

NATIONAL COLLEGE (AUTONOMOUS)
(Nationally Re-accredited with “A+” Grade by NAAC)
College with Potential for Excellence by UGC
Tiruchirappalli – 620 001.



ESTD. 1919

PG & RESEARCH DEPARTMENT OF COMPUTER SCIENCE

**BACHELOR OF COMPUTER SCIENCE
SYLLABUS (2022 - 2025)**

NATIONAL COLLEGE (AUTONOMOUS)
Nationally Re-Accredited at “A+” Level by NAAC
Tiruchirapalli – 620 001
Under Graduate Programme Structure under CBCS
(For candidates admitted from the year 2022 Onwards)

B.Sc. (Computer Science)

Eligibility:

- Candidates for admission to the first year programme leading to the Degree of Bachelor of Computer Science will be required to possess.
- Pass with 50% of marks in HSC. In case of SC/ST candidates, merely pass with 40% of marks in HSC will be sufficient.

Aim:

This Programme is a high quality degree program that ensures that students will be able to integrate theory and practice, recognize the importance of abstraction and appreciate the value of efficient design created to meet clearly developed requirements.

Objective:

- The B.Sc. degree in Computer Science provides students the opportunity to acquire knowledge and skills, to develop their understanding creatively and professionally.
- The Programme balances theory with ‘real world’ practice in information and computer management.
- Students will acquire a comprehensive understanding of computer science and a grasp of the central elements of a computer system.
- Graduates will be prepared for the next step in their careers, for example, having done a research project (for those headed to graduate school), a programming project (for those going into the software industry), or some sort of business plan (for those going into startups).

Program Specific Outcomes (PSOs)

Our clear instructional objectives which are mapped to the student outcomes.

PO1: Ability to apply knowledge of computing, mathematics, and basic sciences that may be relevant and appropriate to the domain

PO2: Ability to analyze a problem, identify and define the computing requirements, which may be appropriate to its solution

PO3: Ability to design, implement, and evaluate computer-based system, process, component, or program to meet desired needs

PO4: Ability to function effectively on teams to accomplish a common goal

PO5: Understanding of professional, ethical, legal, security, social issues and Responsibilities

PO6: Ability to communicate effectively among a range of audiences

NATIONAL COLLEGE (AUTONOMOUS), Tiruchirapalli – 620 001

Nationally Re-Accredited at “A+” Level by NAAC

Under Graduate Programme Structure under CBCS

(For candidates admitted from the year 2022 Onwards)

B.Sc. (Computer Science)

Sem	Part	Course Title	Hours/ Week	Credit	Marks		Total	
					Int. 25	Ex t. 75		
I Sem	I	U22T1, U22H1, U22S1 - Tamil – I / Hindi – I / Sanskrit – I	6	3	25	75	100	
	II	U22E1 - English -I	6	3	25	75	100	
	III	U22CS1 – Programming Language using C		5	5	25	75	100
		U22CS2P -Programming Language using C Lab		3	3	25	75	100
		U22AMS1C – Mathematics – I		5	3	25	75	100
		*U22AMS2C-Mathematics –II		3	2	-	-	-
IV	U22ES – Environmental Studies		2	2	25	75	100	
		Paper : 6	30	21			600	
II Sem	I	U22T2, U22H2, U22S2 - Tamil – II / Hindi – II / Sanskrit – II	6	3	25	75	100	
	II	U22E2 - English - II		4	2	25	75	100
		U22CE1 - Communicative English - I		2	1	25	75	100
	III	U22CS3 – Programming in C++		5	5	25	75	100
		U22CS4P – Programming in C++ Lab		3	3	25	75	100
		*U22AMS2C - Mathematics - II (Operations Research)		3	2	25	75	100
		U22AMS3C – Mathematics –III		5	4	25	75	100
IV	U22SBE1C – Skill Based Elective I – Web Designing using HTML		2	2	25	75	100	
		Paper : 8	30	22			800	
III Sem	I	U22T3, U22H3, U22S3 - Tamil – III / Hindi – III / Sanskrit – III	6	3	25	75	100	
	II	U22E3 - English - III		6	3	25	75	100
	III	U22CS5 - Data Structures and Algorithms		6	4	25	75	100
		U22CS6P- Data Structures and Algorithms Lab		3	3	25	75	100
		U22APH1C – Allied Paper – 1 (Digital Electronics)		5	3	25	75	100
	IV	U22SBE2C- Skill Based Elective II – Java Script		2	2	25	75	100
U22SBE3CP - Skill Based Elective III – HTML and Java Script Lab		2	2	25	75	100		
		Paper : 7	30	20			700	
IV	I	U22T4, U22H4, U22S4 - Tamil – IV / Hindi – IV / Sanskrit – IV	6	3	25	75	100	
	II	U22E4 - English - IV		4	2	25	75	100
		U22CE2 - Communicative English - II		2	1	25	75	100
	III	U22CS7 – Visual Programming		4	4	25	75	100
		U22CS8P– Visual Programming Lab		2	3	25	75	100
		U22APH2C– Allied Paper -2 (Microprocessor)		5	3	25	75	100

Sem		U22APH3CP – Allied Lab -3(Microprocessor Lab)	3	3	25	75	100
	IV	U22NMCS1-Basic Concepts of Computer Science	2	2	25	75	100
		U22VE – Value Education	2	2	25	75	100
		<i>Extra Credit Course I : MOOC COURSE</i>	-	4*	25	75	100*
		Extra Credit Course II : Multimedia Technology.	-	4*	25	75	100*
		Paper : 9	30	23			900
V Sem	III	U22CS9– Programming in Java	5	5	25	75	100
		U22CS10P – Programming in Java Lab	5	4	25	75	100
		U22CS11 – Computer Networks	5	4	25	75	100
		U22CS12E- E-Commerce and its Applications /Introduction To Data Science / Network Essentials & Management	6	5	25	75	100
		U22CS13E – Computer Graphics / Principles of Animation/ Visual Effects	5	4	25	75	100
		U22NMCS2 – INTRODUCTION TO ICT	2	2	25	75	100
		U22SS – Soft Skill	2	2	25	75	100
		<i>Extra Credit Course III: BPO (Business Process Outsourcing).</i>	-	4*	25	75	100*
VI Sem	IV	Paper : 7	30	26			700
		U22CS14 – Python Programming	6	5	25	75	100
		U22CS15P - Python Programming Lab	3	3	25	75	100
		U22CS16– Data Base Systems	6	5	25	75	100
		U22CS17P– MYSQL LAB	3	3	25	75	100
		U22CS18 - Operating Systems	6	5	25	75	100
	V	U22CS19E – Software Engineering / System Analysis and Design - Software Testing	5	5	25	75	100
		U22GS – Gender Studies	1	1	25	75	100
		<i>Extension Activity</i>	-	1	25	75	100*
		<i>Extra Credit Course IV: Cloud Computing.</i>	-	4*	25	75	100*
		Paper : 7	30	28	-	-	700
		GRAND TOTAL	180	140	-	-	4400

PROGRAMMING LANGUAGE using C

COURSE OBJECTIVES

- ✓ The course is designed to provide an extensive study of the C programming language.
- ✓ This course is emphasized the strengths of C which provides students to write a program efficiently.
- ✓ This course is offered to design the wide variety of examples and applications in C language.
- ✓ This course is underlined to learn some other programming languages and how to choose the particular programming language for solving the problem.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

CO1: Understand the fundamentals in C programming.

CO2: Develop knowledge to write, compile and debug C program.

CO3: Explain identifiers, operators, type conversion and other features of C language.

CO4: Understand different data types in C language.

CO5: Demonstrate the control statements like decision making and looping.
then convert them into programs.

CO6: Discuss the file management and the preprocessor method.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	3	3	1
CO2	9	3	2	3	9	1
CO3	9	9	9	9	9	1
CO4	9	9	9	9	9	1
CO5	9	9	9	9	9	1
CO6	9	9	9	3	3	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT – I

History of C – Importance of C – Basic structure of C Program – Data types – Declaration of variables – Declaration of storage class - Operators and Expressions – Built –in Functions.

UNIT – II

Managing Input and Output operations – Decision making and branching (IF, IF-ELSE, ELSE – IF Ladder, SWITCH, GOTO) - Decision making and looping (WHILE, DO – WHILE, FOR, BREAK and CONTINUE).

UNIT – III

User-defined Functions: Introduction, Elements of User-defined Functions – Definition of functions – Return values and their types – Function call – Function declaration – Category of functions – No arguments and no return values – Arguments but no return values - Arguments with return values – No arguments but return a value – Functions that return multiple values – Recursion – The scope, visibility and lifetime of variables – Arrays – Passing arrays to functions – Table of strings – String handling functions.

UNIT – IV

Pointers: Introduction – Declaring pointer variables – Initialization – Accessing a variable through its pointer – Pointers and arrays – Pointer and character strings — Arrays of Pointers – Pointers to Functions – Structures and Unions: Introduction – Defining a structure – Declaring a structure variable – Accessing structure members – Structure initialization– Pointers and structures - Unions.

UNIT – V

File management in C: Introduction – Defining and opening a file – Closing a file – Input / Output operations on files – Random access to files – Bitwise Operations – The preprocessor: Introduction – Macro substitutions.

Text Book:

1. E. Balagurusamy, "*Programming in C*", 4th Edition, Tata McGraw Hill Publications.

Reference Books:

1. Byron S. Gottfried, "*Programming with C*", 2nd Edition, Schaum's outline series, Tata McGraw Hill Publications.

2. Mullish Cooper, "*The Spirit of C*", 4th Edition, Schaum's Outline Series, Tata McGraw Hill Publications.

T. Jeyapooan, "*A first course in Programming with C*", Vikes Publishing House Pvt. Ltd, New Delhi.

PROGRAMMING LANGUAGE using C LAB

COURSE OBJECTIVES

- The course gives hands- on experience on C programming and improves the practical skill set.
- This course demonstrates the learners to develop the logic for the given problem recognize and understand the syntax and construction of C program.
- This course involved in compiling, linking and debugging C program and to develop some complex programs.

COURSE OUTCOME

Upon successful completion of this lab Course, student will be able to

- CO1** Understand the basic concept of C Programming and its different modules.
- CO2** Acquire knowledge about the basic concept of writing, compile and debug C program
- CO3** Demonstrate the role of identifiers, operators, type conversion
- CO4** Explain the control statements like decision making and looping to solve problems
Associated with conditions and repetitions and Explain the role of Functions involving the idea of modularity.
- CO5** Understand the concept of Array and pointers dealing with memory management. Use the structures and unions through which derived data types can be formed and Understand the file handling for permanent storage of data.
- CO6** Develop the file handling for permanent storage of data.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1	3	3	1
CO2	9	3	2	3	9	1
CO3	9	9	9	9	9	1
CO4	9	9	9	9	9	1
CO5	9	9	9	9	9	1
CO6	9	9	9	9	9	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Program to implement the following concepts

1. Control statements
2. Looping structures
3. Functions
4. Arrays
5. String manipulations
6. Structures
7. Application
8. Debugging

COURSE OBJECTIVES

- To get a clear understanding of object-oriented concepts.
- To understand object oriented programming through C++.

COURSE OUTCOME

Upon successful completion of this course, Student will be able to

CO1: Gain the basic knowledge on Object Oriented concepts.

CO2: Develop applications using Object Oriented Programming Concepts

CO3: Demonstrate the differences between traditional imperative designs and object oriented design

CO4: Explain class structures as fundamental, modular building blocks

CO5: Understand the role of inheritance, polymorphism, dynamic binding and generic structures in building reusable code

CO6: Discuss I/O operations and file stream operations.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	3	3	1
CO2	9	9	9	9	9	1
CO3	9	9	9	9	9	1
CO4	9	9	9	9	9	1
CO5	9	9	9	9	9	1
CO6	9	9	9	9	9	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I: Principles of Object Oriented Programming – Software Evolution – Basic Concepts of Object Oriented Programming – Benefits of OOP – Applications of OOP – Structure of C++ Program – Tokens – Keywords – Identifiers and Constants – Basic Data Types – User Defined Data Types – Derived Data Types – Declaration of Variables – Operators – Manipulators – Expressions and their types – Control Structures.

UNIT II: Functions – The Main Function – Function Prototyping – Call by Reference – Return by Reference – Inline Functions – Default Arguments – Function Overloading. Classes and Objects – Specifying a Class – Defining Member Functions – A C++ program with Class – # Static Data Members – Static Member Functions – Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects.

UNIT III: Constructors and Destructors – Constructors - Parameterized Constructors – Multiple Constructors in a Class – Copy Constructors – Destructors – Operator Overloading – Defining Operator Overloading – Overloading Unary Operators – Overloading Binary Operators – Overloading Binary Operators using Friends – Rules for Overloading Operators.

UNIT IV: Inheritance: Extending Classes – Defining Derived Classes – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Virtual Base Classes – Pointer, Virtual Functions and Polymorphism – Pointers - Pointers to Objects – this Pointer – Pointers to Derived Classes – Virtual Functions – Pure Virtual Functions.

UNIT V: Managing Console I/O Operations – C++ Streams – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations – Working with Files – Classes for File Stream Operations – Opening and Closing a File – Detecting End-of-file – More about Open(): File Modes .

Text Books:

E.Balagurusamy, “*Object–Oriented Programming with C++*”, 4nd Edition, 2008.

UNIT 1: Chapter 1, Chapter 2 Section 2.6, Chapter 3

UNIT 2: Chapter 4 (Sec 4.1 – 4.7, 4.9), Chapter 5(Sec 5.3 – 5.6, 5.11 – 5.16)

UNIT 3: Chapter 6 (Sec 6.1 – 6.4, 6.7, 6.11) Chapter 7(Sec 7.1 – 7.5, 7.7)

UNIT 4: Chapter 8 (Sec 8.1 – 8.3, 8.5, 8.6, 8.9) Chapter 9(Sec 9.1 – 9.7)

UNIT 5: Chapter 10 (Sec 10.1 – 10.5) Chapter 11 (Sec 11.1 – 11.5)

Reference Books:

Robert Lafore, “*Object–Oriented Programming in Microsoft C++*”, 2nd Edition, Galgotia Publications, New Delhi, 2000.

COURSE OBJECTIVES

- ✓ The course is given hands-on experience on C++ programming and improves the practical skill set.
- ✓ This course is established the beginners to build up the logic for the given problem recognize and understand the Object oriented Concepts.

COURSE OUTCOME

Upon successful completion of this lab Course, student will be able to

CO1: Describe about the object oriented concepts.

CO2: Discuss the execution of the C++ program using classes and objects.

CO3: Develop the knowledge on Member functions.

CO4: Demonstrate Constructor, Operator Overloading and Inheritance.

CO5: Demonstrate the control statements like decision making and looping to solve problems associated with conditions and repetitions. Describe the File handling.

CO6: Describe the File handling.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	3	3	1
CO2	9	9	9	9	9	1
CO3	9	9	9	9	9	1
CO4	9	9	9	9	9	1
CO5	9	9	9	9	9	1
CO6	9	9	9	9	9	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Program to implement the following concepts

1. Class and object
2. Functions using
 - (i) Call by value
 - (ii) Call by reference
 - (iii) Recursive call
3. Constructor and its types
4. Function Overloading
5. Operator Overloading
6. Inheritance
7. Polymorphism
8. File Handling concept

WEB DESIGNING using HTML

COURSE OBJECTIVES

To get a clear understanding principles of creating an effective web page through HTML.

COURSE OUTCOME

Upon successful completion of this course, Student will be able to

- CO1** To apply markup languages for processing, identifying, and presenting of information in web pages.
- CO2** To learn scripting languages and web services to transfer data and add interactive Components to web pages.
- CO3** Insert a graphic within a webpage
- CO4** Create a link within a webpage
- CO5** Insert heading levels within a webpage. Insert ordered and unordered list within a webpage ,Create and view a webpage.
- CO6** Insert ordered and unordered list within a webpage

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	1	3	1	3	0
CO2	9	1	1	1	3	
CO3	9	1	1	1	3	
CO4	9	1	1	1	3	
CO5	9	1	1	1	3	
CO6	9	1	3	1	3	

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I

Introduction to HTML- Designing a Home page- History of HTML- HTML Generations- HTML Documents- Anchor Tag-Hyper Links.

UNIT II

Header Section- Title- Prologue- Links- Colorful Web Page- Comment Lines- Designing the Body Sections- Heading printing- Aligning the headings- Horizontal rule- Paragraph.

UNIT III

Tab Settings- Images and Pictures- Embedding PNG Format Images- Lists- Unordered Lists- Ordered Lists- Nested Lists.

UNIT IV

Tables- Table Creation in HTML- Width of the Table and Cells- Cells Spanning Coloring Cells- Column Specification- Style Sheets- Defining Styles- Elements of Styles Linking a Style Sheet to an HTML document- In-line Styles- External Style Sheets- Internal Style Sheets- Multiple Styles.

UNIT V

Frames-Frameset Definition- Frame Definition- Nested Frameset- Forms- Action Attribute- Method Attribute- Enctype Attribute- Drop Down List.

Text Book:

C.Xavier, "World Wide Web Design with HTML", Tata McGraw Hill, New Delhi,2010.

Unit 1: chapter 4(sec 4.1-4.6)

Unit 2: chapter 5(sec 5.1-5.6) chapter 6(sec 6.1,6.3)

Unit 3: chapter 6(sec 6.4-6.7) chapter 7(sec 7.1, 7.2, 7.4, 7.5)

Unit 4: chapter 8(sec 8.1-8.6)

Unit 5: chapter 9(sec 9.1-9.7)

Reference Book:

Joel Sklar, "Web Design Principles" Vikas Publications 2000.

DATABASE MANAGEMENT SYSTEM

COURSE OBJECTIVES

The course is designed to provide a wide knowledge on Database System and SQL. This course is emphasized the strengths of SQL and PL/SQL which provides students to write programs efficiently. This course provides the knowledge to design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

CO1 : Understand the features of Database Management Systems and Relational database.

CO2 : Study about the File Organization and Addressing Schemes.

CO3 : Apply normalization techniques to normalize the database

CO4 : Understand the functional dependencies and design of the database

CO5 : Execute the features in Structured Query Language (SQL) .

CO6 : Understand the concept of PL/SQL

CO- PO Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	3	1
CO2	3	3	9	0	3	1
CO3	3	9	9	1	3	0
CO4	9	3	9	3	1	1
CO5	9	3	9	3	3	1
CO6	9	3	9	3	1	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I

Introduction: Flat File – Database System – Database – Actionable for DBA – The Entity –relationship Model: The Entity Relationship Model – Data Models: Relational Approach – The Hierarchical Approach – #The Network Approach#.

UNIT II

Storage Structure: File Organization and Addressing Schemes – Sequential Organization –Indexed Sequential Organization – Direct Organization of File – Interface Indexing – Hashing Scheme of File Organization – Dynamic Hashing Technique – Insertion Scheme in Dynamic Hashing – B-Trees – Indexing Methods – Relational Data Structure: Introduction – Relations – Domains.

UNIT III

Normalization : Purpose of Normalization – Definition of Functional Dependence (FD) –Normal Forms – First Normal Form – #Second Normal Form# – Third Normal Form – Boyce Codd Normal Form (BCNF).

UNIT IV

Structured Query Language: Features of SQL – Select SQL Operations – Grouping the Output of the Query– Querying form Multiple Tables – Retrieval Using Set Operators – Nested Queries – T-SQL – Triggers and Dynamic Execution: Transact-SQL.

UNIT V

Procedural Language-SQL: PL/SQL Block Structure – PL/SQL Tables – Cursor Management and Advanced PL/SQL: Opening and Closing a Cursor – Processing Explicit Cursor – Implicit Cursor – Exception Handlers – Sub Programs in PL/SQL – #Functions# – Precaution While Using PL/SQL Functions – Stored Packages – Dropping Procedure, Function and Package – Triggers – Object-Oriented Technology.

Text Book

1. Rajesh Narang, Database Management Systems, PHI Learning Private Limited, New Delhi, Fourth Printing, 2009

UNIT I : Chapters 1,2 & 3 UNIT II : Chapters 4 & 5 UNIT III : Chapter 7 UNIT IV : Chapters 8 & 9

UNIT V : Chapters 10 & 11

Books for Reference

1. Alexis Leon and Mathews Leon, Essentials of Database Management Systems, Vijay Nicole Imprints Private Limited, 2006.

RDBMS LAB

COURSE OBJECTIVES

- The course is given hands-on experience on RDBMS and improves the practical skill set.
- This course is established the beginners to build up the logic for create and accessing the Database by using Queries.

COURSE OUTCOMES

Upon successful completion of this lab Course, student will be able to

CO1: Understand the fundamentals of RDBMS Concepts.

CO2: Develop knowledge to DDL, DML in SQL

CO3: Use the concepts of Triggers and cursors.

CO4: Demonstrate about the Normalization

CO5: Use the concepts in PL/SQL

CO6: Develop the sample examples like Banking System, Library Management, etc.

CO- PO Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	9	9	9	3	0
CO2	9	9	9	3	3	1
CO3	3	9	9	3	1	1
CO4	9	9	9	3	1	1
CO5	9	3	9	3	1	0
CO6	9	3	9	3	0	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

List of Programs

1. Data Definition Language (DDL) commands in RDBMS
2. Data Manipulation Language (DML) and Data Control Language (DCL)
3. High level language extensions with cursors
4. High level language extension with Triggers
5. Procedures and Functions

Course Objectives

- The student should learn fundamental components used in a Digital Computer which is essential for the programme.

Course Outcomes

- CO1: Perform Number Conversions from one System to another System.
- CO2: Identify the logic gates and their functionality.
- CO3: Analyze the fundamentals of Boolean functions using various mapping and Mathematical methods.
- CO4: Understand DeMorgan’s theorems and simplifications of product.
- CO5: Design basic electronic Circuits (Combinational Circuits).
- CO6: Discuss the concepts flip-flops, Counters and Registers

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9					
CO2	9	9				
CO3	9	3	1			
CO4	9	3	1			
CO5	9	3	1			
CO6	9	3	1			

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation between CO’s and PO’s } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT-I : Number Systems and Codes: Introduction to Number Systems-Types-Decimal, Binary, Octal, Hexadecimal- Conversion from one number system to others- Binary arithmetic operations: Binary Addition-Binary subtraction-Binary multiplication and division- 1’s complement and 2’s complement, The 9’s and 10’s Complements-Binary Codes : BCD codes- Excess-3 code-Gray code, Weighted Binary codes - ASCII code.

UNIT-II : Logic Gates and Circuits: Boolean algebra and Logic gates- AND, OR, NOT, NAND and NOR gate-The Exclusive-OR gate – Application of XOR gate.

UNIT-III : Boolean Algebra: Fundamentals of Boolean Algebra- Boolean functions- Laws and Theorems of Boolean Algebra- DeMorgan’s theorems-Sum-of –Products-Karnaugh Map – Product-of –Sums simplification.

UNIT-IV : Combinational Logic Circuits: Introduction to combinational Circuits-Adders-Half-Adder and Full-Adder- Subtractors - Half and Full Subtractor-BCD Adder- Decoders and Encoders.

UNIT-V : Sequential Circuits: Introduction-Flip-Flops: -RS Flip-Flop, D Flip-Flop, JK Flip-Flop, T Flip-Flop - Master-Slave Flip Flop- Counters – Asynchronous or Ripple Counter – Ring Counter – Shift Register.

Text Book:

“Principles of Digital Electronics”- Dr, K. Meena, PHI Learning Private Limited,2012.

Reference Books:

1. Morris Mano “Digital Design”, 4th Edition, Prentice Hall of India Ltd, 2008.
2. Thomas C. Bartee “Digital Computer Fundamentals” , 6th Edition, Tata McGraw Hill, New Delhi,2011

COURSE OBJECTIVES

- The course is designed to provide an general study of the Javascript programming.
- This course is accentuated the strengths of Javascript which provides students to write a program efficiently.
- This course is offered to design the wide variety of examples and applications in ASP.
- This course is emphasized to learn some other scripting programming languages.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

- CO1: Understand the introduction to javascript.
- CO2: Develop knowledge to write javascript program.
- CO3: Explain variables, functions, objects and other features of javascript.
- CO4: Illustrated the concepts of php.
- CO5: Understand the concept of php cookies and sessions.
- CO6: Discuss the relationship between Javascript and CSS

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	9	9	1	9	
CO2	3	9	9	9	9	
CO3	3	9	9	9	9	
CO4	3	9	9	9	9	
CO5	3	9	9	9	9	
CO6	3	9	9	3	1	

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT – I

Introduction to Java Script : JavaScript's Role on the Web – A First JavaScript Program – Working with Variables, Functions: Variables – Defining Functions – Calling Functions – Understanding JavaScript Objects – Object Methods – Variable Scope

UNIT – II

Windows: The Window Object Model – Opening and closing Windows – Frames and Other Objects: Creating Frames – Using the TARGET Attribute – Nesting Frames – The NOFRAMES Tag

UNIT – III

Forms: Overview of Forms – The <FORM> Tag – Form Elements: Input Fields – Selection Lists – Multiline Text Fields – Validating a User's Input to a Form

UNIT – IV

Creating and Consuming Cookies : Understanding Cookies - Creating Cookies with JavaScript - Looking at a Simple Cookie - Setting a Cookie's Expiration Date - Setting the Cookie Path - Setting the Cookie Domain - Working with Secure Cookies - Reading Cookies with JavaScript - Removing Cookies.

UNIT – V

JavaScript and CSS: Understanding CSS - Using Properties and Selectors - Applying CSS - The Relationship Between JavaScript and CSS - Setting Element Styles by ID - Setting Element Styles by Type - Setting CSS Classes with JavaScript - Retrieving Element Styles with JavaScript - Modifying Style Sheets with JavaScript.

Text Book:

1. Don Gosselin, "JavaScript Comprehensive" – Vikas Publishing house.
UNIT I: CHAPTER 1& 2
UNIT II: CHAPTER 5
UNIT III: CHAPTER 6

2. Steve Suehring, *JavaScript Step by Step*, 2nd Edition, Microsoft Corporation.

3. UNITIV: Chapter 12

UNIT V: Chapter 15

Reference Books:

1. Ivan Bayross, HTML, DHTML, Java Script, Perl, CGI, BPB, Third Revis.

COURSE OBJECTIVES

- The course is given hands-on experience on HTML, Javascript and ASP and improves the practical skill set.
- This course is established the beginners to build understand the Structure of Scripting Languages.

COURSE OUTCOMES

Upon successful completion of this lab Course, student will be able to

CO1: Understand the fundamentals of HTML program.

CO2: Develop knowledge to write and view the output of the HTML program.

CO3: Use the role of function, frames and validation in JavaScript.

CO4: Understand the concept of PHP

CO5: View the simple examples.

CO6: Discuss the CSS script using changing background and Formatting Text.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1		
CO2	9	9	9	1		
CO3	9	9	3	1		
CO4	9	3	3	1		
CO5	9	3	9	1		
CO6	9	9	3	1		

Level of Correlation

1 – Low 3 – Medium 9 – High 0 – No Correlation

between CO’s and PO’s (Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

HTML Lab

- (a) Creation of Vertical Frameset.
(b) Creation of Horizontal Frameset.
- Sending Mail.
- Insertion of Image.
- Application form Creation.
- Creating an Advertisement for a Company.

Java Script Lab

- Functions.
- Frames.
- Validation.
- Cookies
- CSS
 - (a) Changing Background.
 - (b) Formatting Text.

VISUAL PROGRAMMING**COURSE OBJECTIVES**

- This course introduces the fundamental programming skills using the Visual Basic Integrated Development Environment. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level.

COURSE OUTCOMES

Upon successful completion of this course, students will be able to

CO1 Design, create, build, and debug Visual Basic applications.

CO2 Explore Visual Basic's Integrated Development Environment (IDE).

CO3 Implement syntax rules in Visual Basic programs.

CO4 Explain variables and data types used in program development.

CO5 Write and apply procedures, subroutine, and functions to create manageable code.

CO6 Discuss the Data base access control and ODBC

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	9	9	3		3
CO2	9	3	9	3	1	1
CO3	9	9	9	3	1	1
CO4	3	9	9	3	1	
CO5	3	3	9	3	1	1
CO6	3	3	9	3	3	1

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT – I

Introduction to Visual Basic – Integrated Development Environment (IDE) features – VB editor – customizing the IDE – Anatomy of a form – Working with form properties – setting form's Properties – Introducing form events & form methods.

UNIT – II

Variables in Visual Basic: Declaring variables – Data types – Null value, Error value, Empty value – The scope of a variable – Module level variables – constants – Creating your own constants – scope of a constant – converting data types – arrays –declaring arrays – fixed size arrays – dynamic arrays –preserve keyword –REDIM Writing code in Visual Basic: The anatomy of a procedure – subroutine and functions –language constructs: for, next, the while loop, select case, Exit statement, with structure.

UNIT – III

Selecting & using controls: Introducing standard controls – Command buttons –Text buttons – levels – option buttons –check boxes –frame controls –list boxes –combo boxes – Image objects – picture boxes –Timer – scroll bars – file system controls.

UNIT – IV

Introduction to Built in Active X Control: Tool bar – the tree view control – the List view control – the Image list control – common Dialog control – Status bar control – Rich textbox control – Menu Editor.

UNIT – V

Data Base Access – Data control – Field control – Data Grid Record set using SQL to manipulate data – Open data connectivity (ODBC)

Text Books:

1. Mohammed. Azam, "Programming with Visual Basic 6.0" – VIKAS publishing House pvt. Ltd.2009

UNIT I: CHAPTER 1, 3

UNIT II: CHAPTER 4, 5

UNIT III: CHAPTER 2, 6

2. Dr.A. Murugan,Dr.K.Shymala and GrashaJacob"Visual Basic Programming"Margham Publications

UNIT IV: CHAPTER 8

UNIT V: CHAPTER 12,13

Reference Book:

1. Noel jerke,"Visual Basic 6:The Complete Reference",Tata McGraw – Hill Edition, 2008.

VISUAL PROGRAMMING LAB

COURSE OBJECTIVES

- To attain the knowledge in Visual Basic programming. To gain Knowledge about the DML, DDL Operations. To understand about RDBMS, Object Oriented Databases.

COURSE OUTCOMES

- CO1** Describing the basics of design, create, build and debug Visual Basic applications.
CO2 Designing Windows applications using forms, controls, and events
CO3 Explaining variables and data types used in program development and also the arithmetic operations for displaying numeric output.
CO4 Structuring decision structures for determining different operations and loop structures to perform repetitive tasks.
CO5 Monitoring Visual Basic programs that will help to design projects on VB Programming. Implementing one and two dimensional arrays for calculating, and displaying of data.
CO6 Discuss the Data Bound Control

CO- PO Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	9	9	3	1	3
CO2	3	9	9	3	1	3
CO3	9	3	3	3	1	3
CO4	9	9	9	3	1	3
CO5	3	3	9	3	1	3
CO6	3	3	9	3	1	1

Level of Correlation

1 – Low 3 – Medium 9 – High 0 – No Correlation
between CO's and PO's (Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

Visual Basic Programming Lab

Program to implement the following concepts.

1. Application of Form & Design
2. Standard control
3. Control array of a command button
4. a) Geometric shapes control
b) Basic primitives
5. Timer control
6. Menu Editor
7. Expand & shrinkage of Image.
8. Data Bound Control

MICROPROCESSOR

Course objectives

- To introduce 8085 architecture and programming in assembly language.
- To introduce basic concepts of interfacing memory and peripheral devices to a microprocessor.
- To introduce serial and parallel bus standards.

Course Outcomes

- CO1: Apply basic concepts of digital fundamentals to microprocessor based computer system.
 CO2: Describe the architecture and organization of microprocessor along with instruction set format.
 CO3: Describe modes and functional block diagram of 8085 along with pins and their functions.
 CO4: Describe and use different types of instructions and interrupts.
 CO5: Develop assembly language programs using various programming tools.
 CO6: Discuss the A/D Converter and D/A Converter.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1			3			
CO2		3	3			
CO3	3	3	3			
CO4			3			
CO5			3			
CO6	1	1	3			

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
 (Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT – I

Evolution of Microprocessor –Single Chip Microcomputer - Digital Computers – Memory – Memory Addressing Capacity and CPU - Buses– Microprocessor Applications– Intel 8085 Microprocessor Architecture– Instruction Cycle–Timing Diagram.

UNIT – II

Instruction Set of Intel 8085 – Instruction and Data Formats – Addressing Modes–Status Flag – Intel 8085 Instructions– Programming of Microprocessors – Assembly Language – Assemblers – Stack and Subroutine – Macro – Microprogramming.

UNIT – III

Assembly Language Programming – Simple Examples – Addition and Subtraction of Binary and Decimal Numbers – Complements – Shift – Masking – Finding the Largest and Smallest Number in an Array –Arranging a Series of Number –Sum of a Series of Numbers – Multiplication – Division – Multi byte Addition and Subtraction.

UNIT – IV

Peripheral Device and Interfacing – Address Space Partitioning – Memory and I/O Interfacing – Data Transfer Scheme – Interrupts of Intel 8085 – Interfacing Memory and I/O Device.

UNIT – V

I/O Ports – Programmable Peripheral Interface – Programmable Counter/Interval Timer – A/D Converter and D/A Converter – Microprocessor Applications – Delay Subroutine – 7 – Segment LED Display – Microprocessor Based Traffic Control.

Text Book:

1. Badri Ram, “Fundamentals of Microprocessor and Microcontrollers”, 7th revised and Enlarge Edition, Dhanpat Rai Publications.

UNIT I : Chapter 1 Sections 1.2, 1.5, 1.8, 1.9, 1.10, 1.10.1, 1.29 Chapter 3 Sections 3. 1– 3.3

UNIT II : Chapter 4 Sections 4.1 – 4.4, 4.6, Chapter 5 Sections 5.2, 5.5, 5.6, 5.14

UNIT III : Chapter 6 Sections 6.1 – 6.6, 6.9 – 6.18, 6.21 – 6.26, 6. 29 – 6.31, 6. 34

UNIT IV : Chapter 7 Sections 7.1 – 7.6

UNIT V : Chapter 7 Sections 7.7.1, 7.11, Chapter 8 Sections 8.2, 8.12, Chapter 9 Sections 9.1 – 9.3, 9.5.1, 9.8

Reference Books:

Romesh S. Gaonkar, “Microprocessor Architecture Programming and Applications with the 8085/8080A”, Wiley Eastern 1990

1. Barry B. Bray, “The Intel Microprocessor”, 6th Edition, Published by Prentice Hall of India, 2003.

MICROPROCESSOR LAB

Course Objectives

- To give the fundamental knowledge about digital electronics principles.
- To become familiar with the architecture and Instruction set of Intel 8085 microprocessor.
- To provide practical hands on experience with Assembly Language Programming.

Course Outcomes

CO1 : Understand and apply the fundamentals of Assembly Language Programming of Microprocessors.

CO2 : Design and implement programs on 8085 microprocessor.

CO3 : Design interfacing circuits with 8085.

CO4 : Trouble shoot interactions between software and hardware.

CO5 : Understand the concepts related to I/O and memory interfacing

CO6: Discuss To find the sum of series of data array using Ascending order and Descending order

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3			
CO2	9	3	3			
CO3	9	3	3			
CO4	9	3	3			
CO5	9	3	3			
CO6	9	3	3			

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation between COs and Pos } 1 – Low 3 – Medium 9 – High 0– No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

List of Programs

Digital Electronics

1. Number Conversions
2. Verification of Logic gates
3. Boolean algebraic functions using Karnaugh map (K-Map)
4. Shift registers

Microprocessor Lab

5. To perform Addition and Subtraction of two 8-bit numbers.
6. To perform decimal addition of two 8-bit numbers and sum is 8-bit.
7. To search the largest and smallest data in an array using 8085 microprocessor.
8. Arranging an array of data in Ascending order.
9. Arranging an array of data in Descending order.
10. To find the sum of series of data array.

BASIC CONCEPTS OF COMPUTER SCIENCE

Course Objective

- This course introduces the basic concepts of computer to the students who is not belonging to Computer Science stream. This course will give the knowledge about Secondary Storage Devices. This course will stress on fundamental parts Internet and the intranet, so that the students will have a basic concept for understanding and using other programming language.

Course Outcome

Upon successful completion of this course, students will be able to

- CO1** Understanding the concept of input and output devices of Computers and how it works and recognize the basic terminology used in computer programming.
- CO2** Explain the Secondary storage Devices and its types
- CO3** Demonstrate about the Software
- CO4** Understanding the basis of Data communication and computer Networks.
- CO5** Explain about Internet and WWW.
- CO6** Discuss the internet, WWW and multimedia.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3		9			
CO2			9			
CO3		9	9			
CO4		9	9			
CO5		9	9		1	
CO6	3	9	9			

Level of Correlation between COs and Pos } 1 – Low 3 – Medium 9 – High 0– No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I: Introduction: Characteristics of Computers – The Evolution of Computers – The Computer Generations. Basic Computer Organization: Input Unit – Output Unit - Storage Unit – Arithmetic Logic Unit – Control Unit – The Central Processing Unit. Processor and Memory: The Main Memory.

UNIT II: Secondary Storage Devices: Sequential and Direct Access Devices – Magnetic Disk - Optical Disk – CD-ROM. Input-Output Devices: Input Devices: Keyboard – Point-and-Draw Devices – Data Scanning Devices – Electronic-card Reader. Output Devices: Monitors – Printers – Plotters. Computer Software: Types of Software.

UNIT III: Operating Systems: Main Functions of an Operating System. Business Data Processing: Data Processing – Data Storage Hierarchy – Standard Methods of Organizing Data – File Management System: File Types – File Organizations – Database Management System: Database Models.

UNIT IV: Data Communication and Computer Networks: Basic Elements of a Communication System – Data Transmission Modes – Data Transmission Speed – Data Transmission Media – Digital and Analog Data Transmission.

UNIT V: The Internet: Definition- Basic Services: Electronic Mail – File Transfer Protocol – Telnet - The World Wide Web. WWW Browsers – Uses of the Internet. Multimedia: Multimedia Computer System – Multimedia Components – Multimedia Applications.

Text Book:

- Pradeep K. Sinha and Priti Sinha, “Computer Fundamentals”, BPB Publications, 3rd Edition.
Unit 1: chapter (1, 2)
Unit 2: chapter (8, 9, 10)
Unit 3: chapter (14, 16)
Unit 4: chapter (17)
Unit 5: chapter (18, 19)

Reference Book:

- V.Rajaraman and Neeharika Adabala, ”Fundamentals of Computers”, 6th Edition, PHI Learning Private Limited, 2014.

PROGRAMMING IN JAVA

Course Objective

- This course aims at facilitating the student to understand the Object-Oriented programming concepts of Java towards developing Java based applications and hands on practices by applying the concepts of Database Connectivity.

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Explain the OOPs concept, Java tokens and operators and expression

CO2: Explain and implement classes and object, method overloading and overriding concept

CO3: Describe Implements interfaces, use exceptions, threads, collections, logs of Java for the given problem.

Understand Concept of Thread, its life cycle and Thread Exception

CO4: Define various types of Errors and Apply Exception handling using multiple catch statement, understand and describe concept of streams, reading & writing

CO5: Understand the file handling methods

CO6: Discuss the Applet, Life cycle of Applet and develop simple applet

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	1			
CO2	9	3	3		3	
CO3	9	3	9			
CO4	9	9	3		3	
CO5	9	9	3		3	
CO6	9	9	3		1	

CO- PO Mapping (Course Articulation Matrix):

Level of Correlation } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)
between CO's and PO's

UNIT – I: Benefits of OOPS – Java History – Java Features – Java Environment – Java Tokens – Constants – Variables – Data Types – Operators and Expressions – Decision Making and Branching – Decision Making and Looping.

UNIT – II: Classes and Objects – Constructors – Method Overloading – Static Members – Inheritance – Overriding Methods – Final Variables, Final Methods and Final Classes – Finalizer Method – Abstract Methods and Abstract Classes – Visibility Control – Arrays – Strings.

UNIT – III: Defining Interface– Extending Interfaces – Implementing Interfaces – Packages – Multithreaded Programming: Thread Life Cycle – Thread Exceptions – Thread Priority – Synchronization.

UNIT – IV: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statements – Managing Input / Output Files in Java: Concept of Streams – Stream Classes – Character Stream Classes – Reading / Writing Characters – Reading / Writing Bytes – Handling Primitive Data Types – Random Access files.

UNIT – V: Event Handling Methods – Labels – Button Control – CheckBox Control – Radio Button Control – Choice Control – List Control – Flow Layout – Border Layout – Grid Layout– Menus – Mouse Events – Applets: Life cycle of an Applet – Development and Execution of a Simple Applet.

Text Books:

1. E.Balagurusamy, “Programming with JAVA”, Tata McGraw Hill, New Delhi, 4 th Edition. (UNIT I,II,III&IV)
2. C. Muthu, “Programming with JAVA”, Vijay Nicole Imprints Private Limited, Chennai, 2 rd Edition, 2011. (UNIT V)

Reference Books:

1. Herbert Schildt, “Complete Reference JAVA 2”, Tata McGraw – Hill Publishing Company Ltd., 5 th Edition, 2009

PROGRAMMING IN JAVA LAB

Course Objective

- This course aims at facilitating the student to practice and Implement the Object-Oriented programming concepts of Java towards developing Java based applications and hands on practices by applying the concepts of Database Connectivity.

Course Outcomes

On the successful completion of the course, students will be able to

- CO1:** Understand and implement the concept of class and objects. Understand
- CO2:** Write Java programs for string manipulation. Apply
- CO3:** Implement packages, access specifiers and interfaces in a program Apply
- CO4:** Implement Program for Events handling. Apply
- CO5:** Generate program for implementing Multithreading Analyze
- CO6:** Create program for applet and AWT Components.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	1	-
CO2	9	3	3	3	3	-
CO3	9	3	9	3	9	1
CO4	9	9	3	3	9	3
CO5	9	9	3	1	9	1
CO6	9	9	9	1	3	1

CO- PO Mapping (Course Articulation Matrix):

Level of Correlation } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)
between CO's and PO's

List of Exercises :

1. Classes and Objects.
2. Inheritance
3. (a) Built-in package.
(b) User defined package
4. Vector Manipulation.
5. Exception handling.
6. Applet.
7. Multi Threading.
8. AWT components.

COMPUTER NETWORKS

Course Objective

- The course aims to provide an understanding of computer networks concepts like Wired and Wireless Network, it also imparts knowledge about routing algorithm, DNS, WWW and E-mail technologies.

Course Outcomes

On successful completion of the course, the students will be able to

CO1: Describe the uses of Computer Networks, and hardware and software needed for implementing Network

CO2: Explain and illustrate the layers in OSI reference model

CO3: Discuss the difference between guided transmission media and wireless transmission.

CO4: Use Error detection and correction and explain sliding window protocol

CO5: Use suitable routing algorithm and congestion control algorithm .

CO6: Discuss about transport layer and elements of transport protocols and Explain about DNS, E-mail and WWW

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	1			
CO2	3	1	1			
CO3	3	3	3			
CO4	9	1	1			
CO5	9	3	3			
CO6	9	3	1			

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I : Introduction: uses of computer networks - network hardware - network software -reference models - example networks - network standardization

UNIT II : The physical layer: guided transmission media - wireless transmission – communication satellites - the public switched telephone network

UNIT III : The data link layer: data link layer design issues - error detection and correction –elementary data link protocols - sliding window protocols

UNIT IV : The network layer: network layer design issues - routing algorithms - congestion control algorithms- quality of service – internetworking

UNIT V : The transport layer: the transport service - elements of transport protocols - a simple transport protocol the application layer: dns--domain name system - electronic mail – the World Wide Web

Text Book:

Andrew S. Tanenbaum “Computer Network”, 4 th Edition, Prentice Hall, 2006.

UNIT 1: CHAPTER 1(Sec 1.1, 1.2, 1.3, 1.4, 1.5, 1.6)

UNIT 2: CHAPTER 2(Sec 2.3, 2.4, 2.5) UNIT 3: CHAPTER 3(Sec 3.1, 3.2, 3.3, 3.4)

UNIT 4: CHAPTER 5(Sec 5.1, 5.2, 5.3, 5.4, 5.5) UNIT 5: CHAPTER 6(Sec 6.1, 6.2, 6.3, 7.1, 7.2,7.3)

Reference Book:

1.Forouzan “Computer Networks”, Tata McGraw-Hill Education, 2012.

2. William Stallings, “Data and Computer Communications”, 6th Edition, Prentice Hall of India, 2002.

E-COMMERCE and it's APPLICATIONS

Course objective

This course is aimed at providing the student with an in-depth understanding of the still emerging field of E-Commerce. By the end of the course, the student will be able to understand the various elements that are fundamental for a successful E-Commerce enterprise and develop a business plan for developing one such E-Commerce site.

Course Outcomes

Upon completing the course, the participants will be able to:

CO1 Gain a comprehensive understanding of the E-Commerce landscape.

CO2 Business models, and the technology and infrastructure underpinnings of the business.

CO3 Leverage the E-Commerce platforms to enhance current business or incubate new businesses.

CO4 Gain an understanding on how innovative use of the E-Commerce can help developing competitive advantage.

CO5 Develop an understanding on how internet can help business grow.

CO6: Discuss the Electronic Payment Systems and Internet.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	0	9	3	3	9
CO2	9	0	3	3	3	9
CO3	9	3	3	1	3	9
CO4	9	3	3	1	3	3
CO5	9	3	9	3	3	3
CO6	9	3	9	3	3	3

Level of Correlation } 1 – Low 3 – Medium 9 – High 0– No Correlation
between COs and Pos(*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)

UNIT – I

E-Commerce–Electronic Commerce – E-Commerce types – E-Commerce and world at the large – E Commerce Case studies: Intel, Amazon

UNIT – II

Electronic Mail – The X, 400 Messages handling system – Internet addresses – Multipurpose Internet mail Extension – X.500 Directory Services – E-Mail User agent.

UNIT – III

EDI– Costs and benefits – Components of EDI Systems – EDI implementation issues – EDIFACT – EDIFACT Message Structure.

UNIT – IV

Cyber Security – Cyber Attacks – Hacking – SSL – Authentication and assurance of DATA integrity – Cryptographic based solution – Digital Signatures – VPN.

UNIT – V

Electronic Payment Systems – Payment gateway – internet banking – the SET protocol – E-Cash – E-Cheque – Elements of electronics payments

Textbook:

1. Kamallesh.Kbalaji, Debjani Nag “E-Commerce – The Cutting Edge of Business”, 2 nd Edition, Tata McGraw Hill.

Reference Books:

1. Ravi Kalakota and Andrew B.Whinston“ Frontiers of E-Commerce “ – Pearson Edu.
2. S.Jaiswal“E-Commerce : Doing Business through internet “ , Galgotia Publication, 2001 .

INTRODUCTION TO DATA SCIENCE

Course Objective

- This course is designed to enable the student to get a detailed knowledge of all the hardware components that makes up a computer and to understand the different interfaces required for connecting these hardware devices.

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Explain the Hardware components and architecture

CO2: Explain the classification of Memory, Keyboard and mouse

CO3: Describe about various troubleshooting mechanism like BIOS, CD-Drive's, CMOS, etc.

CO4: Describe about various troubleshooting mechanism like Keyboard, Memory, Pointing device, Motherboard etc.

CO5: Explain about Power protection devices and Power supply management

Understand and Describe Installation process of Network/ modem

Unit – I: Introduction

Introduction to Data Science – Evolution of Data Science – Data Science Roles – Stages in a Data Science Project – Applications of Data Science in various fields – Data Security Issues.

Unit – II: Data Collection and Data Pre-Processing

Data Collection Strategies – Data Pre-Processing Overview – Data Cleaning – Data Integration and Transformation – Data Reduction – Data Discretization.

Unit – III: Exploratory Data Analytics

Descriptive Statistics – Mean, Standard Deviation, Skewness and Kurtosis – Box Plots – Pivot Table – Heat Map – Correlation Statistics - Markov Model.

Unit – IV: Model Development

Simple and Multiple Regression – Model Evaluation using Visualization – Residual Plot – Distribution Plot – Polynomial Regression and Pipelines – Measures for In-sample- Evaluation – Prediction and Decision Making.

Unit – V: Model Evaluation

Generalization Error – Out-of-Sample Evaluation Metrics – Cross Validation – Overfitting – Under Fitting and Model Selection – Prediction by using Ridge Regression – Testing -Multiple Parameters by using Grid Search.

Text Books

1. Jojo Moolayil, “Smarter Decisions : The Intersection of IoT and Data Science”, PACKT, 2016.
2. Cathy O’Neil and Rachel Schutt , “Doing Data Science”, O’Reilly, 2015.
3. David Dietrich, Barry Heller, Beibei Yang, “Data Science and Big data Analytics”, EMC 2013

Books for Reference

1. Raj, Pethuru, “Handbook of Research on Cloud Infrastructures for Big Data Analytics”, IGI Global.

NETWORK ESSENTIALS & MANAGEMENT

Course Objectives

- Identify the names and distinguishing features of different kinds of network and benefits of network, network devices and TCP/IP & subnetting and protocols.

Course Outcomes

- CO1:** Identify the different kinds of networks.
- CO2:** Knowledge of network devices.
- CO3:** Idea of Transmission Media and Topologies
- CO4:** Different kinds of protocol and networking services.
- CO5:** To gain knowledge about TCP/IP and subnetting.

UNIT - I: Introduction to networks and networking, LAN, VLAN, CAN, MAN, WAN, Internet and Intranet etc. Uses and benefits of Network, Server-client based network, peer to peer networks.

UNIT – II: Concept of Server, client, node, segment, backbone, host etc. Analog and Digital transmission, Network Interface Card, Crimping tools and Color standards for Straight crimping and Cross crimping Functions of NIC, Repeaters, Hub, Switches, Routers, Bridges.

UNIT – III: Media types: STP cable, UTP cable, Coaxial cable, Fiber cable, Base band and Broadband transmission, Cables and Connectors, Physical and logical topologies, Bus, Star, Ring and Mesh topologies

UNIT – IV: HTTP, FTP and other Different types of protocols, OSI Model, Media Access Method, DNS services, DHCP services, WINS services and RAS services, Web services, Proxy Services etc.

UNIT – V: Introduction about TCP/IP and Sub-nettings, configuring IP address and subnettings with different Routers and Network, TCP/IP Errors and Solutions.

REFERENCE BOOK

- (1) Networking Complete BPB Publication
- (2) Computer Networking Andrew S. Tanenbawan By PHI

COMPUTER GRAPHICS

Course Objective

- The course aims to provide the basic knowledge of Computer Graphics and its application, it also impart knowledge on two dimensional transformation and various clipping concepts.

Course Outcomes

On successful completion of the course, the students will be able to

CO1: Describe the basics of Computer Graphics, input and hard copy device and graphics software

CO2: Explain about Raster Scan and Random Scan system

CO3: Explain and illustrate the various algorithms like line drawing, DDA, Bresenham's etc

CO4: discuss about various attributes of output primitives like line attribute, Area Fill, Character fill

CO5: Illustrate 2D Geometric Transformations and Explain Matrix representation

CO6: Develop the point, line and polygon clipping operations

CO- PO Mapping:

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	9	9		3	
CO2	3	9	3		3	1
CO3	9	9	3	1	3	1
CO4	3	3	3	1	3	
CO5	9	3	9	1	3	
CO6	9	3	9	1	3	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I:

A survey of computer graphics: Computer aided design – Presentation graphics computer art – Entertainment – Education and training – Visualization – ImageProcessing – Graphical user interfaces. Overview of graphics systems: Video display devices – Raster- scan systems – Random scansystems – Graphics monitors and workstation – Input devices – Hard-copy devices –Graphics software.

UNIT II:

Output primitives: Points and lines – Line-drawing algorithms – DDA algorithm – Bresenham's line algorithm – Circle-generating algorithms – Filled-area primitives –Boundary-fill algorithm.

UNIT III:

Attributes of output primitives: Line attributes – Area-fill attributes – Character attributes- Bundled attributes – Inquiry functions – Antialiasing

UNIT IV:

Two-dimensional Geometric transformations: Basic transformations – Matrix representations – Composite transformations – Other transformations.

UNIT V:

Window-to-viewport coordinate – Two-dimensional viewing functions – Clipping operations – Point clipping – Line clipping – Polygon clipping.

Text book:

Donald Hearn and M.Pauline Baker "Computer Graphics" C Version 2 nd Edition, -Pearson Education, 2006.

Unit 1: chapter 1(sec 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8)

chapter 2(sec 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7)

Unit 2: chapter 3(sec 3.1, 3.2, 3.5, 3.11)

Unit 3: chapter 4(sec 4.1, 4.4, 4.5, 4.6, 4.7, 4.8)

Unit 4: chapter 5(sec 5.1, 5.2, 5.3, 5.4)

Unit 5: chapter 6(sec 6.4, 6.5, 6.6, 6.7, 6.8)

Reference Book:

1. Jeffrey J. McConnell," Computer Graphics: Theory Into Practice", Jones and barlett publishers,2006.

2. Peter Shirley, Michael Ashikhmin, Steve Marschner "Fundamentals of Computer Graphics",CRC Press,2009.

PRINCIPLES OF ANIMATION

Course Objective

- This course is designed to provide an overview of History of animation. It also enables the student to get a detailed knowledge on fundamentals of animation from traditional animation to CGI animation.

Course Outcomes

On the successful completion of the course, students will be able to

- CO1: Explain the basic of animation and its history
- CO2: Explain the Basic rules and principles of animation
- CO3: Describe about various timing for animation and also the use of camera angles
- CO4 Describe about Animation production process in detail
- CO5: Understand and apply basic traditional animation
- CO6: Implementation of sample animations like Bouncing ball etc.,

UNIT I:

Introduction to Animation & History of Animation: What is Animation, History of Animation – Starting from Early approaches to motion in art, Animation before film, Traditional Animation – The silent era, Walt Disney & Warner Bros., Snow White & the seven dwarfs, The Television era, Stop-motion, CGI Animation - till date. Different Types of Animation:1. Traditional Animation - Cel Animation or hand drawn Animation 2. Stop Motion Animation – Puppet Animation, Clay Animation, Cut-out Animation, Silhouette Animation, Model Animation, Object Animation etc. 3. Computer Animation – 2D Animation, 3D Animation

UNIT II:

The 12 basic Principles of Animation: The basic rules of animation including Squash and stretch, Anticipation, Staging, Straight Ahead Action and Pose to Pose, Follow Through and Overlapping Action, Slow In and Slow Out, Arc, Secondary Action, Timing, Exaggeration, Solid drawing, Appeal

UNIT III:

Timing for Animation: Ease in & Ease out, X-Sheet handling, Field Chart usage, Camera Panning, Zoom-in & Zoom-out, Cut-shot, Dissolve transform, trick shot, hook-up shot etc. How to create hook-up poses for animation. How to use camera angles to emphasize performance

UNIT IV:

Animation Production Process: Understand Animation Requirements, Basic steps in Pre-Production, Production and Post-Production.

UNIT V:

Basic Traditional Animation Samples: To apply the principles of animation, Posing and Character emotion. How to observe and study human behavior and expressions to help visualize concepts. How to enact and emote. Sample animations - Bouncing Ball Animation, Walk Cycle, Run Cycle, 4 Leg Walk cycle, Fly Cycle

Reference Books Online References:

1. The Illusion of Life: Disney Animation - Frank Thomas and Ollie Johnston
2. Cartoon Animation - Preston Blair
3. The Animators Survival Kit - Richard Williams
4. History of Animation - https://en.wikipedia.org/wiki/History_of_animation
5. Principles of Animation - https://en.wikipedia.org/wiki/12_basic_principles_of_animation
6. YouTube Video <https://www.youtube.com/watch?v=haa7n3UGyDc&feature=youtu>

VISUAL EFFECTS

Course Objective

- This course is designed to provide an overview of Visual effects. It also enables the student to get a detailed knowledge on various visual effects tools and gives a clear knowledge on 2d and 3d effects.

Course Outcomes

On the successful completion of the course, students will be able to

- CO1:** Explain the overview of visual effects, 3D modeling
- CO2:** Describe various tracking and cloning effects
- CO3:** Understand and implement the various effects
- CO4:** Describe about 3D stereo effects in detail
- CO5:** Differentiate anaglyph and polarised
- CO6:** Implementation of image conversion from 2D to 3D
- CO7:** Differentiate 2D and 3D

UNIT – I

Visual effect overview, image animation, 3d tools converting, Controlling timeline panels, Visual effect making, 3d model compositing, Designing Glow Effects

UNIT – II

Tracking, one point track, two point track, Four point track, Double tracking, Paint Clone effect, Wire remove effect, Sky replace effect, background changing effect, Masking, Rotoscoping , 3D character masking.

UNIT - III

Bug effect, Healer effect, Time warp effect, Time Stretching effect, Image to video effect, Day to night effect, Demon face warp, 3D depth effect

UNIT - IV

3D stereo effect, 3d stereo convert effect, 3D glass making, Different between anaglyph; polarised, Change 3d stereo in premier software

UNIT – V

Visual Effects Tool and advanced functions– Converting images from 2D to 3D Pictures. Creating 3D Effects- Differentiation 2D effects and 3D effects.

Reference Books:

- 1) Match moving: The Invisible Art of Camera Tracking by Tim Dobbert. Tim Dobbert
- 2) The After Effects Illusionist: All the Effects in One Complete Guide by Chad Perkins .Chad Perkins
- 3) The Visual Effects Arsenal: VFX Solutions for the Independent Filmmaker by Bill Byrne . Bill Byrne
- 4) After Effects Expressions by Marcus Geduld Marcus. Geduld (Author)
- 5) Filming the Fantastic: A Guide to Visual Effects Cinematography by Mark Sawicki . Mark Sawicki

INTRODUCTION TO ICT (Information and Communication Technologies)

Course Objective:

- The objective of this course is to provide students with opportunities to learn new concepts in the area of Information and Communication Technologies (ICT) and keep up to date on the latest research and developments in the field.

Course Outcome

Upon successful completion of this course, students will be able to

- CO1** Understanding the progress of information and communication technologies (ICT) and their role in modern world
- CO2** Knowing about the social media and community radio in online
- CO3** Searching information on the Internet
- CO4** Understanding the basis of Data communication and computer Networks.
- CO5** Explaining the usage of computers in various fields.
- CO6** Discuss of computer using Business, home, education, entertainment.

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	3	1	9	9		3
CO2	3	3	9	9	3	9
CO3	9	9	9	9	9	9
CO4	3	1	9	9		
CO5	1	9	9	9		9
CO6	1	9	9	9		1

UNIT I : ICT – Concepts, Objectives, Need and Importance of ICT – Characteristics and Scope of ICT – Recent Trends in the area of ICT – Interactive Video – Interactive White Board – Video Conferencing – M-Learning

UNIT II : Social Media – Community Radio – GyanDarshan – Gyanvani – Sakshat Portal – e-Gyankosh – Blog – MOCC – WhatsApp, Facebook, Twitter

UNIT III : Introduction – History of the Internet – Understanding WWW – Web Browsers – Favourites and bookmarks – Kinds of information available – Parts of Internet – Searching the net – Researching on the net

UNIT IV : Introduction – Overview of a Network – Communication Processors – Communication Media – Types of Networks – Network Topologies – Network Architecture – Communication Satellites – Radar – Fiber Optics – ISDN

UNIT V : Computers in Business and Industry – Computers in Home – Computers in Education and Training – Computers in Entertainment, Science, Medicine and Engineering

Text Books:

1. G. Kavitha, Information and Communication Technology in Education, Saradha Publication, Chennai

UNIT I : Chapters 1.1, 1.1.1, 1.1.2, 1.1.3, 2.1 – 2.5

UNIT II : Chapters 2.6, 2.7.1 – 2.7.9

UNIT III : Chapters 6.1 – 6.9

2. Alexis Leon and Mathews Leon, Fundamentals of Information Technology, Vikas Publishing House Pvt Ltd, 2009

UNIT IV : Chapters 18.1 – 18.4, 18.7, 18.8, 18.11, 19.6, 19.9, 19.11, 19.12

UNIT V : Chapters 33, 34, 35, 36

Reference Book: A. Kumar, Internet and IT, Anmol Publications Pvt Ltd, First Edition, 2002

Unit 3: chapter (14, 16)

Unit 4: chapter (17) Unit 5: chapter (18, 19)

Reference Book:

V.Rajaraman and Neeharika Adabala, "Fundamentals of Computers", 6th Edition, PHI Learning Private Limited, 2014

PYTHON PROGRAMMING

Course Objective

- The course is designed to provide Basic knowledge of Python. Python programming is intended for software engineers, system analysts, program managers and user support personnel who wish to learn the Python programming language.

Course Outcomes

- CO1 Be fluent in the use of procedural statements — assignments, conditional Statements, loops, function calls — and sequences.
- CO2 Be able to design, code, and test small Python programs that meet requirements Expressed in English.
- CO3 Basic understanding of top-down design.
- CO4. Understand the operations and Statements.
- CO5 Have knowledge of Regular Expressions and Network Programming
- CO6 Discuss the GUI Programming with TKinter

CO- PO Mapping (Course Articulation Matrix)

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3				
CO2	9	3	9	3		3
CO3	9	3	3	1	3	
CO4	9	9	3	1	3	3
CO5	9	3	9	3	3	3
CO6	9	9	3	3	1	1

Level of Correlation between COs and Pos(} 1 – Low 3 – Medium 9 – High 0– No Correlation
Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I

Python - Introduction – History of Python – Features of Python – Installing Python – Running Python - Comments - Operators - Variables and Assignment - Python Objects – Standard Types - Other Built-in Types - Internal Types - Standard Type Operators - Standard Type Built-in Functions - Categorizing the Standard Types - Unsupported Types

UNIT II

Introduction to Numbers – Integers - Floating Point Real Numbers - Complex Numbers – Operators -Built-in Functions -Sequences – Strings - Strings and Operators - String-only Operators - Built-in Functions - String Built-in Methods - Special Features of Strings-Dictionary.

UNIT III

Lists – Operators - Built-in Functions - List Type Built-in Methods - Special Features of Lists - Tuples - Tuple Operators and Built-in Functions - Special Features of Tuples - Conditionals and Loops – if statement - else statement - else if statement - while statement - for statement - break statement - continue statement - pass statement - else statement

UNIT IV

Regular Expressions – Introduction – Special symbols and characters for Regular Expressions – Regular Expressions and Python .

UNIT V

GUI Programming with TKinter – Introduction TKinter and Python Programming – Tkinter examples.

Text Books

1. Chun, J Wesley, CORE Python Programming, 2 nd Edition, Pearson, 2007 Reprint 2010.
UNIT I : Chapter 1, 2, 4 UNIT II : Chapter 5, 6
UNIT III : Chapter 6, 8 UNIT IV : Chapter 15, 16
UNIT V : Chapter 18, 19

Reference Book

1. Jeffrey Elkner, Chris Meyers Allen Downey, Learning with Python, Dreamtech Press, 2015

PYTHON PROGRAMMING LAB

Course Objective

- The course is designed to provide basic knowledge of Python programming. It is intended to learn the Python programming language.

Course Outcomes

Problem solving and programming capability

- CO1.** Describe the Numbers, Math functions, Strings, List, Tuples and Dictionaries in Python
- CO2.** Express different Decision Making statements and Functions
- CO3.** Understand and summarize different File handling operations
- CO4.** Design and develop Client Server network applications using Python
- CO5.** Understand the GUI Programming with TKinter.
- CO6.** Create the programming with Regular Expression.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	3	0	1
CO2	9	3	3	3	0	3
CO3	9	3	3	1	3	0
CO4	9	9	3	3	3	3
CO5	9	3	9	3	3	3
CO6	9	3	9	9	3	3

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation } 1 – Low 3 – Medium 9 – High 0– No Correlation
between COs and Pos(*Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix*)

Problem solving and programming capability.

1. List
2. Tuple
3. Dictionary
4. Decision making statement
5. Looping Statements
6. Regular Expression.
7. Year & Date Function
8. Application of 'Tkinter'

Data base Systems

COURSE OBJECTIVES

- The course is designed to provide a wide knowledge on Database System and SQL
- This course is offered to study the physical and logical database designs, database modeling, relational, hierarchical, and network models
- This course is emphasized the strengths of SQL and PL/SQL which provides students to write a program efficiently.
- This course is offered to design the wide variety of examples SQL.
- This course is provided the knowledge to design and build a simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

COURSE OUTCOME

Upon successful completion of this course, students will be able to

CO1: Understand the features of Database Management Systems and Relational database.

CO2: Recognize the Data models.

CO3: Understand the features Structured Query Language (SQL) and learn SQL syntax.

CO4: Understand the functional dependencies and design of the database

CO5: Apply normalization to improve the database design.

CO6: Discuss the data storage method, Indexing and Hashing

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	3	1	3	1
CO2	3	3	9	0	3	1
CO3	3	9	9	1	3	0
CO4	9	3	9	3	1	1
CO5	9	3	9	3	3	1
CO6	9	3	9	3	1	1

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I: Introduction: Database System Applications – Purpose of Database Systems – View of Data – Database Language– Relational Databases – Database Design Data Storage and Querying Transaction Management – Data Mining and Analysis – Database Architecture- Database Users and Administrators.

Unit II: Database Design and the E- R Model: Overview of the Design Process – The Entity – Relational Ship Model–Constraints – Entity – Relational ship Diagrams – Entity – Relationship Design Issues.

UNIT III: SQL: Data Definition – Basic Structure of SQL Queries – Set Operations – Aggregate Functions – NULL Values – Nested Sub queries – Complex Queries – Views – Modification of the Database – Joined Relations – SQL Data Types and Schemes – Integrity Constraints – Authorization – Embedded SQL.

UNIT IV: Relational Database Design: Features of Good Relational Designs – Atomic Domains and First Normal Form – Decomposition Using Functional Dependencies – Functional Dependency Theory – Decomposition Using Multi valued Dependencies – More Normal Forms – Database Design Process.

UNIT V: Data Storage: Tertiary Storage – File Organization – Organization of Records in Files – Data Dictionary Storage – Database Buffer. Indexing and Hashing: Basic concepts – Ordered Indices – B + _ Tree Index Files.

TEXT BOOK:

Silberschatz.Henry F.Korth and S.Sudarshan “Database System Concepts”, 6 th Edition- McGraw – Hill – 2013.

Unit 1: chapter 1(sec 1.1,1.2,1.3,1.4,1.5,1.6,1.7,1.8,1.9,1.10,1.12)

Unit 2: chapter 7(sec 7.1, 7.2, 7.3, 7.5, 7.6, 7.7)

Unit 3: chapter 3(sec 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9)

chapter 4(sec 4.1, 4.2, 4.3, 4.4, 4.5)

Unit 4: chapter 8(sec 8.1, 8.2, 8.3, 8.4, 8.6, 8.7, 8.8)

Unit 5: chapter 10(sec 10.4, 10.5, 10.6, 10.7, 10.8)

chapter 11(sec 11.1, 11.2, 11.3)

Reference Books:

1. Ramez Elmasri –Shamkant B.Navathe “Fundamentals of Database Systems” – Third Edition –Addison Wesley Longman Pvt.,Ltd – Delhi 2001.
2. Alexis leon and Matheews Leon “Database Management Systems” – Vikas Publishing House Pvt.,Ltd., - New Delhi –2002.

MYSQL LAB

COURSE OBJECTIVES

- The course is given hands-on experience on RDBMS and improves the practical skill set.
- This course is established the beginners to build up the logic for create and accessing the Database by using Queries.

COURSE OUTCOMES

Upon successful completion of this lab Course, student will be able to

- CO1** Understand the fundamentals of RDBMS Concepts.
- CO2** Develop knowledge to DDL, DML in SQL
- CO3** Use the concepts of Triggers and cursors.
- CO4** Demonstrate about the Normalization
- CO5** Use the concepts in PL/SQL
- CO6** Develop the sample examples like Banking System, Library Management, etc.

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1		3	9			1
CO2		9	9		3	
CO3		9	9		1	
CO4		3	9		3	3
CO5		9	9		1	
CO6		9	9		3	1

CO- PO Mapping (Course Articulation Matrix)

Level of Correlation between CO's and PO's } 1 – Low 3 – Medium 9 – High 0 – No Correlation
(Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

List of Programs

1. DDL Commands.
2. DML Commands.
3. Aggregate Function.
4. Numeric Function.
5. Group By, Having.
6. Operators.
7. String Function.
8. Sub Queries & Alias.

OPERATING SYSTEM

Course Objective

- To learn the fundamentals of Operating Systems - To gain knowledge on Distributed operating system concepts that includes architecture, Mutual exclusion algorithms, Deadlock detection algorithms and agreement protocols - To gain insight on to the distributed resource management components

Course Outcomes

- CO1** Master functions, structures and history of operating systems
- CO2** Master understanding of design issues associated with operating systems
- CO3** Master various process management concepts including scheduling, synchronization, Deadlocks ,Be familiar with multithreading.
- CO4** Master concepts of memory management including virtual memory. Master system resources sharing among the users .Master issues related to file system interface and implementation, disk management
- CO5** Be familiar with protection and security mechanisms. Be familiar with various types of operating systems including Unix
- CO6** Discuss the file management system.

CO/PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	2	1	1		2	
CO2	2	1	1			
CO3	2	1	1			
CO4	9	1	1			
CO5	9	2	2			
CO6	9	1	3		1	

UNIT – I

Evolution of operating systems– Functions – Different views of OS – Batch processing, Multiprocessing, Time sharing OS – I/ O programming concepts – Interrupt Structure & processing

UNIT – II

Memory Management – Single Contiguous Allocation – Partitioned Allocation –Relocatable Partitions allocations – Paged and Demand paged Memory Management –Segmented Memory Management – Segmented and Demand paged Memory Management – overlay Techniques – Swapping

UNIT – III

Processor Management – Job Scheduling – Process Scheduling – Functions and Policies – Evolution of Round Robin Multiprogramming Performance – Process Synchronisation– Wait and Signal mechanisms – Semaphores P & V Operations – Deadlock – Banker’sAlgorithm.

UNIT – IV

I/O Traffic Controller, I/O Scheduler, I/O Device Handlers – Spooling.

UNIT – V

File Management : Simple File System, General Model of a File System, Physical and Logical File System.

Text Book:

- 1.E. Madnick& John J.Donavan,“Operating Systems” Tata McGraw Hill Publishing Co.,Limited.
 - 2.PradeepK.Sinha ,”Distributed Operating Systems”, Prentice – Hall of India Private Limited
- UNIT I : Chapter 1, 2 UNIT II : Chapter 3 UNIT III : Chapter 4
UNIT IV : Chapter 5 UNIT V : Chapter 6

Reference Books:

D.M. Dhamdhere,“System Programming and Operating Systems”Tata McGraw HillPublishing Co., Limited.

SOFTWARE ENGINEERING

Course Objective

- This course aims at introducing to the students about the product that is to be engineered and the process that provides a framework for the engineering technology. The course facilitates the students to analyze risk in software design and quality and to plan, design, develop and validate the software project.

Course Outcomes

On the successful completion of the course, students will be able to

CO1: Explain a process model for a software project development

CO2: Prepare the SRS, Design document, Project plan of a given software system

CO3: Apply Project Management and Requirement analysis, Principles to S/W project development.

CO4: Analyze the cost estimate and problem complexity using various estimation techniques

CO5: Generate test cases using the techniques involved in selecting: (a) White Box testing (b) Block Box testing

CO6: Discuss the Verification and Validation Techniques

CO- PO Mapping (Course Articulation Matrix)

CO / PO	PO1	PO2	PO3	PO4	PO5	PO6
CO1	9	3	9	1	9	
CO2	9	3	9	1	1	
CO3	9	3	3	1	9	
CO4	9	9	9	1	9	
CO5	9	9	3	1	9	
CO6	9	9	3	1	1	

Level of Correlation

1 – Low 3 – Medium 9 – High 0 – No Correlation

between CO's and PO's (Suggested by UGC as per Six Sigma Tool – Cause and Effect Matrix)

UNIT I: Introduction to Software Engineering: Definitions - Size factors – Quality and Productivity Factors – Managerial Issues. The Product: The evolving role of software – Software – characteristics - applications. The process: Software engineering: A Layered Technology – The software process –Evolutionary software process models: Spiral model.

UNIT II: Planning a Software Project: Defining the problem – Developing a solution Strategy –Planning the development Process – Planning an organizational structure – Other Planning Activities.

UNIT III: Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing Level Estimation. Software Requirements Definition: The Software Requirements Specification – Formal Specification Techniques.

UNIT IV: Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notation – Design techniques – Design Guidelines. Implementation Issues: Structured coding techniques – coding style – Documentation guidelines.

UNIT V: Verification and Validation Techniques: Quality Assurance – Walkthroughs and inspections – Static analysis –Unit testing and debugging – System testing – Formal verification.

Text Books:

1. Richard E. Fairly – “Software Engineering Concepts”, Tata McGraw Hill Publication, 1997 edition.

Unit 1: chapter 1(sec 1.1-1.4) Unit 2: chapter 2(sec 2.1-2.5)

Unit 3: chapter 3(sec 3.1-3.4) chapter 4(sec 4.1-4.2)

Unit 4: chapter 5(sec 5.1-5.2, 5.9) chapter 6(sec 6.1, 6.2, 6.4)

Unit 5: chapter 8(sec 8.1-8.3, 8.5-8.7)

2. Roger S.Pressman – “Software Engineering A Practitioner’s Approach”, 5th edition, McGraw Hill, 2001.

UNIT 1: CHAPTER 1(Sec 1.1, 1.2)

Reference book:

1. Watts S. Humphery – “A Discipline for Software Engineering”, Addison Wesley Company, 1995.

System Analysis and Design

Unit I

Business Problem & Computers: Overview of Business Organization – Information needs & systems – Some typical problems – System life cycle – System study – Feasibility Study

Unit II

System Analysis – Initiation of Analysis – The Process of Analysis – System Design – Design factors – Design Constraints – Processing Techniques – The Process of design – Output Design – input Design – Process Design – File Data Base Design

Unit III

Analysis & Design Tools – Data Flow Diagram – Data Dictionary – Entity Relationship Diagram– Decision Tree – Decision Table – Structured English – Structure Charts – Grid Charts – Layout Charts – Configuration Selection & Acquisition – Detailing the configuration – Storage requirements – Internal Memory – Processors – Terminals – Printers.

Unit IV

File Organization & Design: Functional Classification of Files – File Structure – File Organization – Inverted File – Security & Controls – Risk management – Physical Security – Access Control – Data Control – Other Security & control measures.

Unit V

Post – Design phases – Develop Software – Installation & Changes-over-System Operation & maintenance – Systems Applications – Financial Accounting – Inventory Accounting System – Equipment Maintenance – Bank Operations – Production Planning & control – Process Control –Robotics

Text Book:

1. System Analysis & Business Applications – Rajesh Nalk & Swapna Kishore, Wheeler Publishing – 1st edition 1994.

Reference Book:

1. Introducing Systems Analysis & Design – Ellas M. Awad – Galgotia Publications (P) Ltd., (Second Edition)

SOFTWARE TESTING

Unit I

Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. White-Box Testing: Static Testing – Structural Testing –Challenges in White-Box Testing.

Unit II

Black-Box Testing: Introduction to Black-Box Testing- Challenges in White Box Testing -Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase Testing – Scenario Testing – Defect Bash.

Unit III

System and Acceptance Testing: system Testing Overview – Importance of System testing – Functional versus Non-functional Testing – Functional testing – Non-functional Testing – Acceptance Testing.

Unit IV

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: Introduction – Types of Regression Testing – Implementation - Best Practices in Regression Testing.

Unit V

Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. Test Metrics and Measurements: Project Metrics – Progress Metrics – Productivity Metrics – ReleaseMetrics.

Text Book

1. Software Testing Principles and Practices – Srinivasan Desikan & Gopalswamy Ramesh, Pearson Education, 2014

Reference Book

1. Foundations of Software Testing, Aditya P. Mathur, Pearson Education, 2013

LINUX

Course Objective

The purpose of this course is to teach experienced Linux users the techniques, methods, and policies used in Linux system administration.

Course Outcomes

- CO1 Manage system and services startup and shutdown
- CO2 Select and use system administration tools when appropriate
- CO3 Configure and manage printers
- CO4 Use packaging tools to create, install, and de-install packages
- CO5 Manage logging
- CO6 Perform memory management

UNIT - I :

Logging In and Logging Out, Anatomy of Linux OS, Directory Structure, /usr Directory, File Types: User datafiles, System data files, Executable files. Naming files and directories, Spawning Processes. Shell: Creating User Account, Shell Program, bash shell, Changing shell prompt. Commands: Basic Syntax for a command, Exploring the Home Directory, ls, mkdir, rmdir, stat, cat, rm, mv, cp.

UNIT - II :

Editor: Vi editor. Hooking up Hardware Devices: Formatting a Floppy Disk, Gathering important system information. Backing Up and restoring the File System: Simple Backup, gzip, gunzip, tar. Printing files: Print Spool directory, Sending files to Printer.

UNIT - III :

Sharing Files with other Users: Maintaining User Accounts, Changing Password, Creating Group Accounts, Granting Access to files, Changing File Ownership, Protecting Files, Making a File Read-Only. Working with Processes: Types of processes, ps Command, Creating process, killing process, free command and top utility.

UNIT - IV :

Managing Disk Space: df, du commands, Creating Additional Free Disk Space, Locating Unused Files, Setting System Clock.

UNIT - V :

Communication Utilities: who, who am i, finger, mesg, write, wall, talk, Creating a message of the day. X Window System, Graphical User Interfaces: KDE and GNOME Desktop Environment.

Text Books:

1. SAMS Teach Yourself Linux by Craig and Coletta Witherspoon [Techmedia]

Reference Books:

1. LINUX complete reference by Richard Peterson

UNIT I:

Concepts of Gender: Sex-Gender-Biological Determinism- Patriarchy- Feminism -Gender Discrimination -Gender Division of Labour -Gender Stereotyping-Gender Sensitivity - Gender Equity —Equality-Gender Mainstreaming Empowerment

UNIT II:

Women's Studies Vs Gender Studies: UGC's Guidelines - VII to XI Plans- Gender Studies: Beijing Conference and CEDAW-Exclusiveness and Inclusiveness.

UNIT III:

Areas of Gender Discrimination: Family Sex Ratio-Literacy -Health -Governance Religion Work Vs Employment- Market - Media - Politics Law Domestic Violence — Sexual Harassment — State Policies and Planning

UNIT IV:

Women Development and Gender Empowerment: Initiatives International Women's Decade - International Women's Year - National Policy for Empowerment of Women - Women Empowerment Year 2001- Mainstreaming Global Policies.

UNIT V:

Women's Movements and Safeguarding Mechanism:— In India National / State Commission for Women (NCW) - All Women Police Station Family Court- Domestic Violence Act - Prevention of Sexual Harassment at Work Place Supreme Court Guidelines - Maternity Benefit Act - PNDT Act - Hindu Succession Act 2003 Eve Teasing Prevention Act - Self Help Groups 73 and 74 Amendment for PRIS.

TEXT BOOKS

1. Bhasin Kamala, Understanding Gender: Gender Basics, New Delhi: Women Unlimited 2004
2. Bhasin Kamala, Exploring Masculinity: Gender Basics, New Delhi: Women Unlimited, 2004
3. Bhasin Kamala, What is Patriarchy? : Gender Basics, New Delhi: Women Unlimited, 1993
4. Pernau Margrit Ahmad Imtiaz, Reifeld Hermut (ed.,) Family and Gender: Changing Values in Germany and India, New Delhi: Sage Publications, 2003
5. Agarwal Bina, Humphries Jane and Robeyns Ingrid (ed.,)
6. Capabilities, Freedom, and Equality: Amartya Sen's Work from a Gender Perspective, New Delhi: Oxford University Press, 2006
7. Rajadurai.S.V, Geetha.V, Themes in Caste Gender and Religion, Tiruchirappalli: Bharathidasan University, 2007
- Misra Geetanjali, Chandiramani Radhika (ed.,)
8. Sexuality, Gender and Rights: Exploring Theory and Practice in South and Southeast Asia, New Delhi: Sage Publication, 2005 Rao Anupama (ed.,)
9. Gender &Caste: Issues in Contemporary Indian Feminism, New Delhi: Kali for Women, 2003
10. Saha Chandana, Gender Equity and Gender Equality: Study of Girl Child in Rajasthan, Jaipur: Rawat Publications, 2003
11. Krishna Sumi,(ed.,) Livelihood and Gender Equity in Community Resource Management New Delhi: Sage Publication, 2004
12. Wharton .S Amy, The Sociology of Gender: An Introduction to Theory and Research, USA: Blackwell Publishing, 2005.
13. Mohanty Manoranjan (ed.,) Class, Caste, Gender: Readings in Indian Government and Politics- 5, New Delhi: Sage Publications, 2004.
14. Arya Sadhna, Women, Gender Equality and the State, New Delhi: Deep & Deep Publications, 2000.