3	3	3	3	3	3	4	4	3	4	3.3
CO4	4	3	4	4	3	3	4	4	4	3	3.6
CO5	3	3	3	3	3	4	3	4	4	4	3.4
Mean Overall Score											3.5

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

Unit-I **[12hrs]**

Central Processing Unit: General Register and stack Organization-Instruction Formats- Addressing Modes-Data Transfer and Manipulation.

Unit-II **[12hrs]**

Pipelining: Arithmetic, Instruction and RISC Pipelining-Vector Processing.

Unit–III **[12hrs]**

Computer Arithmetic: Addition and Subtraction –Multiplication and division Algorithms – Floating Point and Decimal Arithmetic operations.

Unit-IV **[12hrs]**

Input Output Organization: Peripheral Devices- I/O Interface- Asynchronous Data Transfer- Models of Transfer-Priority Interrupt – Direct Memory Access – I/O Processor.

Unit–V **[12hrs]**

Memory Organization: Memory Hierarchy – Main Memory-Auxiliary Memory – Associative Cache and Virtual Memory.

Text Books:

1. Computer System Architecture, M.M.Mano,3rd Edition-PHI-1994
2. Computer System Architecture, J.P.Haynes,McGrawHill-1988
3. Computer Architecture: A Quantitative Approach, by John L. Hennessy and David A.Patterson, 4th Edition-2007.

Reference Books:

1. Computer Organization and Design, Pal Chaudhary p,Prentice Hall of India ,2004.
2. Computer Organization and Architecture , Hayes J P , 2nd Edition , McGraw Hill,1998.
3. Structured Computer Organization, Tanenbaum A S, 6th Edition, Prentice Hall,2006.

II B.Sc (CS)	PRACTICAL - INTERNET PROGRAMMING	19CSP404
SEMESTER - IV		HRS/WK-3
CORE – PRACTICAL -IV		CREDIT – 2

Objective:

To enable the students to design simple WebPages using HTML and write simple scripting programs.

Course Outcomes(COs):

CO1: To create a static web page that defines all text formatting tags of HTML.
CO2: Ability to create a static webpage using table tags of HTML
CO3: Construct the webpage using list tags in HTML
CO4: Integrating the concepts of CSS in creating web pages.
CO5: Ability to create webpage using FORMS in JavaScript and to understand the functionality to Develop programs in JavaScript

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CSP404					COURSE TITLE: PRACTICAL-INTERNETPROGRAMMING					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	2	4	3	4	4	3	2	4	3.4	
CO2	4	4	2	4	4	5	4	3	2	4	3.6	
CO3	4	3	3	4	3	4	4	3	3	4	3.4	
CO4	4	4	2	4	4	3	4	3	3	4	3.5	
CO5	4	4	2	4	4	4	4	3	2	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL - INTERNET PROGRAMMING

1. Create a static web page which defines all text formatting tags of HTML in tabular format
2. Create a static webpage using table tags of HTML
3. Create webpage using list tags of HTML.
4. Apply style sheet in Webpage
5. Create webpage using FORMS.
6. Script code for n numbers of Fibonacci series.
7. Script code for employee salary calculation.
8. Script code for simple Calculator.
9. Script Code using Math Functions.
10. Script Code using String Functions.

II B.Sc (CS)	PRACTICAL - ADVANCED EXCEL	NEW CODE
SEMESTER – IV		HRS/WK-2
PRACTICAL		CREDIT – 2

Objective:

To develop automation, advanced data modeling, forecasting, and interactive dashboards in Excel for efficient data management and analysis

Course Outcomes(COs):

CO1: Master advanced Excel functions for complex data analysis and decision-making.
CO2: Automate repetitive tasks with VBA and macros to improve efficiency
CO3: Build dynamic financial models for forecasting and budgeting insights.
CO4: Create interactive dashboards for data visualization and real-time analysis.
CO5: Integrate and manage large datasets using Power Query, Power Pivot.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: New Code					COURSE TITLE: Advanced Excel					HOURS: 2	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	2	4	3	4	4	3	2	4	3.4	
CO2	4	4	2	4	4	5	4	3	2	4	3.6	
CO3	4	3	3	4	3	4	4	3	3	4	3.4	
CO4	4	4	2	4	4	3	4	3	3	4	3.5	
CO5	4	4	2	4	4	4	4	3	2	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL – ADVANCED EXCEL

1. Create and manage Table, manage table styles and options, filter and sort a table
2. Perform Calculations using Data Tools to perform Data manipulation, Data Validation and Consolidation.
3. Perform Calculations using Text Functions Upper, Lower, Proper, Left, Mid, Right Trim, Len, Exact, Concatenate, Find, Substitute.
4. Perform Calculations using Mathematical Functions: Sum, Autosum, Sumif, Subtotal Product, Power, Sqrt, Round.
5. Perform Calculations using Statistical Functions and array functions.
6. Apply Advanced Date and Time Functions
7. Look up data by using VLOOKUP and HLOOKUP Functions
8. Create and modify simple Macros
9. Build a Pivot Table report
10. Create and manage Pivot charts and Slicers.

References:

1. **Saxena, Sanjay,** *MS Office 2000 for Everyone,* New Delhi, Vikas Publishing House, 2000.
2. Frye, Curtis, *Microsoft Office Excel 2007 Step by Step,* Pearson Education/PHI Learning, 2007.

III B.Sc (CS)	RELATIONAL DATABASE MANAGEMENT SYSTEM	CS509
SEMESTER – V		HRS/WK-6
CORE – IX		CREDIT – 5

Objective:
To Understand the basic concepts of RDBMS and its practical applications.

Course Outcomes(COs):

After learning this course, the students should be able to expose

CO1: Ability to understand the Database management system concepts
CO2: Ability to understand Entities and entity sets – relationships and relationship sets , E-R diagram and Keys.
CO3: Ability to understand Relational Model
CO4: Ability to know the basic knowledge of Normalization
CO5: Ability to learn the basic concept of DDL,DML,DCL operations

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: CS509					COURSE TITLE: Relational Database Management System					HOURS: 6	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	5	4	4	3	4	3	2	3.5	
CO2	4	4	3	4	4	4	4	4	2	2	3.5	
CO3	4	4	3	4	4	4	3	4	3	2	3.5	
CO4	4	3	2	3	4	4	4	4	3	2	3.3	
CO5	4	3	4	3	3	3	3	3	3	2	3.1	
Mean Overall Score											3.4	

Result: The Score of this Course is 3.4(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT –I **[20 Hrs]**

Database management system: Definition – purpose of database systems – data abstraction – data models – instances and schemes – data independence – database manager – database administrator – database users – overall system structure.

UNIT-II **[20 Hrs]**

Entity Relationship Model: Entities and entity sets – Relationships and Relationship Sets– attributes – mapping constraints – keys –E-R diagram – reducing E-R diagrams to tables – generalization –aggregation.

UNIT–III **[20 Hrs]**

Relational Model: the relational algebra – the tuple relational calculus – the domain relational calculus.

UNIT–IV **[20 Hrs]**

Normalization: First Normal Form – Second Normal Form – Third Normal Form – Boyce – Codd normal form - Fourth Normal Form.

UNIT–V **[10 Hrs]**

Oracle SQL:DDL,DML,DCL operations – integrity constraints – string functions – number functions – data arithmetic – selecting distinct values – working with null values –pseudocolumns– groupingandorderingdata–subqueries–joins–union,intersect&minus–indexes–clusters– views – sequences – synonym – users, roles and privileges – grant and revoke permission – locks.

Text Books:

1.“Database System concepts “Henry F.Korth& Abraham Silberschatz”-TMH-1998.

2.“Developing ORACLE FORMS Applications “Albert Lulushi-–PHI-1997.

3.“Oracle the complete reference”,George Koch & Kevin loney –Oracle Press Edition- 1997

Reference Books:

1.An Introduction to Database System by C.J. Date.,8thEdition,2009

2. “Principles of database system”JeffreyD.Ullman, Pearson Publication, 2nd Edition, 2014

3.”Introduction to PL/SQL”, George Koch & Kevin loney ,Oracle CorporationPress-2008

III B.Sc (CS)	DOT NET TECHNOLOGIES	CS510S
SEMESTER – V		HRS/WK-5
CORE –X		CREDIT –5

Objective:
To make the student get exposed with the latest programming concept DOTNET and to equip them with skills related to C# and ASP.NET programming.

Course Outcomes(COs):

CO1: Understand the basic concepts of DOT NET framework and its components.
CO2: Acquire the basic programming knowledge using .NET framework.
CO3: Identify and differentiate the ASP and ASP.NET and its architecture.
CO4: Understand the fundamental controls and web controls in C#.
CO5: Understand about ADO.NET and have an effective database as a backend.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSECODE: CS510S					COURSE TITLE: DOT NET TECHNOLOGIES					HOURS: 5	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	4	4	4	4	3	4	4	3.6	
CO2	3	4	3	4	4	4	4	3	3	4	3.6	
CO3	4	3	4	4	3	3	4	3	3	4	3.5	
CO4	3	4	3	4	3	4	4	3	4	4	3.6	
CO5	3	4	3	4	3	3	3	4	3	4	3.4	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[10hrs]**

Introduction to Dot Net:- Dot Net Framework –CLR-MSIL-JIT-Managed Code-Benefits of Dot Net.

UNIT-II: **[15hrs]**
C#.Net: Data types-Variables-Arrays-Properties-Namespace-Methods-Interface-Delegation.

UNIT-III: **[20hrs]**
Asp.net: Difference between Asp and Asp.net-Architecture of Asp.net-Execution model- Difference between Code Behind and aspx file-Implementation of simple web application.

UNIT-IV: **[10hrs]**
Controls in C#:Button-Textbox-Timer-Picture Box-Radio Button-Menu. Web Controls: Ad Rotator-Validation-Calendar .

UNIT –V: **[20hrs]**
ADO.NET: ADO.Net Objects Model – Architecture of ADO.NET-Working with Grid control- Working with Crystal Report Viewer control.

Text Books:

1. C# Programmers Harvey M. Deitel& Paul J.Deitel - Second Edition-Pearson Edition - 2011.
2. C#.Net YashavantKanetkar, Motilal Books of India 1- Edition2004.
3. C# in an nutshell. O'Reilley Publication Peter Drayton , Ben Albahari, Ted Neward Edition - 2002
4. Programming with C# E.Balaguruswamy. -. Tata McGraw – Hill Publication. 1- Edition 5th Reprint, Tata McGraw Hill,2004.

Reference Books:

1. C# - A Beginner's Guide Herbert Schlitz Osborne/ McGraw – Hill Publication- 1 Editon 2002
2. C# Programming with the Public Bata Burton Harvey, Simon Robinson, Julian Templeman and Karli Waston, , Shroff Publishers & Distributors Pvt. Ltd(SPD) Mumbai, 3rd Edition -2001.
3. Ben Albahart, Peter Drayton and Brad Merrill, 'c# Essentials', SPD, Mumbai March - 1 Editon2001.
4. ThamariSelvei, A text Book on C#: A Systematic Approach to OOP, Pearson Ed. 1st Edition:2013

III B.Sc (CS)	SOFTWARE ENGINEERING	19ECS51A
SEMESTER – V		HRS/WK-6
Elective – II Option(I)		CREDIT – 4

Objective:

To introduce the concepts of software Engineering and the various phases in Software development in order to equip the students in developing project.

Course Outcomes(COs):

After learning this course, the students should be able to expose

CO1: Ability to understand the Software Engineering and Models

CO2: Ability to understand Requirement Engineering and Requirement Engineering Tasks

CO3: Ability to understand Building Analysis Model

CO4: Ability to know the Testing strategies

CO5: Ability to learn the basic concept of the Management Spectrum

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS51A					COURSE TITLE: Software Engineering					HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	3	4	3	3	3	4	4	3.6	
CO2	4	4	3	3	4	4	4	4	4	3	3.7	
CO3	4	4	3	4	4	4	4	3	3	3	3.6	
CO4	4	4	3	4	4	4	4	3	4	4	3.8	
CO5	4	4	3	4	4	4	4	3	3	4	3.7	
Mean Overall Score											3.7	

Result: The Score of this Course is 3.7(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

Unit-I: **[20hrs]**

Software Engineering and Models: Introduction -Characteristics of Software-Software Myths- **Process Models**: The Waterfall Model- Incremental Process Models: The Incremental Model, The RAD Model - **Evolutionary Process Models:** Prototyping, The Spiral Model, The Concurrent Development Model.

Unit-II: **[15hrs]**

Requirement Engineering: Requirement Engineering Tasks: Inception, Elicitation, Elaboration, Negotiation, Specification, Validation, Requirement management - Initiating the Requirements Engineering Process: Identifying the stake-holder, Recognizing the multiple view point, Working towards collaboration, Asking the first question- Eliciting Requirements: Collaborative requirement gathering- Quality function deployment (QFD)- Users scenarios- Elicitations work product.

UNIT-III: **[20hrs]**

Building Analysis Model: Requirement Analysis: Overall objectives and Philosophy,
Analysis Rule of thumbs, Domain Analysis - Data Modeling: Data Objects, Data Attributes, Relationships, Cardinality and Modality – Flow Oriented Modeling – Class Based Modeling – Creating a Behavioral Model.

Unit-IV: **[20hrs]**

Testing: Introduction about testing: Testing ,Generic characteristics of testing, Verification and Validation - Test Strategies for Conventional Software: Unit Testing, Integration Testing: Top-down Integration, Bottom-up Integration - Validation Testing – System Testing –White Box Testing – Basic Path testing : Flow Graph Notation, Independent paths, Cyclomatic Complexity, Graph matrices method - Control Structure – Black Box Testing: Graph-Based Testing Methods , Equivalence Partitioning, Boundary Value Analysis, Orthogonal Array Testing

Unit-V: **[15hrs]**

Project Management: The Management Spectrum- The People: The Players, Team Leaders, The Software Team- Coordination and Communication Issues-The Product: Software Scope, Problem Decomposition - The Process: Melding the Product and the Process, Process Decomposition – The Project: Signs of Project Failure, Five-part commonsense approach to software projects - Formal Technical Reviews(FTR).

Text Book:

1. R.S.Pressman – Software Engineering –Sixth Edition McGraw Hill International edition-2007.

Reference Books:

1. Richard Fairley – Software Engineering – (Design, Reliability and Management) – Tata McGraw Hill edition–1983.
2. Software Engineering: (Update), 8th Edition. Ian Sommerville, PearsonEdition-2006.

III B.Sc (CS)	MANAGEMENT INFORMATION SYSTEM	19ECS51B
SEMESTER – V		HRS/WK-6
Elective – II Option(II)		CREDIT - 4

Objective:

To introduce the concepts of Management Information System and its various phases in Software Development Management to equip the students in understanding project Environment.

Course Outcomes(COs):

After learning this course, the students should be able to expose

CO1: Ability to understand the basics of Information Systems (IS)

CO2: Ability to understand Information systems for business operations

CO3: Ability to understand Managing Information Technology

CO4: Ability to know the Enterprise Resource Planning(ERP)

CO5: Ability to learn the basic concept of ERP implementation

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS51B					COURSE TITLE: Management Information System					HOURS: 6	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	3	2	4	4	4	2	4	3	3.4	
CO2	4	4	3	2	4	4	4	2	4	4	3.5	
CO3	4	4	3	3	4	3	3	3	4	3	3.4	
CO4	3	4	3	3	4	4	4	2	4	4	3.5	
CO5	4	4	3	2	4	4	4	3	4	4	3.6	
										Mean Overall Score	3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I: **[20hrs]**

Introduction to Information systems(IS): why study IS- why business need information technology (IT) – fundamentals of IS concepts – overview of IS – solving business problems with IS – developing IS solutions.

UNIT-II: **[20hrs]**

Information systems for business operations: Business IS – marketing, manufacturing, human resource, accounting and financial information systems – transaction processing system – management information and decision support systems.

UNIT-III: **[20hrs]**

Managing information technology: Managing information resource and technologies – global IT management – planning and implementing business change with IT.

UNIT-IV: **[15hrs]**

Enterprise Resource Planning (ERP): an overview – benefits of ERP – ERP and related technologies – business process reengineering – data warehousing – data mining – online analytical processing – supply chain management.

UNIT-V: **[15hrs]**

ERP implementation: ERP implementation life cycle – implementation methodology – hidden cost – organizing the implementation – vendors, consultants and users contracts with vendors, consultants and employees project management and monitoring – ERP present and future – turbo change the ERP systems – enterprise integration applications – ERP and E- commerce – ERP and Internet.

Text Book:

1. James A O'Brien – Management Information Systems for managing IT in the internetworked Enterprise – 4thEdition, Tata McGraw Hill, New Delhi, 1999.

Reference Books:

1. Enterprise Resource Planning - Alexis Leon, Tata McGraw Hill, New Delhi,2000.
2. Alexis LeonERP Demystified ... Enterprise Resource Planning, Tata McGraw-Hill Publishing Company Ltd, New Delhi,2007.
3. Management Information Systems, W.S. Jaswadekar – Tata McGraw Hill, New Delhi,1998.

III B.Sc(CS)	DATA COMMUNICATION AND NETWORKS	19ECS52A
SEMESTER - V		HRS/WK-5
Elective –I (Option I)		CREDIT –4

Objective:

To enable the students to get acquainted with the basics of Networks and to make them concentrate on research side with respect to networks.

Course Outcomes(COs):

CO1: To know about basics of networks and internetworks.
CO2: To understand the function of layers and signals.
CO3: Ability to understand the different transmission medium with error correction and detection.
CO4: Ability to acquire knowledge about switching
CO5: To understand the concept of networking, internetworking devices and routing algorithm.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:19ECS52A					COURSE TITLE: DATA COMMUNICATION AND NETWORKS					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	3	3	3	4	4	3	3	3	4	3.4	
CO2	3	4	3	4	4	4	3	3	3	4	3.5	
CO3	3	3	4	3	3	3	3	3	4	3	3.2	
CO4	4	3	4	3	3	3	4	3	3	3	3.3	
CO5	3	3	4	3	4	3	4	3	3	4	3.4	
Mean Overall Score											3.4	

Result: The Score of this Course is 3.4(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[10hrs]**

Networks: Protocols and standard – line configuration – topology – transmission mode – categories of networks – inter networks.

UNIT-II **[20hrs]**

The OSI Model: Functions of the layers – TCP/IP protocol suite – signals – analog and digital signal – periodic and a periodic signal – analog signals – digital signal – data transmission – data terminal equipment – data circuit terminals equipment – modems.

UNIT-III **[20hrs]**

Transmission Media: Guided media – unguided media – transmission impairments – media comparison. Multiplexing – FDM – TDM – WDM. Error detection and correction – types of errors–detection – vertical redundancy check (VRC) – longitudinal redundancy check (LRC) – cyclic redundancy check (CRC) – check sum – error correction.

UNIT-IV **[15hrs]**

Switching: Circuit switching – packet switching – message switching – networking and internetworking devices – repeaters – bridges – routers – gateways.

UNIT-V **[10hrs]**

Routing algorithms: Distance vector routing – link state routing – data link control – line discipline – flow control – error control.

Text Books:

1. "Data Communications and Networks" – Behrouz A Forouzan, Second Edition, Tata McGraw Hill,2002.

2. "Data and Computer Communication", William Stallings, 7th Edition, Pearson Education – 2006.
3. Introduction to Data Communications and Networking. Wayne Tomasi . Pearson Prentice Hall, 2005

Reference Books:

1. William Stallings, "Data & Computer Communications", Sixth Edition, Pearson Education, 2001.
2. Introduction to Data Communications and Networking by Behrouz Forouzan, Catherine Ann Coombs, and Sophia Chung Fegan-1997.
3. Fred Halsall, "Data Communications, Computer Networks and Open Systems", Addison Wessley,1995.

III B.Sc (CS)	ELECTRONIC COMMERCE	19ECS52B
SEMESTER - V		HRS/WK-5
Elective –I (Option II)		CREDIT –4

Objective:
To explore the basic concepts of E-Commerce and its Applications in real world.

Course Outcomes(COs):

CO1: To know about basics of E-Commerce.
CO2: To understand the use of Electronic Payment.
CO3: To understand the various security policies.
CO4: To acquire knowledge about various cards used for transactions.
CO5: To know about the Internet Applications for E-commerce.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS52B					COURSE TITLE: Electronic Commerce					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	5	4	4	3	4	3	3	3.6	
CO2	4	4	3	4	4	4	4	4	2	3	3.6	
CO3	4	4	3	4	4	4	3	4	3	2	3.5	
CO4	4	3	2	3	4	4	4	4	3	3	3.4	
CO5	4	3	4	3	3	3	3	3	3	4	3.3	
Mean Overall Score											3.48	

Result: The Score of this Course is 3.48(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-1 **[10HRS]**

Electronic commerce environment and opportunities: Background – the electronic commerce environment - electronic marketplace technologies – models of electronic commerce: Overview – electronic data interchange – migration to open EDI – electronic commerce with WWW/Internet – Commerce Net Advocacy – Web commerce going forward.

UNIT-II **[15HRS]**

Approaches to safe electronic commerce: Overview – secure transport protocols – secure transactions – secure electronic payment protocol (SEPP) – Secure electronic transaction (SET) – certificates for authentication – security on web servers and enterprise networks – electronic cash and electronic payment schemes: Internet monetary payment and security requirements – payment and purchase order process – on-line electronic cash.

UNIT-III **[20HRS]**

Internet/Intranet security issues and solutions: The need for computer security – specific intruder approaches – security strategies – security tools – encryption – enterprise networking and access to the internet – antivirus programs – security teams.

UNIT-IV **[20HRS]**

MasterCard/visa secure electronic transaction: Introduction – business requirements – concepts – payment processing – E-mail and secure E-mail technologies for electronic commerce: Introduction – The means of distribution A Model for message handling – how does E-mail work?- MIME: Multipurpose internet mail extensions – S/MIME: Secure multipurpose internet mail extensions – MOSS: Message object. Security services – Comparisons of security methods – MIME and related facilities for EDI over the internet.

UNIT-V **[10HRS]**

Internet and web site establishment: Introduction – technologies for web servers – internet tools relevant to commerce – internet applications for commerce – internet charges – internet access and architecture – searching the internet – internet resources: A travelogue of web malls: Introduction a shopping experience – a travelogue – applications: Advertising on the internet: Issues and technologies: Introduction – advertising on the web – "Marketing 101" – creating a website.

Text Books:

1. Daniel Minoli and Emma Minoli. Web commerce technology handbook. Tata Mc Graw Hill. 1999.
2. Kamalesh K Bajaj and DebjaniNag.. E-Commerce, the cutting edge of business. TataMcGrawHill.1999
3. Janice Reynolds.. The Complete E-Commerce Book: Design, Build & Maintain a Successful Web-based Business. Focal PressPublication.2004

Reference Books:

1. Kenneth C. Laudon, Carol GuercioTraver.. E-commerce: Business, Technology, Society. Addison WesleyPublication,2001
2. Constance H. McLaren, Bruce J. McLaren. E-commerce: Business on the Internet South. Western Educational Publication,1999.

III B.Sc(CS)	Web Technology – WordPress	NEW CODE
SEMESTER – V	(Upskilling Course)	HRS/WK-2
PRACTICAL		CREDIT - 2

Objectives:

This skill course introduces the fundamentals of web technology and gets practically exposed.

Course Outcomes (COs):

CO1: Acquire Fundamental knowledge on WordPress.
CO2: Learn the Basics of webpage design using WordPress.
CO3: Design the web page with various themes and its effects on Website.
CO4: Create Website by sharing your images using WordPress.
CO5: Develop an idea about displaying the content in the web site.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:*					COURSE TITLE: Practical – Web Technology – WordPress					HOURS: 2	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

1. Create a simple Blog by selecting a theme, setting up your pages, and starting to write posts using WordPress.
2. Create E-commerce website and set up the product and displaying the products using WordPress.
3. Create a Portfolio website to showcase your work by selecting a theme, set up your pages, and start displaying your content using WordPress.
4. Create a website for the department Event by selecting a theme using WordPress.
5. Create Job board where employers can post job listings and job seekers can search for jobs using WordPress.
6. Create a Fitness website that provide resources and information on fitness and health using WordPress.
7. Create a technology website that provides technology news, reviews and insights using WordPress.
8. Create Photography website by selecting a theme that's designed for photography, set up your galleries, and start sharing your images using WordPress.
9. Create a Travel website where you can share information about destination ideas using WordPress.
10. Create Educational website that provides resources and learning materials for students using WordPress.

TEXT BOOKS:

1. WordPress for Beginners 2021: A visual step by step guide to mastering WordPress, Dr Andy Williams 10th edition 2021.

2. WordPress for Dummies, Lisa Sabin-Wilson,9th edition 2019.

3. WordPress 5 Complete: Build beautiful and feature-rich websites from scratch, Karol Krol 7th edition 2019.

REFERENCE BOOKS

1. WordPress 5 Cookbook: Actionable Solutions to Common Problems when Building Websites with WordPress , Rakhitha Nimesh Ratnayake , 2nd edition 2020.

2. WordPress to Go: How to Build a WordPress Website on Your Own Domain, from Scratch, Even If You are a Complete Beginner. Sarah McHarry,2013

III B.Sc (CS)	PRACTICAL - ORACLE	CSP505
SEMESTER – V		HRS/WK-3
CORE - PRACTICAL V		CREDIT – 2

Objective:

To make the student aware of the ORACLE as a Back-End tool.

Course Outcomes(COs):

CO1: Ability to understand the Simple queries using DDL, DML and DCL

CO2: Ability to understand Views and snapshots.

CO3: Ability to understand PL/SQL Block

CO4: Ability to know the basic PL/SQL functions, procedures and Triggers

CO5: Ability to learn the basic concept of Oracle Reports.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: CSP505					COURSE TITLE:ORACLE					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	4	5	4	4	3	4	3	2	3.5	
CO2	4	4	3	4	4	4	4	4	2	3	3.6	
CO3	4	4	3	4	4	4	3	4	3	2	3.5	
CO4	4	3	2	3	4	4	4	4	3	4	3.5	
CO5	4	3	4	3	3	3	3	3	3	3	3.2	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL - ORACLE

SQL

1. Simple Queries using DDL, DML and DCL
2. SQL Aggregate Functions
3. SET Operations
4. Views and Snapshots
5. Multiple Tables and Nested Queries

PL/SQL

6. PL/SQL Block
7. Function and Procedures
8. Subprograms and Packages
9. Triggers
10. Cursors

Forms and Reports

11. Designing Oracle Forms using Menus and Buttons
12. Developing Oracle Reports.

III B.Sc, (CS)	PRACTICAL - DOT NET TECHNOLOGIES	CSP506S
SEMESTER - V		HRS/WK-3
CORE PRACTICAL – VI		CREDIT –2

Objective:

To enable students to learn and program using C#.NET and also to develop web application using ASP.NET.

Course Outcomes(COs):

CO1: Knowledge to develop windows and web applications.

CO2: Develop a simple bio-data storage application.

CO3: Usage of the standard controls for creating color chooser and notepad applications.

CO4: Learn to create login form using MS-Access as backend.

CO5: Acquire a good programming knowledge for creating database applications and design a simple website using master page.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: CSP506S					COURSE TITLE: Practical-Dot Net Technologies					HOURS: 3	CREDITS: 2
COURSE OUTCOME S	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5 (High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL - DOT NET TECHNOLOGIES

WINDOWS APPLICATION

1. To develop simple student bio data
2. Create a color chooser using standard control.
3. To develop Notepad Application.
4. Login Form Creation using MS Access.

WEB APPLICATION

5. Create an application to sending a request from one page to another using session.
6. Create a simple website for an organization using Master Page.
7. To develop database application for student mark list processing using validation control (Oracle)
8. To develop database Application for Telephone Directory to store phone number, Customer name and Customer address and display it with Grid View control.(SQL Server)

III B.Sc (CS)	OPERATING SYSTEM	19CS613
SEMESTER - VI		HRS/WK- 6
CORE - XI		CREDIT – 5

Objective:

To make the students aware of all basic concepts related to operating system and illustrate with UNIX Case Study.

Course Outcomes(COs):

After learning this course, the students should be able to expose

CO1: Ability to understand the services provided by the OS and also to understand the history of the OS.
CO2: Ability to understand about process and how the processes are Communicated and scheduled.
CO3: Ability to understand the different techniques of memory management.
CO4: Ability to know the basic knowledge of protection and security mechanisms.
CO5: Ability to learn the basic concept of operating system using UNIX operating System.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: 19CS613					COURSE TITLE:OPERATING SYSTEM					HOURS: 6	CREDITS : 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	3	5	4	4	4	3	5	4.0	
CO2	4	4	4	4	4	4	4	3	4	5	4.0	
CO3	3	3	3	3	3	4	4	4	3	4	3.4	
CO4	4	3	4	4	4	4	4	4	3	4	3.8	
CO5	3	4	4	4	5	4	4	4	4	5	4.1	
Mean Overall Score											3.8	

Result: The Score of this Course is 3.8(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[20 hrs]**

Introduction to Operating System: Definition of Operating System- Booting: Before Booting and after Booting, Types of Booting – Kernel- History of Operating System - Operating system functions: Information Management, Process Management, and Memory Management.

UNIT-II **[20 hrs]**

Process Management and Deadlock: Process Management: Context Switching, Different States of Process, Process Sate Transition Diagram, Process Control Block (PCB), Operation on Process – Levels of Scheduling – Short term Scheduling Policies: Round robin method - Scheduling based on priority (or priority method) - Priority class method - Heuristic scheduling. - Inter-process communication - Dead Lock - Dead Lock prerequisites - Dead Lock Strategies.

UNIT-III **[20hrs]**

Memory Management: Memory Management: Real Memory Management, Virtual Memory Management – Real Memory Management: Contiguous Real Memory Management, Single Contiguous , Fixed Partitioned, Variable Partitions, Non- Contiguous Real Memory Management–Paging , Segmentation - Virtual Memory Management Systems.

UNIT-IV **[20hrs]**

GUI and Security: GUI – Components of GUI – Requirements of Windows based GUI – Security: Threats – Attacks – Worms – Virus - Design principles – Encryption: Methods of Encryption – Authentication: Authentication in Centralized Environment, Authentication in Distributed Environment.

UNIT-V **[10hrs]**

UNIX: Unix - Architecture of Unix: Various Modules and relationship of Unix and their relationship – Unix File System: Different Types of Files, Important Unix Directories and Files – Basic commands in UNIX.

Text Books:

1. A.S.Godbole-OperatingSystems-TMH-1999.
2. A.Silberschatz and P.B.Galvin- Operating system concepts-Addision-Wesley Publishing company, Fifth Edition,1998.

Reference Books:

1. Andrew S.Tannenbaum, “Operating Systems: Design and Implementation”, 3/e,PHI,2006.
2. Charles Crowley,”Opearting Systems-A design Oriented Approcah”,TataMCGraw Hill ,1998.
3. William Stallings, “Operating Systems”,5/e PHI/Pearson Education ,1997.

III B.Sc, (CS)	OPEN SOURCE TECHNOLOGIES-PHP	19CS614
SEM – VI		HRS/WK- 6
CORE - XII		CREDIT - 5

Objective:

To impart basic knowledge of PHP and My SQL with Programming Skills.

Course Outcomes(COs):
CO1: To gain knowledge about basics of PHP.
CO2: To understand the concept of strings and arrays.
CO3: To implement function and control structures
CO4: Ability to learn about controls for reading data in Web page.
CO5: To implement the concept of database in PHP.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: 19CS614					COURSE TITLE: OPEN SOURCE TECHNOLOGY- PHP					HOURS: 6	CREDITS: 5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	3	3	3	4	4	3	4	3	3.5	
CO2	3	3	3	3	2	4	4	3	4	3	3.2	
CO3	3	3	3	3	2	4	4	3	3	3	3.1	
CO4	3	3	3	4	3	3	3	3	4	3	3.2	
CO5	3	3	4	3	3	3	4	3	4	4	3.4	
Mean Overall Score											3.2	

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[15 Hrs]**

ESSENTIAL PHP: Creating your Development Environment – Mixing HTML and PHP – Command - Line PHP – Working with Variables – Creating Constants – Understanding PHP's Internal Data types – Operators - Data Input/ Output functions - flow of control – branching , looping, switch, break and continue - Go to statement-comma operator.

UNIT-II **[20 Hrs]**

STRINGS AND ARRAYS: String Functions- Converting to and from Strings - Formatting Text String - Modifying Data in an Array-Deleting Array Elements- Arrays with Loops - PHP Array Functions-Sorting Arrays.

UNIT-III **[20 Hrs]**

CREATING FUNCTIONS: Passing Functions- Passing Arrays to Functions- Passing by Reference- Using Default Arguments- Returning Data from functions- Nesting Functions:

UNIT-IV **[20 Hrs]**

READING DATA IN WEB PAGES: Setting up web pages to communication with PHP- Handling Text Fields-Checkbox-Radio buttons-Password Controls- List boxes- Buttons – Hidden Control – File Upload.

UNIT-V **[15Hrs]**

WORKING WITH DATABASES: Creating a MYSOL Database- Creating a New Table-Accessing the Databases in PHP-Updating Databases-Inserting New Data Items into a Database- Deleting Records-Sorting your Data.

Text Book:

"The Complete Reference PHP", Steven Holzner, Tata McGraw Hill Pvt.Ltd., 2008.

Reference Book:

"Core PHP programming", Leon Atkinson, Pearson Education, 2004.

III B.Sc, (CS)	Introduction to Artificial Intelligence	NEW CODE
SEM – VI		HRS/WK – 5
ELECTIVE - III Option (II)		CREDIT - 4

Objectives:
To enable students, learn the fundamentals of Artificial Intelligence and explore problem- solving approaches

COURSE OUTCOMES:

CO1: Understanding fundamental concepts of Artificial Intelligence (AI)
CO2: Proficiency in problem-solving methods used in AI
CO3: Competence in knowledge representation techniques
CO4: Ability to design and implement software agents, understanding their architecture, communication protocols, negotiation strategies, and Bargaining
CO5: Application of AI techniques and methodologies to real-world problems.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: NEW CODE					COURSE TITLE Introduction to Artificial Intelligence					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	5	3	2	5	3.9	
CO2	4	4	4	4	4	4	5	3	2	5	3.9	
CO3	4	4	4	4	4	4	5	3	2	5	3.9	
CO4	4	4	4	4	4	4	5	3	2	5	3.9	
CO5	4	4	4	4	4	4	5	3	2	5	3.9	
Mean Overall Score											3.9	

Result: The Score of this Course is 3.9(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT I : INTRODUCTION TO AI [15 HRS]

Introduction to Artificial Intelligence – Foundations of Artificial Intelligence – History of Artificial Intelligence – What is Artificial Intelligence – Approaches to Artificial Intelligence – Applications of Artificial Intelligence.

UNIT II: PROBLEM SOLVING [15 HRS]

Introduction – Types of Problems – Problem solving Agents –Problem of Building a System -Defining Problem as a State Space Search – Problem Characteristics – Problem Decomposition - Characteristics of Production System

UNIT III : SEARCH ALGORITHMS [15 HRS]

Hierarchical Representation of Search Algorithms – Uninformed Search – Depth First Search – Breadth First Search – Informed Search – Generate and Test – Simple Hill Climbing – Characteristics of Heuristics Search- Differentiate between Uninformed Search and Informed Search.

UNIT IV : KNOWLEDGE REPRESENTATION [15 HRS]

Introduction – Importance of Knowledge – Knowledge Based Systems –Representation of Knowledge- Knowledge organization- Knowledge Manipulation. Knowledge Representation Issues: knowledge Representation- Representation and Mappings-Approaches to Knowledge Representation

UNIT V: EXPERT SYSTEMS [15 HRS]

Introduction to Expert System-Architecture of Expert Systems- Development of Expert System-Capabilities of Expert Systems-Characteristics of Expert Systems-Limitations of Expert Systems-Applications of Expert Systems.

Text Books:

Stuart J Russell and Peter Norvig, Artificial Intelligence – A Modern Approach, PHI Learning, Third Edition, 2015.
Dr.P.Rizwan Ahmed, Artificial Intelligence-Margham Publications, First Edtion 2015.
Patterson W D, Introduction to Artificial Intelligence and Expert Systems, PHI Learning, First Edition, 1995.

Reference Books:

1. Elaine Rich and Kelvin Knight, Artificial Intelligence, TMH, Third Edition, 2009.

III B.Sc, (CS)	INTRODUCTION TO MACHINE LEARNING	NEW CODE
SEM – VI		HRS/WK – 5
ELECTIVE - III Option (II)		CREDIT - 4

Objectives:
The course aims to provide students with a comprehensive understanding of machine learning techniques, algorithms, and applications, equipping them with the knowledge and skills necessary to analyze, design, and implement machine learning solutions for real-world problems.

COURSE OUTCOMES:

CO1: Understanding fundamental concepts of Machine Learning (ML)
CO2: Proficiency in probabilistic and stochastic models used in machine learning, including Bayesian learning, concept learning, maximum likelihood estimation, and hidden Markov models.
CO3: Master supervised learning techniques and unsupervised learning techniques.
CO4: Ability to design and build, train, evaluate, and improve machine learning models
CO5: Modelling and evaluating Machine learning techniques to real-world problems

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: NEW CODE					COURSE TITLE INTRODUCTION TO MACHINE LEARNING					HOURS: 5	CREDTS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	4	4	4	5	3	2	5	3.9	
CO2	4	4	4	4	4	4	5	3	2	5	3.9	
CO3	4	4	4	4	4	4	5	3	2	5	3.9	
CO4	4	4	4	4	4	4	5	3	2	5	3.9	
CO5	4	4	4	4	4	4	5	3	2	5	3.9	
Mean Overall Score											3.9	

Result: The Score of this Course is 3.9(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT - I: **[15 Hrs]**

Introduction: Introduction, easy for human hard for machines, a simple predicting machine, classifying is not very different from predicting, training a simple classifier, one classifier is not enough, Types of machine learning, Applications of Machine Learning, Perspectives and issues in machine learning.

UNIT - II: **[15 Hrs]**

Probabilistic and Stochastic Models: Bayesian Learning – Bayes theorem, Concept learning, Maximum likelihood, Bayes optimal classifier, Gibbs algorithm, Naïve Bayes classifier, Expectation maximization and Gaussian Mixture Models, Hidden Markov models

UNIT - III: **[15 Hrs]**

Supervised learning: Introduction, Regression, Linear regression, Classification: Decision trees, k-Nereast Neighbours, Support Vector Machine, Logistic regression, Random Forest. Artificial Neural Network: Introduction, Perceptrons, multi-layer networks and back propagation.

UNIT - IV: **[15 Hrs]**

Unsupervised learning: Introduction, Supervised vs Unsupervised Cluster Analysis, K-means clustering, Hierarchical clustering. Dimension reduction: Principal Component Analysis, Linear Discriminant Analysis

UNIT - V: **[15 Hrs]**

Modelling and evaluation: Building the model, Training a model, evaluating a model, improving a model. Performance metrics - accuracy, precision, recall, sensitivity, specificity, AUC, RoC, Bias Variance decomposition.

TEXT BOOKS:

1. Saikat Dutt, Subramanian Chandramouli, Amit Kumar Das, ―Machine Learning, Pearson Education.(Unit1: Chapter1:.4,1.5,1.7,1.9; Unit 2: Chapter 6; Unit 3: Chapter 7, 8, 10; Unit 4 Chapter 9 (9.1,9.4), Unit 5: Chapter 3;)
2. Ethem Alpaydin,"Introduction to Machine Learning", MIT Press, Prentice Hall of India, Third Edition 2014. (Unit2: Chapter 7, Chapter 15)
3. Tariq Rashid, "Make your own neural network", Create Space Independent Publishing Platform, US 2016, ISBN:978-1-5308-2660-5 (Unit1, Part1)
4. Shai Shalev-Shwartz, Shai Ben-David, ― Understanding Machine Learning: From Theory to Algorithms, Cambridge University Press.

REFERENCE BOOKS:

1. T. Hastie, R. Tibshirani and J. Friedman, "Elements of Statistical Learning", Springer.
2. Charu C. Aggarwal, "DATA CLUSTERING Algorithms and Applications", CRC Press, 2014.
3. C. Bishop, "Pattern Recognition and Machine Learning", Springer.
4. Sebastian Raschka and Vahid Mirjalili, "Python Machine Learning", Packt Publishing, Third Edition, 2019

III B.SC(CS)	MULTIMEDIA	19ECS66A
SEMESTER – VI		HRS/WK – 5
ELECTIVE- IV Option(I)		CREDIT – 4

Objectives:
To enable the students to learn the concepts of Multimedia.

Course Outcomes(COs):

CO1 : Understand the basic need and ways of using multimedia.
CO2 : Understanding the basics of text and its origin.
CO3 **:** Gain knowledge about the multimedia project developing team.
CO4 **:** Acquire the knowledge about video and its standards.
CO5 **:** To develop and understand about the multimedia project planning and Costing.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: 19ECS66A					COURSE TITLE: MULTIMEDIA					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	3	3	3	3	4	4	3	3	3	3.2	
CO2	3	3	3	4	3	4	4	3	3	3	3.3	
CO3	3	4	3	4	3	3	3	3	4	3	3.3	
CO4	3	3	3	3	3	3	4	3	4	3	3.2	
CO5	3	3	3	3	3	4	3	3	3	4	3.2	
Mean Overall Score											3.2	

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I:

[15 Hrs]

MULTIMEDIA: Definition and Introduction to Multimedia – **Introduction to Making Multimedia:** Needs of Multimedia - **TEXT:** The power of meaning – About fonts and faces – Using text in multimedia – Computers and Text – Font editing and Design tools – Hypermedia and Hypertext.

UNIT-II: **[15 Hrs]**

SOUND: The power of sound – Multimedia system sounds – MIDI versus Digital Audio – Digital Audio – Making MIDI audio – Audio, File formats – Adding sound to your Multimedia project - **IMAGES**: Making still Images – Color – Image file formats.

UNIT -III: **[15 Hrs]**

ANIMATION: The Power of Motion – Principles of Animation – Making animations that works.

UNIT-IV: **[15 Hrs]**

VIDEO: Using Video – Working of Video – Broadcast video standards – Integrating computers and television – Shooting and Editing Video – Video tips – Recording formats – Digital Video.

UNIT-V: **[15 Hrs]**

PLANNING AND COSTING: Project planning – Estimating – RFPs and Bid Proposals - Designing – Producing.

Text Book:

1."Multimedia Making itWork" -Tay Vaughan –- McGraw Hill, 8thEdition-2010,

Reference Book:

1. Multimedia in Practice: Technology and Applications -Jeffcoate, Judith –- Prentice Hall, 2001.

III B.Sc, (CS)	BIG DATA ANALYTICS	ECS66B
SEM – VI		HRS/WK- 5
Elective- IV Option(II)		CREDIT - 4

Objectives:

To understand the fundamentals of big data analytics and the methodologies used in storing, manipulating and analyze large volumes of unstructured data.

Course Outcomes(COs):

CO1: Ability to acquire knowledge on the basics of Big Data.
CO2: Knowing the role and use of virtualization in big data.
CO3: Ability to have a clear idea on hadoop tools and techniques used in big data.
CO4: Ability to become a Big Data Analytics.
CO5: Ability to appreciate the Big Data Storage concepts and technologies

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: ECS66B					COURSE TITLE: BIG DATA ANALYTICS					HOURS: 5	CREDITS: 4
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	4	3	4	4	4	4	3	5	3.9	
CO2	3	4	4	3	4	4	4	4	4	5	3.9	
CO3	4	4	4	4	4	4	3	4	4	4	3.9	
CO4	4	4	3	3	5	3	4	3	3	4	3.6	
CO5	4	3	4	4	5	4	4	4	4	5	4.1	
Mean Overall Score											3.8	

Result: The Score of this Course is 3.8(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

UNIT-I **[15 HRS]**

Introduction To Big Data Analytics: Big Data – History of Big data- Types of Big data – Structured, Unstructured Data and Semi structured – Characteristics of Big Data – Importance of Big data.

UNIT-II **[15 HRS]**

Big data analytics: Activities performed in Big Data – Classification of analytics – Challenges of Big data analytics- Terminologies used in Big Data Environments – Analytics tools.

UNIT-III **[15 HRS]**

Hadoop – Hadoop Overview - Hadoop architectures – Working of Hadoop – Advantage of Hadoop - Key aspects and Components of Hadoop – Limitation of Hadoop.

UNIT-IV **[15 HRS]**

MapReduce Fundamentals: MapReduce task - Text Analytics and Big Data-Customized Approaches for Analysis of Big Data

UNIT-V **[15 HRS]**

Integrating Data Sources-Real-Time Data Streams and Complex Event Processing, Operationalizing Big Data.

Text Book:

1. Judith Hurwitz, Alan Nugent, Fern Halper, Marcia Kaufman. " Big Data For Dummies", Wiley India,New Delhi., 2013

Reference Books:

1. Paul Zikopoulos, Dirk deRoos, Krishnan Parasuraman, Thomas Deutsch, James Giles, David Corrigan.. Harness the Power of Big Data TheIBM Big Data Platform, Tata McGraw Hill Publications, New Delhi.2012
2. Michael Minelli (Author), Michele Chambers (Author), AmbigaDhiraj (Author).. Big Data, Big Analytics: Emerging Business Intelligence and Analytic Trends for Today"s Businesses, Wiley Publications, New Delhi,2013
3. Zikopoulos, Paul, Chris Eaton. Understanding Big Data: Analytics for Enterprise Class Hadoop and Streaming Data, Tata McGraw Hill Publications, New Delhi,2011.

III B.Sc(CS)	GIMP	19SCS62
SEMESTER – VI	(Skill Enhancement Course)	HRS/WK-2
SEC – PRACTICAL		CREDIT - 2

Objectives:

This skill course introduces the fundamentals of Open-Source graphics tool GIMP and gets practically exposed.

Course Outcomes (COs):

CO1: Acquire Fundamental knowledge on GIMP.
CO2: Learn the Basics of GIMP Interface and its practical impact.
CO3: Solve the effects related to effects applied on GIMP.
CO4: Develop an idea about new techniques applied in GIMP.
CO5: Create Applications like Banner, Business Card used for Employability Training.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:19SCS62					COURSE TITLE: Practical- GIMP					HOURS: 2	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	3	4	3	3	3	4	4	3	4	3	3.4	
CO2	4	4	3	4	3	4	3	4	4	3	3.6	
CO3	4	4	3	3	3	3	4	3	4	4	3.5	
CO4	3	4	3	3	3	3	3	4	4	4	3.4	
CO5	4	4	3	3	3	4	4	3	3	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

1. Introduction and installation of GIMP
2. Demonstrate using Tool-box
3. The menus and windows
4. Layer and Layer masking
5. Performing Text Effects
6. Modify Color effects in images
7. Drawing Shapes in GIMP
8. Cutting Images and removing background
9. Design a Business Card
10. Develop a Banner for College

TEXT BOOKS:

1. Beginning Photo Retouching & Restoration Using GIMP, Phillip Whitt,ISBN-13: 978-1-484204-04-7,Paperback (308pp.), EPUB, MOBI, DF,Publisher/Date: Apress/2014,Website: http://www.apress.com/9781484204047

2. The Book of GIMP, Olivier Lecarme, KarineDelvare,ISBN-13: 978-1-59327-383-5, Paperback, 67 6pp,No Starch Press/2013- http://nostarch.com/gimp.

REFERENCE BOOKS

1. Jan Smith, Roman Joost, “GIMP for Absolute Beginners”, Apress Publications, 2012
2. Fazreil Amreen, “Instant GIMP Starter”, Packet Publishing., 2013.
3. Jason van Gumster, Robert Shimonski, “GIMP Bible”, Wiley Publishing, Inc, 2010.

III B.Sc, (CS)	PRACTICAL – OPEN SOURCE TECHNOLOGIES-PHP	CSP607S
SEM – VI		HRS/WK- 3
CORE PRACTICAL- VII		CREDIT -2

Objective:
To enable the student to learn practical scripts and build applications in PHP.

Course Outcomes(COs):

CO1: Learn to develop simple web application in PHP.
CO2: To implement string and array and user defined function in Web application.
C**O3:** Acquire knowledge and skills for creating Home page using PHP.
CO4: Learn to create web form and use POST method in PHP.
CO5: Develop web applications to implement database concept and Learn to build some common web applications using controls.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: CSP607S					COURSE TITLE: Open Source Technologies-PHP					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	3	3	3	3	4	4	4	4	4	3.6	
CO2	3	3	2	2	2	4	4	3	3	3	2.9	
CO3	4	3	3	3	3	3	4	4	4	3	3.4	
CO4	3	3	2	2	2	3	4	3	3	3	2.8	
CO5	4	3	3	3	3	4	4	4	4	4	3.6	
Mean Overall Score											3.2	

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL – OPEN SOURCE TECHNOLOGIES-PHP

1. Simple Programs
2. String Functions
3. Arrays
4. Functions
5. Create a Home Page using PHP
6. Form creation using POST method
7. Database Operations
8. Login form
9. Student mark list creation
10. Electricity bill preparation.

III B.Sc, (CS)	MINI PROJECT	JCS601
SEMESTER - VI		HRS/WK-3
Practical – Mini Project		CREDIT –2

Objective:
The main objective of the Project is to expose the students to industry atmosphere and to get a broad idea to develop project.

Course Outcomes(COs):

CO1: Ability to perform Critical Thinking, Reasoning, and Creative Thinking.
CO2: Ability to use the technology
CO3: Ability to visualize the problems and Provide Solution
CO4: Ability to test technical skills.
CO5: Ability to work both independently and in groups on presentations and/or development of Projects.

SEMESTER VI	COURSE CODE: JCS601					COURSE TITLE: MINI PROJECT							HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)								MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	PSO6	PSO7	PSO8	
CO1	5	4	5	5	4	4	4	4	4	3	4	4	4	4.10
CO2	5	4	5	5	4	4	4	4	5	3	4	4	4	4.20
CO3	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50
CO4	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50
CO5	5	5	5	5	5	5	5	4	5	3	4	4	4	4.50
Mean Overall Score														4.4

Result: The Score of this Course is 4.4(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **Very High** association with Programme Outcomes and Programme Specific Outcomes.

Group Project: A group consist of 2 students.

FORMAT FOR PREPARING PROJECT REPORT

Arrangement of contents

1. Title Page
2. Bonafide Certificate
3. Acknowledgement
4. Table of contents
5. Abstract
6. Chapters of the Report
7. References
8. Appendices, if any

Appendices should be named as APPENDIX –A
APPENDIX -B

BINDING SPECIFICATION

Report should be found using flexible cove of thick white art paper. The Spine for the bound volume should be of black of 2cms width. The Cover should be printed in block letters.

MARGIN SPECIFICATION

Top	:4 cms
Bottom	:3 cms
Left	:4.5cms
Top	:2.5cms

PAGE NUMBERING

All Page numbers should be typed without punctuation on the bottom-center portion of the page. The Preliminary pages (table of contents and abstract) should be numbered in lowercase roman literals. Papers of main text, starting with chapter-1, Should be consecutively numbered using Arabic numerals.

TITLE PAGE

TITLE OF THE PROJECT

A project report

Submitted for the partial fulfillment for the award of degree of

BACHELOR OF COMPUTER SCIENCE

By

STUDENT'S NAME

(Register Number)

Under the Guidance of GUIDE NAME

COLLEGE ADDRESS

Month And Year

CERTIFICATE

CERTIFICATE

This is to certify that the project report entitled

TITLE OF THE PROJECT

being submitted to the St. Joseph's College of Arts and Science (Autonomous),

Affiliated to Annamalai University, Annamalai Nagar.

By

Mr./Ms. STUDENT'S NAME

For the partial Fulfillment for the award of degree of

BACHELOR OF COMPUTER SCIENCE

Is a Bonafide record of work carried out by him/her, under my guidance and supervision.

Internal Guide Head of the Department

Submitted for the viva-voce examination held on----------

Examiners: 1.

2.

SEMESTER – III	BASICS OF COMPUTERS AND ITS APPLICATIONS	19ETA31
Elective		HRS/WK: 7
		Credits: 5

OBJECTIVE:

To know the fundamentals of computers to understand how to use computer application in day today business.

COURSE OUTCOMES(COs)**:**

CO1: To understand Basic concept of computer.
CO2: Ability to acquire knowledge about various types of Computers, types of input and output devices.
CO3: To Learn about Installing & Removing of Software
CO4: To acquire knowledge about computer viruses and its types.
CO5: To Understand the basics usage of MS-Office Packages and the basics concept of Internet.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE:19ETA31					COURSE TITLE: Basics of Computers and its Applications				HOURS:7	CREDITS:5
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)				MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4		
CO1	5	5	5	5	5	5	5	5	5	5	
CO2	5	5	5	5	5	5	5	5	5	5	
CO3	4	4	4	4	4	5	5	5	5	4.5	
CO4	4	4	4	4	4	4	4	4	4	4	
CO5	4	4	4	4	4	4	4	4	4	4	
	Mean Overall Score									4.5	

Result: The Score of this Course is 4.5(Very High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **Very High** association with Programme Outcome and Programme Specific Outcome.

UNIT- I:Basics of Computers and GUI Based Operating System [21Hrs]

Introduction of Computer-Computer and its components- Characteristics of Computer- Generation of Computer-Types of Computers- Uses of Computers.

GUI Based Operating System

Parts of Windows screen-Status Bar,- Use of Common Icons-Viewing & Removing of File, Folders and Directories-Creating and Renaming of files and folders-Opening and closing of different Windows.

UNIT- II :Computer peripherals and Installing & Removing of Software [21Hrs]

Computer Peripherals: - CPU –Types of Processors- Memory - Storage Devices - Input Devices - Output Devices- **Installing & Removing of Software**: Installing & Removing of Fonts and Software's – Viruses-Antivirus Software's

UNIT- III: **PC Package: [21Hrs]**

Introduction to Word Processing, Advantages of word processing, Creating, Saving and Editing a document: Selecting, Deleting, Replacing Text, Copying text to another file. Formatting Text and Paragraph: Using the Font Dialog Box, Paragraph Formatting using Bullets and Numbering in Paragraphs, Checking Spelling, Line spacing, Margins, Space before and after paragraph.

UNIT- IV : **[21Hrs]**

Introduction to spreadsheet, Entering information: Numbers, Formula, Editing Data in a cell, Excel functions, Using a Range with SUM, Moving and copying data, Inserting and Deleting Row and Columns in the worksheet, Using the format cells Dialog box, Using chart wizard to create a chart.

UNIT-V:

Introduction to Power Point and Internet Basics [21Hrs]

Introduction of slide presentation- Presentations-Creating, Manipulating & Enhancing Slides-Organizational Charts- Inserting clip Arts, Adding Objects- formatting and checking text. **Internet Basics:** Networks-Types of Networks-Network Topologies-Internet basics - Basic internet terms - Getting connected to internet - Internet applications - Electronic Mail - Searching the Web.

TEXT BOOKS:

1. Fundamentals of Computer, Kritika Gupta, Sunil Chauhan, AkashSaxena– Laxmi Publication.-2008

2. Fundamentals of Computer, Raja Raman, Prentice Hall of India publications .-2003

3.Microsoft Office 2007 Bible. , John Walkenbach, Herb Tyson, Cary N.Pr, FaitheWempen, John Wiley & Sons publications, 2007.

4. Fundamentals of Internet and the World Wide Web "Raymond Greenlaw--Second Edition-McGraw-Hill publications,2017

REFERENCE BOOKS:

1. "Introduction to Computers and Basic Programming, Xavier," 3rd Edition , New Age International, New Delhi ,2008

1. "Computer Fundamentals ",Sinha P. K., 6th Edition,BPB publications, 2004.
2. "Microsoft Office 2007,Will Train, Gini Corter, Annette Marquis" BPB publications,2007
3. "PC Software for Windows 98, Made Simple R. K. TAXALI " TMH publications, 2001
4. "MS Office 2000 for every one",Sanjay Saxena, Vikas Publishing House PVT LTD,2000.

NME	INTRODUCTION TO INFORMATION TECHNOLOGY	NCSIT301
SEMESTER - III		HRS/WK-3
Part-IV		CREDIT – 2

Objectives:

To understand basic concepts and terminology of information technology

Course Outcomes(COs)**:**

CO1: This course is specially designed to get exposure on the fundamentals of a computer System

CO2: To attain knowledge about Computer Networks, Input, and Output Devices.

CO3: It enables the students by giving them sufficient knowledge on Internet Basics.

CO4: To acquire knowledge about types of Web Browsers and

CO5: To learn about Basics Concepts of Computer Security.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: NCSIT301					TITLE OF THE PAPER: Introduction to Information Technology					HOURS: 3	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	3	3	3	4	4	3	4	3	3.5	
CO2	3	3	3	3	2	4	4	3	4	3	3.2	
CO3	3	3	3	3	2	4	4	3	3	3	3.1	
CO4	3	3	3	4	3	3	3	3	4	3	3.2	
CO5	3	3	4	3	3	3	4	3	4	4	3.4	
									Mean Overall Score		3.2	

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome

UNIT - I: **[9 HRS]**

Introduction of Basics of Computers

Introduction of Computer-Computer and its components- Characteristics of Computer- Generation of Computer-Types of Computers- Uses of Computers- Latest trends in computer

UNIT - II

[9 HRS]

Computer Networks:

Introduction - Local Area Network (LAN), Applications of LAN, Wide Area Network (WAN), Internet, Naming Computers Connected to Internet, The Future of Internet Technology.

UNIT - III

Internet Technologies **[9 HRS]**

Basics of Internet- Basic internet terms -How does the Internet work - Server Types-Tools required for developing a website-Domain Names-Hosting.

UNIT - IV

Web Browsers & HTML **[9 HRS]**

World Wide Web WWW - Web Browsers - Browser Types- Hyper Text Markup Language HTML - Uniform Resource Locator URL - search engines.

UNIT - V

Computer Security **[9 HRS]**

Introduction - Security Threat and Security Attack - Malicious Software - Security Services - Threats – Attacks – Worms – Bombs - Virus.

Text Books:

1. Fundamentals of Information Technology, Alexis Leon And Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009
2. Fundamentals of Computer , Kritika Gupta, Sunil Chauhan, Akash Saxena– Laxmi Publication.-2008
3. "Internet: The Complete Reference" by Margaret Levine Young- McGraw Hill Education - Millennium Edition – 1999 .
4. "The Internet For Dummies" by John R. Levine , Carol Baroudi, and Margaret Levine Young, Wiley Publishing , Inc- 9th Edition- 2003

Reference Books:

1. Introduction to Data Communications and Networking by Behrouz Forouzan, Catherine Ann Coombs, and Sophia Chung Fegan -1997.
2. "How the Internet Works" by Michael Troller, Preston Gralla – Que Publisher - 8th Edition-2006.

SDC	FUNDAMENTALS OF WEB DESIGNING	NCSWD401
SEMESTER -IV		HRS/WK-3
Part- IV		CREDIT – 2

Objectives:

To understand the basic concepts, technologies, and web designing principles.

Course Outcomes(COs)**:**

CO1: To understand the Basics of Internet and its applications.

CO2: Ability to learn about Browsers and Protocols.

CO3: To attain the basic knowledge about tags.

CO4: Understanding and Implementing the basics of web design principles.

CO5: To understand the basics of E-Commerce and its applications.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: NCSWD401					TITLE OF THE PAPER: FUNDAMENTALS OF WEB DESIGNING					HOURS: 3	CREDIT: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	3	3	3	4	4	3	4	3	3.5	
CO2	3	3	3	3	2	4	4	3	4	3	3.2	
CO3	3	3	3	3	2	4	4	3	3	3	3.1	
CO4	3	3	3	4	3	3	3	3	4	3	3.2	
CO5	3	3	4	3	3	3	4	3	4	4	3.4	
										Mean Overall Score	3.2	

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

Unit - I: - **[9 HRS]**

Basics of Internet - Basic internet terms – Internet Based Services- How does the Internet work - Advantages of the Internet-Server Types-Tools required for developing a website- Web pages- Static, Dynamic web pages.

Unit - II: **[9 HRS]**

Web Browsers & Overview of Protocols - WWW-Web Browsers - Browser Types- Uniform Resource Locator URL - search engines- **Protocols:** Simple Mail Transfer Protocol, Hyper Text Transfer Protocol-Emails.

Unit - III: **[9 HRS]**

HTML - Introduction to HTML - Structure of HTML– Creating an HTML document – Heading - Paragraphs - Line Breaks - HTML Tags – Advantages & disadvantages of HTML.

Unit - IV: **[9 HRS]**

Web Design Principles - Basic web design principles- Planning process - Types of website structure - Five Golden rules of web designing - Designing navigation bar - Home Page Layout.

Unit - V: **[9 HRS]**

E-Commerce & E-Business: - Introduction to E-Commerce – Scope of E-Commerce –Types of E-Commerce - E-Commerce Framework - Technologies of E-Commerce- Applications of E-Commerce- Limitations of E-Commerce.

Text Books:

1. "Internet : The Complete Reference" by Margaret Levine Young- McGraw Hill Education -Millennium Edition – 1999 .
2. "The Internet For Dummies" by John R. Levine , Carol Baroudi, and Margaret Levine Young, Wiley Publishing , Inc- 9 th Edition- 2003
3. Kogent Learning Solutions Inc. HTML 5 in simple steps, Dreamtech Press

Reference Books:

1. "How the Internet Works" by Michael Troller, Preston Gralla – Que Publisher - 8th Edition-2006.
2. "Web Technology & Design" by C. Xavier – New Age International Pubslishers – First Edition - 2003

NME	FUNDAMENTALS OF WEB DESIGNING	NCSWD301
SEMESTER -III		HRS/WK-3
Part- IV		CREDIT – 2

Objectives:

To understand the basic concepts, technologies, and web designing principles.

Course Outcomes(COs)**:**

CO1: To understand the Basics of Internet and its applications.

CO2: Ability to learn about Browsers and Protocols.

CO3: To attain the basic knowledge about tags.

CO4: Understanding and Implementing the basics of web design principles.

CO5: To understand the basics of E-Commerce and its applications.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: NCSWD301					TITLE OF THE PAPER: FUNDAMENTALS OF WEB DESIGNING				HOURS: 3	CREDIT: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	4	4	3	3	3	4	4	3	4	3	3.5
CO2	3	3	3	3	2	4	4	3	4	3	3.2
CO3	3	3	3	3	2	4	4	3	3	3	3.1
CO4	3	3	3	4	3	3	3	3	4	3	3.2
CO5	3	3	4	3	3	3	4	3	4	4	3.4
									Mean Overall Score		3.2

Result: The Score of this Course is 3.2(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

Unit - I: - **[9 HRS]**

Basics of Internet - Basic internet terms – Internet Based Services- How does the Internet work - Advantages of the Internet-Server Types-Tools required for developing a website- Web pages- Static, Dynamic web pages.

Unit - II: **[9 HRS]**

Web Browsers & Overview of Protocols - WWW-Web Browsers - Browser Types- Uniform Resource Locator URL - search engines- **Protocols:** Simple Mail Transfer Protocol, Hyper Text Transfer Protocol-Emails.

Unit - III: **[9 HRS]**

HTML - Introduction to HTML - Structure of HTML– Creating an HTML document – Heading - Paragraphs - Line Breaks - HTML Tags – Advantages & disadvantages of HTML.

Unit - IV: **[9 HRS]**

Web Design Principles - Basic web design principles- Planning process - Types of website structure - Five Golden rules of web designing - Designing navigation bar - Home Page Layout.

Unit - V: **[9 HRS]**

E-Commerce & E-Business: - Introduction to E-Commerce – Scope of E-Commerce –Types of E-Commerce - E-Commerce Framework - Technologies of E-Commerce- Applications of E-Commerce-Limitations of E-Commerce.

Text Books:

1. "Internet : The Complete Reference" by Margaret Levine Young- McGraw Hill Education -Millennium Edition – 1999 .
2. "The Internet For Dummies" by John R. Levine , Carol Baroudi, and Margaret Levine Young, Wiley Publishing , Inc- 9 th Edition- 2003
3. Kogent Learning Solutions Inc. HTML 5 in simple steps, Dreamtech Press

Reference Books:

1. "How the Internet Works" by Michael Troller, Preston Gralla – Que Publisher - 8th Edition-2006.
2. "Web Technology & Design" by C. Xavier – New Age International Pubslishers – First Edition - 2003

Naan Mudhalvan	PRACTICAL – WEB DESIGNING	NEW CODE
SEMESTER – IV		HRS/WK-2
PRACTICAL		CREDIT – 2

Objective:

To teach foundational HTML skills for creating well-structured, accessible web pages using core elements and tags.

Course Outcomes(COs):

CO1: Structure web content using basic HTML.
CO2: Create accessible, semantic HTML layouts.
CO3: Develop skills in linking pages, embedding media, and formatting text.
CO4: Build responsive layouts compatible across different devices and browsers.
CO5: Validate HTML for web standards.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: New Code					COURSE TITLE: Web Designing					HOURS: 2	CREDITS: 2
COURSE OUTCOMES	PROGRAMME OUTCOMES(PO)					PROGRAMME SPECIFIC OUTCOMES(PSO)					MEAN SCORE OF CO'S	
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5		
CO1	4	4	2	4	3	4	4	3	2	4	3.4	
CO2	4	4	2	4	4	5	4	3	2	4	3.6	
CO3	4	3	3	4	3	4	4	3	3	4	3.4	
CO4	4	4	2	4	4	3	4	3	3	4	3.5	
CO5	4	4	2	4	4	4	4	3	2	4	3.5	
Mean Overall Score											3.5	

Result: The Score of this Course is 3.5(High)

Association	1%-20%	21%-40%	41%-60%	61%-80%	81%-100%
Scale	1	2	3	4	5
Interval	0<=rating<=1	1.1<=rating<=2	2.1<=rating<=3	3.1<=rating<=4	4.1<=rating<=5
Rating	Very Poor	Poor	Moderate	High	Very High

This Course is having **High** association with Programme Outcome and Programme Specific Outcome.

PRACTICAL – WEB DESIGNING

1. Create a blank HTML page with <!DOCTYPE html>, and add <html>, <head>, and <body> tags.Set a title for the page using the <title> tag inside the <head>.
2. Create a document with headings (from <h1> to <h6>) and paragraphs. Add some example content.
3. Use tags like text formatting tags to style text within paragraphs.
4. Add a Horizontal Line Divider to separate sections of content using the <hr> tag.
5. Create a List of Favorite Foods by using an ordered list (<ul>) tag.
6. Create a link to any website using the <a> tag.
7. Insert an image from an external source using the <img> tag. Include alt text.
8. Create a Simple Navigation Menu using an unordered list (<ul>) with list items (<li>) to create links to "Home," "About," and "Contact" sections.
9. Create a table with information (class Time Table). Use <table>, <tr>, <th>, and <td>.
10. Add a footer section using <footer>. Write "Copyright © 2024."

VACS01	Hardware Trouble Shooting Value Added Course 1	30 HRS

Objective:

This **course** helps to learn step by step trouble shooting techniques of **PC, Laptop and Smart Phone.**

LAPTOP	
DAY 1	Basic concepts of electrical and electronics PC Architecture Peripheral devices and types
DAY 2	PC Assembling and Disassembling
DAY 3	BIOS Installation of windows 7,8
DAY 4	Installation of windows 10 Basic software installations
DAY 5	PC Troubleshooting No power on, No display problem, etc
DAY 6	Laptop service tools Laptop assembling and disassembling Laptop practical LED and LCD display ,battery, keyboard, hard disk, Ram,dvd drive, wifi card. Adapter
DAY 7	Laptop troubleshooting Adapter related problems Battery related problems Lcd related problems Hard disk related problems
DAY 8	Basic electronics Resistor, capacitor ,inductor, diode, transistor, mosfet
DAY 9	Soldering and de-soldering practice Electronics –practical
DAY 10	Laptop motherboard concepts Motherboard troubleshooting
Smart Phone	
DAY 11	Cell phone concepts Cell phone service tools &equipments Cell phone components Mic, ear piece, loud speaker,vibrator,sensors,etc
DAY 12	Cell phone assemble and disassemble LCD TOUCH/PA

DAY 13	Cell phone battery Charging connector Sim card, Secret codes, mobile rooting
DAY 14	Cell phone motherboard troubleshooting Jumper setting Password unlock Mobile flashing
DAY 15	Troubleshooting Charging problem Network problem Display ,Restart problem Mic, speaker related problems, software problems

VACS02	MS-Office (MS-Word, MS-Excel, MS-PowerPoint) Value Added Course 2	30 HRS

Objective:

To gain the practical knowledge of MS-Office (MS-Word, MS-Excel, MS-PowerPoint)

MS-Office (MS-Word, MS-Excel, MS-PowerPoint)	
DAY 1	**Text Basics** Introduction to Word Processing and MS-Word, Document creating, formatting Standard toolbar Text Basics Typing the text, Alignment of text Editing Text: Cut, Copy, Paste, Select All, Clear Find & Replace
DAY 2	**Text Formatting and saving file** New, Open, Close, Save, Save As Formatting Text: Font Size, Font Style Font Color, Use the Bold, Italic, and Underline Change the Text Case Line spacing, Paragraph spacing Shading text and paragraph Working with Tabs and Indents
DAY 3	**Working with Objects** Shapes, Clipart and Picture, Word Art, Smart Art Change the Order of Objects Inserting Text boxes Inserting Word art Inserting symbols Inserting Chart Inserting Header, Footer, page number
DAY 4	**Working with bullets and numbered lists** Multilevel numbering and Bulleting Creating List Customizing List style Page bordering Page background
DAY 5	**Working with Tables and Printing** Table Formatting Table Styles Alignment option

	Merge and split option Page Setup, Setting margins Print Preview, Print
DAY 6	**Introduction to Excel** Introduction to Excel interface Understanding rows and columns, Naming Cells Working with excel workbook and sheets Inserting, Deleting, Copying And Moving of Data Cells, Inserting And Deleting Rows & Columns, Copying, inserting, Renaming the sheet of workbook
DAY 7	**Formatting excel work book**: New, Open, Close, Save, Save As **Formatting Text:** Font Size, Font Style Font Color, Use the Bold, Italic, and Underline Wrap text, Merge and Centre Modifying Columns, Rows & Cells
DAY 8	**Create Effective Charts to Present Data Visually** Inserting Column, Pie chart etc. Create an effective chart with Chart Tool Design, Format, and Layout options Adding chart title Changing layouts Chart styles Editing chart data range Editing data series Changing chart
DAY 9	**Perform Calculations with Functions & Graphs** Creating Simple Formulas Logical Functions Mathematical Functions Creating Graphs A Worksheet Printing of the worksheet, page margin setting and adding header and footer
DAY 10	**Sort and filtering data** Sort and filtering data Using number filter, Text filter Custom filtering Removing filters from columns Conditional formatting
DAY 11	**Creating slides and applying Themes** Introduction to MS - power point Inserting new slide Changing layout of slides Duplicating slides Copying and pasting slide Applying themes to the slide layout

	Changing theme color Slide background Formatting slide background Using slide views
DAY 12	**Working with bullets and numbering** Multilevel numbering and Bulleting Creating List Page bordering Page background Aligning text Text directions Columns option
DAY 13	**Working with Objects & Hyperlinks** Inserting Text boxes Inserting shapes, using quick styles Inserting Word art Inserting symbols Inserting Chart Inserting Hyperlinks Inserting Shapes
DAY 14	**Animation and Slide Transition & Tables** Default Animation, Custom Animation Modify a Default or Custom Animation **Working with Tables** Table Formatting Table Styles Alignment option Merge and split option Inserting Chart & Graphs
DAY 15	**Slide show option** Start slide show Start show from the current slide Rehearse timing Creating custom slide show

DIPLOMA	ADVANCED DIPLOMA IN GRAPHIC DESIGN	120 HRS

Objective:
To understand the basic concepts of a Graphic Design and its Tools.

MODULE1: PHOTOSHOP & BASIC TOOLS [12HRS]

Intro about multimedia & Photoshop- Interface of Photoshop & Basic Tools- Basic Tools Contd- Tools: Selection Tools(Marquee, Lasso, Magic, crop)

MODULE 2: PHOTOSHOP & BASIC TOOLS [12HRS]

Painting Tools(Brush, History, Eraser, Paint)-Retouching tools (Clone, Healing, Dodge, Blur) - Text & Path Tools(Text ,Pen, Shapes, Path Selection)- Other Tools(Notes, Zoom, Eye Dropper)

MODULE 3: PHOTOSHOP LAYERS & FILTERS [12HRS]

Layer Styles(Blending Options)- Masking(Layer, Vector, Quick, Clipping)- UI(User Interface) Design- Website Front End Design

MODULE 4: LAYERS & FILTERS [12HRS]

Layer Adjustments- Edit menu (excluding settings) Layer menu commands- Image & Select Menu.- Filters- History & Actions Automate

MODULE 5: ADOBE ILLUSTRATOR [12HRS]

Introduction - Selection & Drawing Tools- Painting & Graph Tool-

MODULE 6: DESIGN [12HRS]

Symbols & Other Tools- Logo& Brochure Design.

Question Paper Pattern

THEORY EXAMINATION

Continuous Internal Assessment (CIA) 25marks

1.Two Internal Examinations		15 marks
2. Assignment/ Seminar		5 marks
3. Attendance		5 marks
	Total	**25 marks**

External Examination (75 marks)

B. Sc. Computer Science

Time:3Hrs **Max. Marks:75**

Section – A (5 x 5 = 25)

Answer ANY FIVE out of EIGHT

One question from each unit and three questions from important topics with problems and programs

Section – B (5 x 10 = 50)

Answer ANY FIVE out of EIGHT.

One question from each unit and three questions from important topics with problems and programs

PRACTICAL EXAMINATION

Continuous Internal Assessment (CIA) (40 marks)

Based on the periodical evaluation of record and experiments assessed by the staff in charge

External Examination (60 marks)

Total Marks: 60
Time: 3 Hrs

Program	- 50marks
Record	- 10marks

Total - 60marks