ST. JOSEPH'S COLLEGE OF ARTS & SCIENCE

(AUTONOMOUS)

CUDDALORE-1

PG & RESEARCH DEPARTMENT OF

COMPUTER SCIENCE

B.Sc(Computer Science)

SYLLABUS 2018 - 2021

UNDER GRADUATE PROGRAMME OUTCOMES (POs)
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 OUTCOMES (PSOs)
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
Capability to use appropriate software for analysis of data and relevant information from various sources for easy access and evaluation in a variety of learning situations.

PG and Research Department of Computer Science
B.Sc Computer Science (Template)

Semester	Code	Part	Subject Title	Hours	Credit
I	LT101S/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	5
	VE101T	IV	Value Education	3	2
			Total	**30**	**21**
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
	AMCS202T	III	Allied Mathematics – II	8	5
	EBT201	IV	Basic Tamil	3	2
	EPD201T		Dynamics of Personality		
			Total	**30**	**21**
III	LT303T/LH303S/LF303	I	Tamil-III / Hindi-III / French-III	4	3
	LE303T	II	Functional English – III	4	3
	CS305T	III	Core & Advanced Java Programming	4	4
	CS306S	III	Fundamentals of Algorithms	4	4
	CSP303T	III	Practical- Core & Advanced Java Programming	3	2
	ASCS301Q	III	Statistical Methods for Computer Applications - I	8	4
	EVS301S	IV	Environmental Science	3	2
			Total	**30**	**22**

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
	CS407Q	III	Internet Programming	3	4
	ECS408A ECS408B	III	**Elective - I** 1.Computer Graphics 2. Cloud Computing	4	4
	CSP404Q	III	Practical-Internet Programming	3	2
	ASCS402Q	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	4	4
			Total	**30**	**26**
V	CS509	III	Relational Database Management System	6	5
	CS510S	III	DOT NET Technologies	5	5
	CS511S	III	Operating System	6	5
	ECS512A ECS512B	III	**Elective - I: 1**. Data Communications and Network 2. Electronic Commerce	5	5
	CSP505	III	Practical: Oracle	3	2
	CSP506S	III	Practical: DOT NET Technologies	5	2
			Total	**30**	**24**
VI	CS613S	III	Computer Architecture	5	5
	CS614S	III	Open Source Technologies-PHP	6	5
	ECS615S ECS615B	III	**Elective – I**: 1. Software Engineering* 2. Management Information System	6	5
	ECS616A ECS616B	III	**Elective - II:** 1.Multimedia* 2.Advanced Technologies	5	5
	CSP607S	III	Practical - Open Source Technologies-PHP	5	2
	JCS601	III	Mini Project	3	2
	EU601		Extension Activities	-	2
			Total	**30**	**26**

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 C Language and its Programming skills.

COURSE OUTCOMES (CO):

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 and Pointers.
CO6: To write 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:

To Understand the basic concepts of Digital Circuits and Logic design of Computers

COURSE OUTCOMES (CO):

CO1: To know the basic design of computer, arithmetic operation, digital number system and its conversion.

CO2: To 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	
CO6	4	4	4	4	4	4	4	2	1	4	3.5	
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 : **[15 hrs]**

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

Unit-IV:Combinational Logic Circuits: **[15 hrs]**

Adders: Half Adder,Full Adder – Subtractors: Half Subtractor,Full subtractor. - 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 unleash the Programming skills in C Language and Logic building capabilities.

COURSE OUTCOMES(CO):

CO1: To write programs using Control structures & Looping structures

CO2: To Understanding the String Manipulation.

CO3: To equip 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:
To Learn the basic concepts of Object-Oriented Programming and C++ Programming skills.

Course Outcomes (CO)
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					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 Bjarne Stroustrup
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:

To Understand the Fundamentals of Data Structures and its algorithms.

Course Outcomes:

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					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	
CO6	4	4	4	4	4	3	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, Mc Graw Hill, International Edition.Data Structures and Algorithm Analysis in C++ by Mark Allen Weiss, Pearson Education.

I B.Sc(CS)	PRACTICAL -PROGRAMMING IN C++	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 C++ Programs.

COURSE OUTCOMES (co):

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					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	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	CORE & ADVANCED JAVA PROGRAMMING	CS305T
SEMESTER - III		HRS/WK-4
CORE – 5		CREDIT – 4

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 using AWT with Layout Managers
CO4: Acquire knowledge of JDBC programming techniques in Java.
CO5: Learn to apply networking concepts through Java program.
CO6: knowledge to acquire RMI and Java Beans concept to solve Java applications.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: CS305T					TITLE OF THE PAPER: CORE & ADVANCED JAVA PROGRAMMING					HOURS: 4	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	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	
CO6	4	4	1	3	4	4	4	3	3	4	3.4	
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]**

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

UNIT – II **[10 hrs]**

Packages, Interfaces and Exception Handling: Packages – Importing Packages – Interfaces – Exception Handling. **Thread :** Life Cycle of Thread – Multithreading

UNIT –III **[10 hrs]**

Applets & AWT: Applet life cycle – creating a simple applets- Loading and displaying images on applets. AWT controls –windows Fundamentals-working with graphics - layout managers

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

JDBC: JDBC Architecture – Connecting to a Database (MS Access) – SQL commands- select, insert, delete, update. **NETWORKING:** URL- Inet Address – TCP/IP Sockets – UDP Sockets .

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

RMI AND BEANS: Introduction to RMI-RMI architecture - Example using RMI-Introduction to java Beans-Properties of beans-Simple example using bean.

Text Books:

1. Cray S. Horstman, Gray Cornell – Core Java 2 Vol. I and Vol. II – 7th Ed. PHI, 2000.
2. H. Schildt – Java2 (The Complete Reference) – Fourth Edition, TMH 1999. 3. Java 2 Platform Unleashed

3. Deitel & Deitel "JAVA: How to program", third edition Prentice Hall of India, 1999.

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 - 4

Objective:

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

COURSE OUTCOMES:

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

CO6: Ability to know the basic concept of 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: 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	
CO6	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	PRACTICAL - CORE & ADVANCED JAVA PROGRAMMING	CSP303T
SEMESTER– III		HRS/WK-3
CORE PRACTICAL - 3		CREDIT - 2

Objective:

To enable the students to learn core and Advanced 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

CO6: To Create Distributed Applications using RMI and Component Based Applications using Java Beans

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: CSP303T					TITLE OF THE PAPER: Practical- CORE & ADVANCED 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	
CO6	4	4	1	3	4	4	4	3	3	4	3.4	
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- CORE & ADVANCED 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) Loading image onto applet.
6) Create a database for storing and manipulating student mark list using AWT.
7) Write a program to display the IP address of a given host machine.
8) Implement an application for sending a string from one machine to another using TCP/IP.
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	CS407Q
SEMESTER - IV		HRS/WK-4
CORE- 7		CREDIT – 4

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

COURSE OUTCOMES:

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.

CO6: To Gaining the knowledge about the commercial benefits by using XML.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: CS407Q					TITLE OF THE PAPER:INTERNET PROGRAMMING					HOURS: 4	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	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	
CO6	3	4	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: **[12 hrs]**

Internal Concepts: Internet Services – Types of accounts - Media for internet – ISP – TCP/IP and Connection software – Dial-up Networking –setting up and Internet Connection – Testing connection – Disconnecting from the Internet .

UNIT -II : **[12 hrs]**

Contenders: Issues in high-speed Connection – Connecting via ISDN, ASDN and cable Modem – Intranets – Components of an Intranet – steps for creating Intranet – Maintenance – Connecting LAN to Internet .

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

E-mails: Downloading E-Mails – Signatures and Stationery – Web based E-Mail – E-mail task – Outlook Express – Sending and Receiving Files using Eudora – Outlook Express and Pine – Multiple e-Mail Accounts – Sending form Letters – Formatting E-mail – E-mail mailing List.

UNIT IV **[10 hrs]**

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

UNIT V **[11 hrs]**

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

TEXT BOOKS:

1. Internet – Margaret Levine Young – The Complete Reference – Millennium Edition – TMH Edition – 1999 .
2. The Internet For Dummies by John R. Levine, Margaret Levine Young, and Carol Baroudi
3. The Everyday Internet All-in-One Desk Reference For Dummies (For Dummies (Computer/Tech)) by Peter Weverka
4. How the Internet Works (8th Edition) by Preston Gralla
   Harley Hahn , The Internet – Complete Reference – Second Edition – TMH Edition
5. Bayross, Web Enable Commercial Application Development Using HTML, DHTML, Java Script, Pen CGI,BPB Publications, 2000.

Reference Books:

1. Harley Hahn , The Internet – Complete Reference – Second Edition – TMH Edition .
2. The Everyday Internet All-in-One Desk Reference For Dummies (For Dummies (Computer/Tech)) by Peter Weverka
3. T.A.Powell, Complete Reference HTML (Third Edition), TMH, 2002.

YEAR – II	COMPUTER GRAPHICS	ECS408A
SEMESTER– IV		HRS/WK-4
Elective – I		CREDIT – 4

Objective:

To enable Students, Learn and understand the basic concepts of Computer Graphics

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 IV	COURSE CODE:ECS408A					TITLE OF THE PAPER: COMPUTER GRAPHICS					HOURS: 4	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	
CO6	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
3. Computer Graphics Using OpenGL (3rd Edition) by Francis S Hill Jr. and Stephen M Kelley

II B.Sc (CS)	CLOUD COMPUTING	ECS408B
SEMESTER – IV		HRS/WK-4
Elective – I		CREDIT – 4

Objectives:

***** To impart the basic concepts of Cloud Computing and its applications**.**

COURSE OUTCOMES:

CO1: To understand the basic concepts of Cloud Computing

CO2: Understand the concept of Infrastructure as a service in cloud

CO3: Ability to Design & develop backup strategies for cloud data based on features.

CO4: Gain idea about the Cloud with Map Reducing concept.

CO5: Abllity to understand the concept of security

CO6: To understand the Cloud Applications and key components of AWS.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER III	COURSE CODE: ECS408B					TITLE OF THE PAPER: CLOUD COMPUTING					HOURS: 4	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	2	4	3	3	2	3	4	3.0	
CO2	3	4	3	4	4	3	3	2	3	4	3.3	
CO3	3	3	4	3	3	3	3	2	4	3	3.1	
CO4	4	3	4	3	3	3	3	3	2	3	3.1	
CO5	3	3	4	3	4	3	4	3	3	4	3.4	
CO6	3	2	3	4	3	3	3	3	3	4	3.1	
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 – Fundamentals Of Grid And Cloud Computing **[12 hrs]**
Fundamentals – Cloud computing – History of Cloud Computing – Cloud Architecture – Cloud Storage – Why cloud computing Matters – Advantages of Cloud computing – Disadvantages of Cloud Computing – Companies in the Cloud Today – Cloud Services

UNIT II – Developing Cloud Services **[12 hrs]**
Web-Based Application – Pros and Cons of Cloud Service Development – Types of Cloud Service Development – Software as a Service – Platform as a Service – Web Services – On-Demand computing – Discovering Cloud Services Development Services and Tools – Amazon Ec2- Google App Engine – IBM Clouds.

UNIT III – Cloud Computing For Everyone **[12 hrs]**
Centralizing Email communications – collaborating on Schedules – Collaborating on To-Do Lists – Collborating Contact Lists – Cloud computing for the Community – Collaborating on Group Projects and Events – Cloud Computing for the Corporation.

UNIT IV – Using Cloud Services **[12 hrs]**
Collaborating on Calendars, Schedules and Task Management – Exploring Online Scheduling Applications – Exploring Online Planning and Task Management – Collaborating on Event Management – Collaborating on Contact Management – Collaborating on Project Management – Collaborating on Word Processing – Collaborating on Databases – Storing and Sharing Files – Evaluating Web Mail Services – Evaluating Web Conference Tools – Collaborating via Social Networks and Groupware – Collaborating via Blogs and Wikis.

UNIT V – Grid Computing **[12 hrs]**
OGSA – Sample Use Cases – OGSA Platform Components – OGSI – OGSA Basic Services. Globus Toolkit – Architecture – Programming Model – High Level Services – OGSI.Net. Middleware Solutions.

Text Book:
Michael Miller, Cloud Computing : Web-Based Applications That Change the Way You Work and Collaborate Online, Que Publishing, August 2008.

REFERENCE BOOK :
Haley Bear, Cloud Computing Best Practices for Managing and Measuring Processes for On-demand Computing, Applications and Data Centers in the Cloud with SLAs.

YEAR – II	SOFT SKILLS	AOSS401S
SEMESTER– IV		HRS/WK-4
PART IV		CREDIT – 4

Objective:

To Learn and practice soft skills required for students in Higher Education and Career development.

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: 4	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	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 **[12Hrs]**

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

Unit-II **[12Hrs]**

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

Unit-III **[12Hrs]**

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

Unit-IV: **[12Hrs]**

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

Unit V: **[12Hrs]**

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), Kiran Prakashan, 2012

5.R.S. Aggarwal, Quantitative Aptitude, S. Chand & Company, New Delhi, 2012

II B.Sc (CS)	PRACTICALS - INTERNET PROGRAMMING	CSP404Q
SEMESTER - IV		HRS/WK-3
Core – Practical – 4		CREDIT – 2

Objective:

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

COURSE OUTCOMES:

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.
CO6: To Gaining the knowledge about the commercial benefits by using XML.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER IV	COURSE CODE: CSP404Q					TITLE OF THE PAPER: INTERNET 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	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	
CO6	3	4	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

PRACTICALS - INTERNET PROGRAMMING

1. Design a simple web page in html using formatting tags to display your address at the center of the screen.
2. Display you're like things and dislike things using Html list.
3. Display an image in html with comments.
4. Design a web page using anchor tag to display about the important persons in India.
5. Use html Frames to divide the screen and load few web pages in a screen.
6. Use html Forms to design your Bio-data.
7. Design menus in Html.
8. Design simple Calculator using Java Scripts.
9. Use functions in Java script.
10. Use strings in Java Script.

III B.Sc (CS)	Relational Database Management System	CS509
SEMESTER – V		HRS/WK-6
CORE -9		CREDIT – 5

Objective:

To understand the basic concepts of RDBMS and its practical applications.

COURSE OUTCOMES:

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: 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 **[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	CS510S
SEMESTER - V		HRS/WK-5
CORE - 10		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:

CO1: Understand the basic concepts of DOTNET framework and itscomponents.

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 inC#.

CO5: Understand about ADO.NET and have an effective database as abackend.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSECODE: 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 [10 hrs]
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-Namespace-Methods-Interface-Delegation.

UNIT-III: [20 hrs]
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: [10 hrs]
Controls in C#: Button-Textbox-Timer-PictureBox-RadioButton-Menu. Web Controls: AdRotator-Validation-Calendar .

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

TEXT BOOKS:

1. Harvey M.Deitel & Paul J.Deitel- c# Programmers- Second Edition-Pearson Edition.
2. Yashavant Kanetkar, 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. Thamari Selvei, A text Book on C#: A Systematic Approach to OOP, Pearson Ed.

III B.Sc (CS)	OPERATING SYSTEM	CS511S
SEMESTER - V		HRS/WK- 6
CORE - 11		CREDIT – 5

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

COURSE OUTCOMES:

CO1: Ability to understand the services provided by the OS and also to understand the Structure of the file system.

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: CS511S					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 – Kernel-History of Operating system - Operating system functions – File system.

UNIT-II **[20 hrs]**

Process Management and Deadlock: Process Management - Inter-process communication - Dead Lock - Dead Lock prerequisites - Dead Lock Strategies.

UNIT-III **[20 hrs]**

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

UNIT-IV **[15 hrs]**

GUI and Security: GUI – Components of GUI – Requirements of Windows based GUI – Security Protection: Threats – Attacks – Worms – Virus - Design principles – Authentication – Protection mechanisms – Encryption.

UNIT-V **[12 hrs]**

UNIX: Unix-Architecture of Unix-File System of Unix- 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)	DATA COMMUNICATION AND NETWORKS	ECS512A
SEMESTER - V		HRS/WK-5
Elective - I		CREDIT –5

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 with error correction and detection.

CO4: Ability to acquire knowledge about switching

CO5: To understand the concept of networking and internetworking devices.

CO6: Ability to understand the routing algorithm.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE:ECS51A					TITLE OF THE PAPER: DATA COMMUNICATION AND NETWORKS					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	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	
CO6	3	3	3	4	3	3	3	4	3	4	3.3	
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)	E -COMMERCE	ECS512B
SEMESTER - V		HRS/WK-5
Elective –II		CREDIT – 5

Objective:

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

COURSE OUTCOMES:

CO1: To know about basics of E-Commerce.

CO2: To understand the use of Electronic Payment.

CO3: To understand the various securitypolicies.

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: ECS512B					TITLE OF THE PAPER:E- Commerce					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	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 **[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-2 **[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-3 **[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-4 **[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-5 **[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)	PRACTICAL - ORACLE	CSP505
SEMESTER – V		HRS/WK-3
PRACTICAL- 5		CREDIT – 2

Objective:

To make the student aware of the ORACLE as a 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: 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-5
PRACTICAL - 6		CREDIT –2

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

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.

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER V	COURSE CODE: CSP506S					TITLE OF THE PAPER: PRACTICAL-DOT NET TECHNOLOGIES					HOURS: 5	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-DOT NET TECHNOLOGIES

WINDOWS APPLICATION:

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

WEB APPLICATION:

6. Create an application to sending a request from one page to another using session.
7. Create a simple website for an organization using Master Page.
8. To develop database application for student mark list processing using validation control (Oracle)
9. 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)	COMPUTER ARCHITECTURE	CS613S
SEMESTER - VI		HRS/WK-5
CORE		CREDIT - 5

Objective:
To Learn 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: 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: CS613S					TITLE OF THE PAPER:COMPUTER ARCHITECTURE					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	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 **[10 hrs]**

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

Unit-II **[10 hrs]**

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

Unit –III **[15 hrs]**

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

Unit- IV **[20 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 **[20 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.

III B.Sc, (CS)	Open Source Technologies-PHP	CS614S
SEM – VI		HRS/WK- 6
CORE		CREDIT - 5

Objective:

To impart basic knowledge of PHP and MySQL with Programming Skills.

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: CS614S					TITLE OF THE PAPER: 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 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 buttons-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)	SOFTWARE ENGINEERING	ECS615S
SEMESTER - VI		HRS/WK-6
Elective - I		CREDIT – 5

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:

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: ECS615S					TITLE OF THE PAPER:Software Engineering					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	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: **[20 hrs]**

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 : **[15 hrs]**

Requirement Engineering: Requirement Engineering Tasks - Initiating the Requirements Engineering Process- Eliciting Requirements.

Unit III: **[20 hrs]**

Building Analysis Model: Requirement Analysis - Data Modeling – Flow Oriented Modeling – Class Based Modeling – Creating a Behavioral Model.

Unit –IV: **[20 hrs]**

Testing: **Testing strategies**: Test Strategies For Conventional Software- Validation Testing – System Testing –White Box Testing – Basic Path- Control Structure – Black Box Testing.

Unit –V: **[15 hrs]**

Project Management: The Management Spectrum- The People – The Product, The Process - Formal Technical Reviews.

Text Books:

1. R.S.Pressman – Software Engineering –Sixth Edition McGraw Hill International edition – 2005.

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	ECS615B
SEMESTER - VI		HRS/WK-6
Elective - I		CREDIT - 5

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:

CO1: Ability to understand the basics ofInformation Systems (IS)

CO2: Ability to understand Information systems for business operations

CO3: Ability to understand Managing InformationTechnology

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: ECS615B					TITLE OF THE PAPER:Management Information 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	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

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

III B.Sc (CS)	MULTIMEDIA	ECS616A
SEMESTER – VI		HRS/WK-5
Elective II		CREDIT – 5

Objectives:

To enable the students to learn the concepts of Multimedia.

COURSE OUTCOMES:

CO1: Understand the basic need and ways of usingmultimedia.

CO2: Understanding the basics of text and itsorigin.

CO3: Gain knowledge about the multimedia project developingteam.

CO4: Acquire the knowledge about video and itsstandards.

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: ECS616A					TITLE OF THE PAPER: MULTIMEDIA					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	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: **[20 Hrs]**

WHAT IS MULTIMEDIA: Definitions – Where to use multimedia – Introduction to Making Multimedia:What you need – Macintosh and Windows production platforms.

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: **[20 Hrs]**

SOUND: The power of sound – Multimedia system sounds – MIDI versus Digital Audio – Digital Audio – Making MIDI audio – Audio, File formats – Working with sound on the Macintosh – Notation Interchange File Format (NIFF) – Adding sound to your multimedia project. **IMAGES**: Making still Images – Color – Image file formats.

UNIT - III: **[10Hrs]**

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

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

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

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

MULTIMEDIA PACKAGES: Cool3d, Photoshop, Sound forge, Windows Movie maker, Flash- a Simple Project for Multimedia using the Multimedia Packages.

UNIT - V: **(15Hrs)**

INTRODUCTION TO VIRTUAL REALITY: Introduction to virtual reality – goals of virtual reality- Issues in Virtual Reality- Introduction to VRML.

Text Books:

1. Tay Vaughan – "Multimedia Making it Work" - McGraw Hill, 1994.
2. John Hayward – Adventures in Virtual Reality, One Publications

Reference Book(s):

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

III B.Sc(CS)	ADVANCED COMPUTER TECHNOLOGIES	ECS616B
SEMESTER – VI		HRS/WK – 5
ELECTIVE		CREDIT – 5

Objectives:

To enable the students to learn the concepts of advanced computer technologies

COURSE OUTCOMES:

CO1: Understand the basic need and ways of computer technologies.

CO2: Understanding the basics of smart devices.

CO3: Gain knowledge about IOT.

CO4: Acquire the knowledge about cloud computing.

CO5: To understand the Emerging Trends Of Information Technology

Relationship Matrix Course Outcomes, Programme Outcomes and Programme Specific Outcomes

SEMESTER VI	COURSE CODE: ECS616B					TITLE OF THE PAPER: ADVANCED COMPUTER 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	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: **[20 hrs]**

E - commerce : Introduction - Evolution and development in Ecommerce- Types of E-Commerce- E-Commerce models- B2B - B2C -security - electronic payments - supply chain - EDI – E-markets - Emerging Trends

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

Pervasive Computing devices and Interfaces: Device technology trends-Connecting issues and protocols-pervasive computing principles-XML and its role in Pervasive Computing - Wireless Application Protocol (WAP) Architecture and Security - Wireless Mark-Up language (WML) - Introduction

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

Smart Devices : Introduction - Types of Smart Phones - Operating Systems for Smart Phones **Emerging Trends of Information Technology:** Mobile Communication, Bluetooth, Global Positioning System (GPS), Smart Card, Blue Laser Disc, Nano Technology, DNA Computing, Quantum Computer, Holographic Memory.

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

IoT: The Vision-Introduction-From M2M to IoT-M2M towards IoT-the global context, A use case example, Differing Characteristics. Building an architecture, Main design principles and needed capabilities

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

Cloud Computing: Introduction-Cloud types- Uses of Cloud- Software as a Service (SaaS): Concepts – Open SaaS Solutions, and Service-Oriented Architecture (SOA)-Platform as a Service (PaaS) -Infrastructure as a Service (IaaS)- Advantages and Server types of IaaS Solutions.

Text Books:

1. Krishna Kumar “Cyber Laws: Intellectual property & E Commerce Security”, Dominant Publisher and Distributors

2. Jochen Burkhardt, Horst Henn, Stefan Hepper, Thomas Schaec, Klaus Rindtorff, “Pervasive Computing Technology and Architecture of Mobile Internet Applications”, Pearson Education, New Delhi, 2007

3. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Avesand, Stamatis Karnouskos, David Boyle, **“From Machine-to-Machine to the Internet of Things: Introduction to a New Age of Intelligence”,** 1st Edition, Academic Press, 2014.

4. Kris Jamsa, “Cloud Computing” Jones and Baretlett Learnig, 2013.

5.ITL Education Solution Ltd, “Introduction to Information Technology”, Dorling, Kindersley (India) Pvt. Ltd, New Delhi.

III B.Sc, (CS)	PRACTICAL - Open Source Technologies-PHP	CSP607S
SEM – VI		CREDIT - 5
CORE PRACTICAL-7		HRS/WK- 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.

CO6: 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: PRACTICAL - Open Source Technologies-PHP					HOURS: 5	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	
CO6	4	3	2	3	3	4	4	3	4	3	3.3	
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)	PROJECT VIVA-VOCE	JCS601
SEMESTER - VI		HRS/WK-3
CORE-8 Project Viva-Voce		CREDIT –2

Objective:

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

Group Project : A group consist of 3 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 cm s
Bottom : 3 cm s
Left : 4.5 cm s
Top : 2.5 cm s

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