ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE

(AUTONOMOUS)

CUDDALORE-1

PG & RESEARCH DEPARTMENT OF

COMPUTER SCIENCE

B.Sc(Computer Science)

SYLLABUS 2019 - 2020

PG and Research Department of Computer Science

B.Sc. Computer Science (Template) 2019 -2020 BATCH

Semester	Code	Part	Subject Title	Hours	Credit
I	LT101T/LH101S/LF101	I	Tamil-I / Hindi-I / French-I	4	3
	LE101T	II	Functional English – I	4	3
	CS101S	III	Programming in C	4	3
	CS102S	III	Digital Logic Fundamentals	4	3
	CSP101S	III	Practical - Programming in C	3	2
	AMCS101T	III	Allied Mathematics - I	8	6
	19AEC101	IV	AEC - English Communication - I	1	1
	VE101T	IV	SEC-Value Education	2	2
			Total	**30**	**23**
II	LT202T/LH202S/LF202	I	Tamil-II / Hindi-II / French-II	4	3
	LE202T	II	Functional English – II	4	3
	CS203S	III	Programming in C++	4	3
	CS204S	III	Fundamentals of Data Structures	4	3
	CSP202S	III	Practical -Programming in C++	3	2
	19AMCS22	III	Allied Mathematics – II	8	6
	19AEC202	IV	AEC-English Communication – II	1	1
	EPD201T/EBT201	IV	Dynamics of Personality/Basic Tamil	2	2
			Total	**30**	**23**
III	LT303T/LH303S/LF303	I	Tamil-III / Hindi-III / French-III	4	3
	LE303T	II	Functional English – III	4	3
	19CS305	III	Java Programming	4	3
	CS306S	III	Fundamentals of Algorithms	4	3
	19CSP303	III	Practical III – JAVA Programming	3	2
	19ASCS31	III	Statistical Methods for Computer Applications – I	8	6
	EVS301S	IV	EVS – Environmental Science	3	3
			Total	**30**	**23**

Semester	Code	Part	Subject Title	Hours	Credit
IV	LT404T/LH404S/LF404	I	Tamil-IV / Hindi-IV / French-IV	4	3
	LE404T	II	Functional English – IV	4	3
	19CS407	III	Internet Programming	4	3
	19CS408	III	Computer Architecture	4	3
	19CSP404	III	Practical IV– Internet Programming Practical	3	2
	19ASCS42	III	Statistical Methods For Computer Applications – II	6	4
	ASCP401T	III	Allied Practical: Statistical Methods for Computer Applications-II	2	2
	AOSS401S	IV	Soft Skills	3	3
			Total	**30**	**23**
V	CS509	III	Relational Database Management System	5	5
	CS510S	III	DOT NET Technologies	5	5
	19ECS51A 19ECS51B	III	**Elective – II**: 1. Software Engineering 2. Management Information System	6	4
	19ECS52A 19ECS52B	III	**Elective - I:** **1**. Data Communications and Network 2. Electronic Commerce	6	4
	CSP505	III	Practical – Oracle	3	2
	CSP506S	III	Practical - DOT Net Technologies	3	2
	19SCS51		Skill Enhancement Course (SEC) Python	2	2
			SSC##(OPTIONAL)		2*
			Total	**30**	**24**

	19CS613	III	Operating System	6	5
	19CS614	III	Open Source Technologies-PHP	6	5
	19ECS65A 19ECS65B	III	**Elective III:** 1. Web Graphics 2. Computer Graphics	5	4
	19ECS66A 19ECS66B	III	**Elective - IV:**1 Multimedia 2 Big data Analytics	5	4
VI	CSP607S	III	Practical VII: Open Source Technologies-PHP	3	2
	JCS601	III	Practical VIII: Mini Project	3	2
	19SCS62		SEC - Practical - GIMP	2	2
			Total	**30**	**24**
	EU601	V	Extension Activities	-	2
			TOTAL CREDITS		**140**

Extra courses –given extra credits -SSC ##- ONLY INTERNAL - READING , WRITING,LISTENING ORAL TEST COMPONENT EXERCISES• ONLY. SEPARATE TEST BASED ON THE ABOVE COMPONENT TO BE TESTED.

I B.Sc (CS)	PROGRAMMING IN C	CS101S
SEMESTER - I		HRS/WK-4
CORE - 1		CREDIT – 3

Objective:
To understand the basic concepts of a structured programming language.

COURSE OUTCOMES:

CO1: To make use of various data types in C Programming.
CO2: To know the flow of various control structures.
CO3: To have familiarity with function calling mechanism.
CO4: To transform a problem into programming constructs.
CO5: To write C programs using Structures,Strings,Arrays, Pointers and File Handling Programs.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: CS101S					TITLE OF THE PAPER: 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	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 **10hrs**

Basics of C: C fundamentals Character set – Identifier and keywords – data types – constants– Variables – Declarations – Expressions – Statements – operators – Library functions.

UNIT – II **10hrs**

I/O and Control Statements: Data input output functions - Simple C programs - Flow of control – if, if- else, while, do-while, for loop, nested control structures – switch, break and continue, go to statements.

UNIT –III **15hrs**

Function and Storage classes: Function – Definition – Prototypes – Passing arguments – Recursion - Storage classes.

UNIT – IV **15hrs**

Arrays, Structures and Unions: Arrays – Defining and Processing – Passing arrays to functions – Arrays and string - Structures and Unions.

UNIT – V **10hrs**

Pointers and Files: Pointers – Declarations – Passing pointers to function – Operation on Pointers – Pointer and Arrays – Files and operation on files.

Text Books:

1. Programming in ANSI C by E.Balagurusamy.
2. Ashok N.Kamthane, Programming with ANSI and Turbo C, Pearson Education.

Reference Books:

1. B.W. Kernighan and D.M. Ritchie, the C programming Language.
2. H. Schildt, C: The Complete Reference, TMH Edition,.
3. Kanetkar Y., "Let us C", BPB Pub., New Delhi.

I B.Sc (CS)	DIGITAL LOGIC FUNDAMENTALS	CS102S
SEMESTER - I		HRS/WK-4
CORE - 2		CREDIT - 3

Objective:
The main objective of digital logic design is to show clearly how digital circuits are designed today.

COURSE OUTCOMES:
CO1: To know the basic design of computer, arithmetic operation, digital number system and its conversion.
CO2: Understand the Boolean algebra and the operations of Logic Gates.
CO3: To know Simplification of Boolean expressions using K-map.
CO4: Gain knowledge about Arithmetic and Data Processing Digital Circuits.
CO5: Understand the principles of Sequential Logic Circuits such as Flip-flops and Counters.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE: CS102S					TITLE OF THE PAPER: DIGITAL LOGIC FUNDAMENTALS					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	3	4	4	3.6	
CO2	4	4	4	4	4	3	4	3	3	4	3.4	
CO3	4	4	4	3	4	4	4	3	4	4	3.4	
CO4	4	4	4	4	4	4	3	3	4	3	3.5	
CO5	4	4	4	4	3	4	4	4	4	4	3.2	
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:Binary Systems: **[10hrs]**

Digital Computers and Digital Systems - Binary Number System – Binary Addition– Binary Subtraction- Binary Multiplication and Division-Number Base Conversion:decimal, binary, octal, hexadecimal .

Unit-II:Boolean algebra and Logic Gates: **10hrs**

Basic Definitions of Boolean algebra - Basic Theorems and Properties of Boolean Algebra - Digital Logic Gates: AND, OR, NOT, NAND, NOR, Exclusive OR and Exclusive NOR Gates- DeMorgan's Theorem – Universal gates.

Unit-III:Simplification of Boolean Functions: **15hrs**

Sum of Products and Product of Sums - KarnaughMaps - Two and Three Variable Maps - Four Variable Maps -Don't Care Conditions - Rolling the Map – Eliminating Redundant Groups.

Unit-IV:Combinational Logic circuits: **15hrs**

Adders: Half Adder,Full Adder – Subtractors: Half Subtractor,Fullsubtractor. - Binary Adder-BCD Adder – Encoder - Decoders – Multiplexers – Demultiplexers.

UNIT-V:Sequential circuits: **10hrs**

Flip Flops – RS Flip Flop – Clocked RS Flip Flop – D Flip Flop – JK Flip Flop – T Flip Flop – Master Slave Flip Flop - Counters: – Asynchronous and synchronous Counter

Text Books

1. M. Morris Mano, "Digital Logic and Computer Design", PHI, 1996
2. Principles of Digital Electronics, Dr. K. Meena, PHI Learning Private Limited, New Delhi 2009.

Reference Books

1. Louis Neshelsky, "INTRODUCTION TO DIGITAL TECHNOLOGY", John Wiley & Sons, Third Edition, 1983. 2. Digital Logic Design – Ployd
2. **"Digital Logic Design Principles" -**Norman Balabanian , Bradley Carlson -John Wiley & Sons, Inc.

I B.Sc (CS)	PRACTICAL - PROGRAMMING IN C	CSP101S
SEMESTER – I		HRS/WK-3
CORE-PRACTICAL -1		CREDIT - 2

Objective

To understand the working nature of a powerful programming language.

COURSE OUTCOMES:

CO1: To write programs using Control structures&Looping structures
CO2: Understanding the String Manipulation.
CO3: To equip the students with the knowledge of Sorting & Searching
CO4: Ability to learn the concept of Matrix Manipulations & Recursion.
CO5: To Understand the concept of Handling File Operations

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER I	COURSE CODE:CSP101S					TITLE OF THE PAPER: PRACTICAL-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	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-PROGRAMMING IN C

1. Control Statements
    a. Implementing Control statements
    b. Implementing Loop structures.
2. Summation of series
3. String Manipulation.
4. Sorting
    a. Bubble Sort
    b. Selection Sort
    c. Insertion Sort
5. Searching
    a. Linear Search
    b. Binary Search.
6. Matrix Manipulations
7. Recursion
8. File Handling - Mark sheet.

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

Objective:
This paper deals with all the concepts involved in Object Oriented programming with reference to C++ .

Course Outcomes
CO1: Learn the basic concepts, Principles of Object Oriented programming
CO2: Understand the C++ Fundamentals and Functions
CO3: Be skillful in writing C++ code using class objects and understand core concept Constructor
CO4: Know the Core concepts of OOPS such as Inheritance
CO5: 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					TITLE OF THE PAPER :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 **10 hrs**

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 **10 hrs**

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 **15 hrs**

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

UNIT-IV **15 hrs**

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

UNIT-V **10 hrs**

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. E.Balagurusamy, Object Oriented Programming with C++.
2. The C++ Programming Language: Special Edition by BjarneStroustrup
3. C++ Primer by Stanley B. Lippman, Josie Lajoie, and Barbara E. Moo

Reference Books:

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

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

Objective:

This subject will make the student to get acquire with different storage techniques and also make them to implement the logic using different algorithms.

Course Outcomes:

CO1: To understand the Fundamental concepts in Data Structure and about Arrays Structure.

CO2: To Learn the Stack and Queue's operations and applications.

CO3: To gain knowledge about Linked List Concept in Data Structure and its application.

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					TITLE OF THE PAPER: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 **[10 hrs]**

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

Unit-II **[10 hrs]**

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

Unit – III **[15 hrs]**

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

Unit – IV **[15 hrs]**

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

Unit – V **[10 hrs]**

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

Text Books:

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

Reference Books:

S.E Goodman and S.T. Hedetniemi, Introduction to the Design and Analysis of Algorithms, McGraw Hill, International Edition.Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss, Pearson Education.

I B.Sc(CS)	OBJECT ORIENTED PROGRAMMING IN C++ For the students admitted in the year 2010	CSP202S
SEMESTER - II		HRS/WK-3
CORE– Practical -2		CREDIT - 2

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

COURSE OUTCOMES:

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:to 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: CS203S					TITLE OF THE PAPER:OBJECT ORIENTED 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

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 For the students admitted from the year 2019	19CS305
SEMESTER – III		HRS/WK-4
CORE – 5		CREDIT – 3

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

COURSE OUTCOMES:

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 Applets programming and AWT
CO4: Acquire knowledge of JDBC programming techniques in Java.
CO5: Learn to apply networking concepts through Java program and knowledge to acquire RMI concept to solve Java applications.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE:19CS305					TITLE OF THE PAPER: JAVA PROGRAMMING					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	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: 15Hrs

AWT :AWT controls –windows Fundamentals - layout managers

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

15Hrs

UNIT-V:

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

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

Text Books:

1. H. SchildtJava 2: The Complete Reference, Fifth Edition Jul 2017.
2. Deitel&Deitel "JAVA: How to program", tenth edition ,2014.
3. Cray S. HorstmanCore Java, Volume II--Advanced Features (11th Edition)-2019.

Reference Books:

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

YEAR – II	FUNDAMENTALS OF ALGORITHMS	CS306S
SEMESTER - III		HRS/WK-4
CORE – 6		CREDIT –3

Objective:
To enable the students learn the basic concepts of Algorithms.

COURSE OUTCOMES:

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

CO1: Ability to understand fundamental knowledge on data structures.

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 Problem.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: CS306S					TITLE OF THE PAPER: FUNDAMENTALS OF ALGORITHMS					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	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 **[12Hrs]**

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

UNIT-V **[12Hrs]**

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

Text Books:

1. E.Horowitz.S.Sahni and S.Rajasekaran- *Computer Alogrithms*- Glgotia Pub, Pvt.Ltd.,-1998.
2. Design and Analysis of Computer Algorithms by Alfred V. Aho
3. Introduction to Algorithms, Third Edition by Thomas H. Cormen

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

YEAR – II	JAVA PROGRAMMING For the students admitted from the year 2019	19CSP303
SEMESTER– III		HRS/WK-3
CORE – Practical -3		CREDIT - 2

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

COURSE OUTCOMES:

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 write simple networking & Java Bean programs

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: 19CSP303					TITLE OF THE PAPER: 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

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.

B.Sc (CS)	INTERNET PROGRAMMING For the students admitted from the year 2019	19CS407
SEMESTER - IV		HRS/WK-4
CORE – 7		CREDIT – 3

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

COURSE OUTCOMES:

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

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE:19CS407					TITLE OF THE PAPER:INTERNETPROGRAMMING					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	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 **[15 hrs]**

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

UNIT II **[15 hrs]**

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

UNIT III **[15 hrs]**

JavaScript DOM,Forms:

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

UNIT IV **[12 hrs]**

DHTML

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

UNIT V **[15 hrs]**

XML

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

TEXTBOOKS:

1.Web Enabled Commercial Application Development Using HTML, JavaScript, DHTML and PHP-IVAN BAYROSS

2. HTML QuickStart Guide: The Simplified Beginner's Guide To HTML- Clyde Bank Technology.

3.XML: The Complete Reference - The Complete Reference - Williamson Heather

Reference Books

1. Professional JavaScript for Web Developers-Nicholas C. Zakas

2.HTML: Learn Front-end web development -Darshan Magdum

II B.Sc, (CS)	COMPUTER ARCHITECTURE (For the students admitted from the year 2019)	19CS408
SEMESTER – IV		HRS/WK-4
Core- 8		CREDIT - 3

Objective:
Know and understand the main components of a computer system and the considerations in their design.

COURSE OUTCOMES:

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

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CS408					TITLE OF THE PAPER: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 **[12 hrs]**

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

Unit-II **[12 hrs]**

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

Unit –III **[12 hrs]**

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

Unit- IV **[12 hrs]**

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

Unit –V **[12 hrs]**

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

Text Books:

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

Reference Books :

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

II B.Sc (CS)	Internet Programming Practical For the students admitted from the year 2019	19CSP404
SEMESTER - VI		HRS/WK-3
Practical - 4		CREDIT – 2

Objective:
To enable the students to design simple WebPages using HTML and write simple scripting program.

COURSE OUTCOMES:

CO1: To create a static web page 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 and to Develop programs in JavaScript

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: 19CSP404					TITLE OF THE PAPER: 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

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 a webpage using list tags of HTML.
4. Create a webpage using style sheet.
5. Create a webpage using FORMS.
6. Write a java Script code to generate Fibonacci series.
7. Write a java Script code to generate paybill.
8. Write a java Script code to develop a simple Calculator.
9. Write a java Script code using Math Functions.
10. Write a java Script code using String Functions.

YEAR – II	SOFT SKILLS For the students admitted from the year 2013	AOSS401S
SEMESTER– IV		HRS/WK-3
		CREDIT – 3

Objective:

A learning experience that grows with time that increase skills

Course Outcomes:

CO1: To be able to apply what is learned to everyday life understands knowledge of Group Discussion.

CO2: Ability to know about Interview preparation.

CO3: Ability to know quantitative aptitude.

CO4: Ability to know the basic concept of Logical Reasoning with example.

CO5: Ability to know the sequence series and syllogism problem.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: AOSS401S					TITLE OF THE PAPER: SOFTSKILL					HOURS: 3	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	5	5	4	4	4	4	4	3	4.0	
CO2	4	4	3	4	3	4	4	3	3	4	3.6	
CO3	4	4	3	3	4	4	4	3	4	4	3.7	
CO4	4	4	3	3	3	4	4	3	4	4	3.6	
CO5	4	4	3	3	3	4	4	3	4	4	3.6	
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 **10hrs**

Group Discussion: Why Group Discussion is important- Types of Group Discussion-techniques in Group Discussion-Tips for Group Discussion.

Unit-II **10hrs**

Interview Preparation- Common Interview Questions - Questions to Ask Your Employer-What Employers Want- Attitude & Effort - Body Language –Types of Interview: The MockInterview- Phone Interviews- Behavioural Interviews- Closing the Interview-Thank You Notes & Follow-Ups.

Unit-III **15hrs**

Quantitative Aptitude: Time and work -Time and Distance -Heights and Distances Data Interpretation: Tabulation – Bar Graphs – Pie Charts – Line Graphs.

Unit-IV: **10hrs**

Logical Reasoning (1): Analogies –Arrangement-Causes and Effects -Family Tree-Puzzles based questions.

Unit V **15hrs**

Logical Reasoning (2): Sequence and Series -Code based questions on letters of alphabet-Syllogism-Statement and Conclusion.

References:

1. Group Discussion: A Practical Guide to Participation And Leadership by Kathryn Sue Young, Julia T. Wood, Gerald M. Phillips and Douglas J. Pedersen (Jun 25, 2006)
2. How To Interview Like A Pro: Forty-Three Rules For Getting Your Next Job Paperback – July 25, 2012-by JD Mary Greenwood (Author)
3. R.S. Aggarwal, Objective Arithmetic , S. Chand & Company, New Delhi , 2005
4. Govind Prasad Singh and Rakesh Kumar, Text Book of Quickest Mathematics (for all Competitive Examinations), KiranPrakashan, 2012
5. R.S. Aggarwal, Quantitative Aptitude, S. Chand & Company, New Delhi, 2012

III B.Sc (CS)	Relational Database Management System	CS509
SEMESTER – V		HRS/WK-5
CORE		CREDIT – 5

Objective:
To make the students aware of all concepts related to Database.

COURSE OUTCOMES:

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					TITLE OF THE PAPER: Relational Database Management System					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	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 **[15 hrs]**

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

Unit – V **[15 hrs]**

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

Text Books:

1. Henry F.Korth& Abraham Silberschatz "Database System concepts"- TMH-1998.
2. Albert Lulushi-Developing ORACLE FORMS Applications – PHI-1997.
3. A.J.Page "Relational database concepts selection and implementation"
4. George Koch & Kevin loney "Oracle the complete reference"
5. Oracle Developer 2000" by Ivan Bayross

Reference books:

1. C.J.Date , "An introduction to database system"
2. Jeffrey D.Ullman, "Principles of database system"
3. "Introduction to Oracle" ,Oracle Corporation Press.
4. "Introduction to PL/SQL",Oracle Corporation Press.

III B.Sc, (CS)	DOT NET TECHNOLOGIES For the students admitted in the year 2017	CS510S
SEMESTER – V		HRS/WK-5
CORE – 10		CREDIT –5

Objective:
To make the student get exposed with the latest programming concept Dot net and to equip them with skills related to c# programming.

COURSE OUTCOMES:

CO1 : Understand the basic concepts of dot net framework and its components.
CO2 : Acquire the basic programming knowledge using .NET framework.
CO3 **:** Identified and differentiated 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	COURSE CODE: CS510S					TITLE OF THE PAPER: 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: [15 hrs]

C#.Net: Data types-Variables-Arrays-Properties-Control structures-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 aspxfile-Implementation of simple web application.

UNIT-IV: **[10hrs]**

Controls in C#: Button-Textbox-Timer-PictureBox-RadioButton-Menu. Web Controls:AdRotator-Validation-Calendar .

UNIT –V: [20hrs]

ADO.NET: ADO.Net Objects Model – Architecture of ADO.NET-Working with Grid control.

TEXT BOOKS:

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

REFERENCE BOOKS

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

III B.Sc (CS)	SOFTWARE ENGINEERING For the students admitted from the year 2019	19ECS51A
SEMESTER – V		HRS/WK-6
Elective –II		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:

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					TITLE OF THE PAPER: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, he 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 Books:

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) by Ian Sommerville

III B.Sc (CS)	MANAGEMENT INFORMATION SYSTEM	19ECS51B
SEMESTER – V	For the students admitted from the year	HRS/WK-6
Elective - II	2019	CREDIT – 4

Objective:

To introduce the concepts about Management Information Systemvarious phases in Software development Management in order to equip the students in developing project Environment.

COURSE OUTCOMES:

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

CO1: Ability to understand the Introduction to 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 ERP implementation

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS51B					TITLE OF THE PAPER: 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: **[20 hrs]**

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 I: **[20 hrs]**

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: **[20 hrs]**

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

UNIT IV: **[15 hrs]**

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: **[15 hrs]**

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

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

Reference Books

1. 1.Alexis Leon – ERP Demystified – Tata McGraw Hill, New Delhi, 2000.
2. 2.W.S. Jaswadekar – Management Information Systems – Tat McGraw Hill, New Delhi, 1998.

III B.Sc(CS)	DATA COMMUNICATION AND NETWORKS For the students admitted in the year 2017	19ECS52A
SEMESTER - V		HRS/WK-6
Elective –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:

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 and error correction and detection.
CO4: Ability to acquire knowledge about switching and networking and internetworking
devices.
CO5: Ability to understand the routing algorithm.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: 19ECS52A					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS					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	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 **[10 hrs]**

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

Unit II **[20 hrs]**

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

Unit III **[20 hrs]**

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 **[15 hrs]**

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

Unit V **[10 hrs]**

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 by Wayne Tomasi

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.
3. Fred Halsall, "Data Communications,Computer Networks and Open Systems", Addison Wessley, 1995.

III B.Sc (CS)	ELECTRONIC COMMERCE	19ECS52B
SEMESTER – V		HRS/WK-6
Elective –I		CREDIT – 4

Objective:
Almost all Business that is done in this world is electronically. This paper deals with all issues pertaining to the E-Commerce and equips the students with almost all technical issues regarding E-Commerce.

COURSE OUTCOMES:

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					TITLE OF THE PAPER:ELECTRONICCOMMERCE					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	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-I **[10 HRS]**

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 **[15 HRS]**

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 **[20 HRS]**

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 **[20 HRS]**

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 **[10 HRS]**

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 web site.

Text Books:

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

Reference Books:

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

III B.Sc(CS)	PYTHON PROGRAMMING	19SCS51
SEMESTER – V	(Skill Enhancement Course)	HRS/WK-2
IV - SEC – PRACTICAL	For the students admitted from the year 2019	CREDIT - 2

Objective:

This course introduces students to learn fundamentals of Python Programming and to get employed in various MNC.

COURSE OUTCOME:

CO1: To write, test, and debug simple Python programs.

CO2: To implement Python programs with conditionals and loops

CO3: Represent compound data using Python lists, tuples, dictionaries.

CO4: To learn database connectivity in python.

CO5: Students can understand Python and apply to get Employability skills.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:19SCS51					COURSE TITLE: Practical- Python Programming					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 python.
2. Write a program to demonstrate different data types in Python.
3. Write a program to perform different Arithmetic Operations in Python.
4. Write a simple program to perform Looping in Python.
5. Write a program to demonstrate working with arrays (numpy)
6. Write a program to demonstrate working with lists in python.
7. Write a program to demonstrate working with tuples in python.
8. Write a program to demonstrate working with dictionaries in python.
9. Write a program using split operator
10. Create a database for student mark sheet preparation.

Text Books:

1. Jeeva Jose and P. SojanLal, "Introduction to Computing and Problem Solving with PYTHON", Khanna

Book Publishing Co. (P) Ltd., 2016.

Reference Books:

1. Wesley J. Chun, "Core Python Programming", Second Edition, Prentice Hall Publication, 2006.

2. Micheal Dawson, "Python Programming for Absolute Beginners", Third Edition, Course Technology, 2010.

III B.Sc(CS)	ORACLE	CSP505
SEMESTER – V		HRS/WK-3
PRACTICAL -5		CREDIT – 2

Objective:

To make the student aware of the Back-End tool.

COURSE OUTCOMES:

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					TITLE OF THE PAPER: Relational Database Management System					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.

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)	DOT NET TECHNOLOGIES For the students admitted in the year 2017	CSP506S
SEMESTER - V		HRS/WK-3
PRACTICAL - 6		CREDIT –2

Objective:

To improve the programming skills of the students with respect to C# and also to develop web application using asp.net and to make the students to know the latest programming concepts.

COURSE OUTCOMES:

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 simple website using master page.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: CSP506S					TITLE OF THE PAPER: PRACTICAL-DOT NET TECHNOLOGIES					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

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 (MS Access)
8. To develop database Application for Telephone Directory to store phone number, Customer name and Customer address and display it with Grid View control.(MS Access)

III B.Sc (CS)	OPERATING SYSTEM For the students admitted from the year 2019	19CS613
SEMESTER - VI		HRS/WK- 6
CORE - 11		CREDIT – 5

Objective:

This paper is intended to make the student aware of all concepts related to operating system.

COURSE OUTCOMES:

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 operating system.

CO2: Ability to understand what a process is and how the processes areCommunicated 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					TITLE OF THE PAPER: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 - Inter-process communication - Deadlock – Deadlock prerequisites - Deadlock Strategies.

UNIT-III **[20hrs]**

Memory Management: 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 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-Operating Systems-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",Tata MCGraw Hill , 1998.
3. William Stallings, "Operating Systems",5/e PHI/Pearson Education , 1997.

III B.Sc, (CS)	Open Source Technologies-PHP For the students admitted in the year 2019	19CS614
SEM – VI		HRS/WK- 6
CORE - 12		CREDIT - 5

Objective:

To impart basic knowledge of PHP and MySQL.

COURSE OUTCOMES

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					TITLE OF THE PAPER:OPEN SOURCE TECHNOLOGIES- 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 and Flow Control.

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.
CONTROL STATEMENTS: Data Input/Output functions - flow of control-control structures - switch, break and continue - Go to statement-comma operator.

UNIT-IV [10 Hrs]

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

UNIT-V [10 Hrs]

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

TEXT BOOK

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

BOOK FOR REFERENCE

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

III B.Sc, (CS)	WEB GRAPHICS For the students admitted in the year 2019	19ECS65A
SEM – VI		HRS/WK – 5
ELECTIVE -III		CREDIT – 4

Objectives:

The purpose of the course is to learn the basic concepts on web in graphics,to understand the importance of graphics and also to know the various types of web graphics tools

COURSE OUTCOMES:

CO1 : Understand the basic concepts of web graphics and basic HTML tags to design a website.
CO2 : Understand the built in tools of Photoshop.
CO3 : Designing and adding multimedia to the web page
CO4 : Understanding and implementing the basic tools of Photoshop.
CO5 : Acquire knowledge to handle images in an effective manner.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE:19ECS65A					TITLE OF THE PAPER: WEB GRAPHICS					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	4	3	3	4	3	4	4	3	3	3.4	
CO2	3	3	3	3	3	3	4	3	4	4	3.3	
CO3	3	3	3	3	4	3	4	3	3	4	3.3	
CO4	3	3	3	4	3	4	3	3	3	3	3.2	
CO5	3	3	3	3	3	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.

Unit – I **(11 Hrs)**

Introduction: HTML Coding – Basic Web Graphics – Web Page Design – Site building – Image Maps – Adding Multimedia to the Web.

Unit – II **(12 Hrs)**

Paint Sharp Pro/Photoshop: Introduction – Image Basics – File Formats – GIF – JPEG – Color Palette – Layers – Creating new Images – Brushes – Grids – Scaling Images – Moving and Merging layer – Tool Palette – Screen Capturing – Gray – Using Style Palette – Animation.

Unit – III **(13 Hrs)**

Image Handling: Scanning images – adding text to the images – Designing icons – Creating background images – Color models – Color Depths – Color Calibration – Creating Gradients – Oil paint effect.

Unit – IV **(13 Hrs)**

Multimedia: Creating Clipping- Animation with sound effect – audio or video – Window's Media Player ActiveX control – Embedding VRML in a web page – Real player ActiveX control.

Unit – V **(12 Hrs)**

Applications: Creating website with a particular theme - Graphics – Animations and Interactions.

Reference Text Books:

1. Photoshop 6 Visual jump start, Adobe +2000 – Richard Schrand.
2. Flash 5.0 graphics, Animation and Interaction, Macromedia 2000 – James L Mohles.

YEAR – III	COMPUTER GRAPHICS For the students admitted from the year 2019	19ECS65B
SEMESTER– VI		HRS/WK-5
Elective – III		CREDIT – 4

Objective:

- To enable the students to learn about the working of input output devices and also to learn the concepts of 2D and 3D transformation models and generation algorithms.

COURSE OUTCOMES

CO1: Ability to learn about the basic knowledge of Graphics systems
CO2: Ability to know about the Attributes of I/O and 2-D transformation models.
CO3: Ability to understand clipping, interactive graphics I/P and picture Construction techniques
CO4: Ability to understand 3-D display methods
CO5: Ability to know about Projections and Projection operations.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: 19ECS65B					TITLE OF THE PAPER: COMPUTER GRAPHICS					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 **10 hrs**

Introduction to computer Graphics: Video display devices – Raster scan system – Random Scan System – Interactive input Devices – Graphics software – Output primitives – line drawing algorithms – Line function – circle Generating algorithms.

UNIT – II **10 hrs**

Output Primitives: Attributes of output Primitives – line attributes – Color and Grayscale style – Area filing algorithms – Character attributes Inquiry functions – Two dimensional transformations – Basic transformation – composite transformation – Matrix representation –Other transformations.

UNIT – III **10 hrs**

Two dimensional viewing: Two – dimensional viewing – window – to view port co-ordinate transformation – clipping algorithms – interactive input methods –logical classification of input devices – interactive picture construction methods.

UNIT- IV **15 hrs**

Three dimensional viewing : Three – dimensional concepts – Three dimensional display methods – parallel Projection –Perspective projection – Depth Cueing – Visible line and surface identification.

UNIT – V **15 hrs**

Three dimensional Transformations: Three dimensional transformations - Three dimensional viewing – Projection – Viewing transformations – Depth buffer(Z-Buffer) method – A-buffer method - implementation of viewing operations.

Text Books:

1. D. Hearn and M.P. Basker – Computer Graphics [C Version] – Person Education.
2. Computer Graphics: Principles and Practice in C (2nd Edition) by James D. Foley, Andries van Dam, Steven K. Feiner, and John F. Hughes
3. Schaum's Outline of Computer Graphics by Zhigang Xiang and Roy A. Plastock
4. Introduction to Computer Graphics by James D. Foley, Andries van Dam, Steven K. Feiner, and John F. Hughes

Reference Books:

1. W.M. Newman and RF. Sproull – Principle of Interactive Computer Graphics – McGraw Hill International Edition -1979.
2. Interactive Computer Graphics: A Top-Down Approach Using OpenGL (5th Edition) by Edward Angel
   Computer Graphics Using OpenGL (3rd Edition) by Francis S Hill Jr. and Stephen M Kelley

III B.SC(CS)	MULTIMEDIA For the students admitted from the year 2017	19ECS66A
SEMESTER – VI		HRS/WK – 5
ELECTIVE IV		CREDIT – 4

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

COURSE OUTCOMES:

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					TITLE OF THE PAPER: 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: **(10Hrs)**

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: **(13Hrs)**

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.

UNIT - III:

IMAGES: Making still Images – Color – Image file formats. **(12Hrs)**

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

UNIT - IV: **(13Hrs)**

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: **(12Hrs)**

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

Text Book:

1. Tay Vaughan – "Multimedia Making it Work" - McGraw Hill, 1994,Sixth Edition-2004,Seventh Edition-2008.

Reference Book(s):

1. Jeffcoate, Judith – "Multimedia in Practice" - Prentice Hall, 2001.

III B.Sc, (CS)	BIG DATA ANALYTICS For the students admitted in the year 2019	19ECS66B
SEM – VI		HRS/WK- 5
ELECTIVE - IV		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:

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

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: 19ECS66B					TITLE OF THE PAPER: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

Fundamentals of Big Data - The Evolution of Data Management Understanding the Waves of Managing Data- Defining Big Data - Big Data Management Architecture- The Big Data Journey -Big Data Types-Defining Structured Data-Defining Unstructured Data-Putting Big Data Together.

Unit II

Big Data Stack- Basics of Virtualization - The importance of virtualization to big data -Server virtualization - Application virtualization - Network virtualization -Processor and memory virtualization - Data and storage virtualization-Abstraction and Virtualization-Implementing Virtualization to Work with Big Data.

Unit III

Hadoop - Hadoop Distributed File System - Hadoop MapReduce- The Hadoop foundation and Ecosystem.

Unit IV

Big Data Analytics-Text Analytics and Big Data-Customized Approaches for Analysis of Big Data

Unit V

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

References

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

III B.Sc(CS)	GIMP	19SCS62
SEMESTER – VI	(Skill Enhancement Course)	HRS/WK-2
SEC – PRACTICAL	For the students admitted from the year 2019	CREDIT - 2

Objectives:

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

COURSE OUTCOME:

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. FazreilAmreen, "Instant GIMP Starter", Packet Publishing., 2013.
3. Jason van Gumster, Robert Shimonski, "GIMP Bible", Wiley Publishing, Inc, 2010.

IIIB.Sc, (CS)	PRACTICAL – OPENSOURCE TECHNOLOGIES-PHP For the students admitted in the year 2019	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

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					TITLE OF THE PAPER: 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 – OPENSOURCE 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 For the students admitted in the year 2018	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:

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 calio of 2cms width.
The Cover should be printed in block letters.

MARGIN SPECIFICATION

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

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'S 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 Thiruvalluvar University-Vellore.

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.

Head of the Department Internal Guide

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

Examiners:

1.

2.

THEORY EXAMINATION

Continuous Internal Assessment (CIA) 25 marks

Two Internal Examinations	15 marks
Assignment / Seminar	5 marks
Attendance	5 marks
Total	**25 marks**

External Examination (75 marks)

Question Pattern

B. Sc. Computer Science

Time: 3 Hrs 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	- 50 marks
Record	- 10 marks
Total	- 60 marks