

B.Sc COMPUTER SCIENCE

Course Structure and Syllabus

(For the candidates admitted from the academic year 2020-2021 onwards)

CHOICE BASED CREDIT SYSTEM (CBCS)



THANTHAI HANS ROEVER COLLEGE (AUTONOMOUS)

(Nationally Re-Accredited by NAAC with B⁺⁺)

(Affiliated to Bharathidasan University, Tiruchirappalli)

ELAMBALUR, PERAMBALUR – 621 220



VISION:

- To be a Centre of excellence in education and research in the frontier areas of Computer Science

MISSION:

- To facilitate quality transformative education in Computer Science
- To promote quality research and innovation in technology for meeting global challenges
- To transform students to competent professionals to cater to the needs of the society.

Programme Outcomes (POs):

Undergraduate Programmes

Upon completion of the programme, the undergraduate will be able to

- ✓ Acquire knowledge, understand concepts and apply new ideas which enable them to be employable or self employed
- ✓ Demonstrate motivation in advancing to higher learning programmes
- ✓ Engage in socially responsible behavior and have value added education
- ✓ Have exposure to technical proficiency, analytical capability, soft skills and life skills development
- ✓ Develop broad understanding in the basic concepts of Languages/Commerce/Management Studies/Physical Sciences/Computer Sciences/Biological Sciences/Life Sciences.

Program Specific Outcomes (PSOs):

- ❖ Provides basic knowledge on core concepts of Computer Science.
- ❖ Ability to solve problems using programming languages and software tools.
- ❖ Capable of analyzing, designing, developing, testing and implementing software systems.
- ❖ Acquire skill in Mathematics, Electronics and Computer Science courses; these empower the analytical mind and critical thinking.
- ❖ Ability to communicate the technical aspects of systems with peers and customers, which possess employability and entrepreneurship skills.

Thanthai Hans Roever College (Autonomous), Elambalur, Perambalur - 621 220

B.Sc. Computer Science Course Structure under CBCS

(For the candidates admitted from the academic year 2020-2021 onwards)

Semester	Part	Course Code	Title of the Course	Ins. Hours/ Weeks	Credit	Exam Hours	CIA (Max)	ESE (Max)	Total (Max)
1	I	20UT1	Tamil - I (Ikkala Ilakkiyam - Kavithai, Sirukathai, Urainadai, Ilakkiya Varalaru)	6	3	3	25	75	100
1	II	20UE1	English-I (Communicative English - I)	6	3	3	25	75	100
1	III	20UCS1CC1	Programming in C	5	4	3	25	75	100
1	III	20UMA1AC1	Mathematics-I (Numerical Methods and Statistics)	5	3	3	25	75	100
1	III	20UCS1CP1	Programming in C Lab	4	3	3	40	60	100
1	III	20UCS1PE1	Professional English for Physical Sciences – I	2	2	3	25	75	100
1	IV	20UVE	Value Education	2	2	3	25	75	100
			Total	30	20	-	-	-	700
2	I	20UT2	Tamil - II (Idaikkala Ilakkiyam - Bakthi, Puthinam, Ilakkiya Varalaru)	6	3	3	25	75	100
2	II	20UE2	English-II (Communicative English - II)	6	3	3	25	75	100
2	III	20UCS2CC2	Object Oriented Programming using C++	5	5	3	25	75	100
2	III	20UMA2AC2	Mathematics-II (Operation Research)	5	3	3	25	75	100
2	III	20UCS2CP2	Object Oriented Programming using C++ Lab	4	3	3	40	60	100
2	III	20UCS2PE2	Professional English for Physical Sciences-II	2	2	3	25	75	100
2	IV	20UES	Environmental Studies	2	2	3	25	75	100
			Total	30	21	-	-	-	700
3	I	20UT3	Tamil-III (Kappiya Ilakkiyam, Nadagam, Ilakkiya Varalaru)	6	3	3	25	75	100
3	II	20UE3	English-III (Language Through Literature and Communicative Skills – I)	6	3	3	25	75	100
3	III	20UCS3CC3	Programming in Java	6	5	3	25	75	100
3	III	20UPH3AC3	Applied Physics-I	4	4	3	25	75	100
3	III	20UCS3CP3	Programming in Java Lab	3	3	3	40	60	100
3	IV	20UPH4AP2	Applied Physics-II(Practical)	3	-	-	-	-	-
3	IV		NME1*	2	2	3	25	75	100

			Total	30	20	-	-	-	600
4	I	20UT4	Tamil-IV (Pazhanthamizh Ilakkiyam, Ilakkiya Varalaru & Pothukkatturai)	6	3	3	25	75	100
4	II	20UE4	English-IV(Language Through Literature and Communicative Skills – II)	6	3	3	25	75	100
4	III	20UCS4CC4	Relational Database Management Systems	4	4	3	25	75	100
4	III	20UCS4CP4	SQL and PLSQL Lab	3	2	3	40	60	100
4	III	20UPH4AC4	Applied Physics-III	4	3	3	25	75	100
4	III	20UPH4AP2	Applied Physics Lab-II (Practical)	3	3	3	40	60	100
4	IV		NME2*	2	2	3	25	75	100
4	IV	20UCS4SBE1	SBE 1-Office Automation	2	2	3	25	75	100
			Total	30	22	-	-	-	800
5	III	20UCS5CC5	Operating Systems	6	5	3	25	75	100
5	III	20UCS5CC6	Web Technology	5	5	3	25	75	100
5	III	20UCS5CC7	Computer Networks	5	5	3	25	75	100
5	III	20UCS5CP5	Web Technology Lab	3	3	3	40	60	100
5	III	20UCS5MBE1:1/ 20UCS5MBE1:2/ 20UCS5MBE1:3	Data Structures and Algorithms/Microprocessor & Assembly Language Programming/Computer Graphics	5	5	3	25	75	100
5	IV	20UCS5SBE2	SBE 2-Quantitative Aptitude	2	2	3	25	75	100
5	IV	20UCS5SBE3	SBE 3-Android Programming	2	2	3	25	75	100
5	IV	20USSD	Soft Skill Development	2	2	3	25	75	100
			Total	30	29	-	-	-	800
6	III	20UCS6CC8	Software Engineering	6	6	3	25	75	100
6	III	20UCS6CC9	Programming in Python	6	6	3	25	75	100
6	III	20UCS6CP6	Python Programming Lab	5	4	3	40	60	100
6	III	20UCS6MBE2:1/ 20UCS6MBE2:2/ 20UCS6MBE2:3	Multimedia Systems/ Open Source Technology/ Linux and Shell Programming	6	5	3	25	75	100
6	III	20UCS6PW/ 20UCS6MBE3:1/ 20UCS6MBE3:2	Mini Project(Students to do it in their respective Colleges)/ Open Source Technology Lab/Shell Programming Lab	6	5	3	40	60	100
6	V	20UGS	Gender Studies	1	1	3	25	75	100
6	V		Extension Activities	-	1	-	-	-	-
			Total	30	28	-	-	-	600

			Grand Total	180	140				4200
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List of Allied Courses:

Allied Course I

Mathematical

Allied Course II

Applied Physics

Paper Details:

Tamil Paper-Part I - 4
 English Paper-Part II - 4
 Core Course Paper - 9
 Core Course Practical - 6
 Allied Course Paper - 4
 Allied Course Practical- 2
 Non-Major Elective - 2
 Skill Based Elective - 3
 Major Based Elective - 3
 Environmental Studies - 1
 Value Education - 1
 Professional English -2
 Soft Skill Development- 1
 Gender Studies - 1
 Extension Activities - 1 (Credit Only)

- For those who studied Tamil up to 10th +2 (Regular Stream)
- Syllabus for other Languages should be on par with Tamil at degree level
- Those who studied Tamil up to 10th +2 but opt for other languages in degree level under Part I should study special Tamil in Part IV
- Extension Activities shall be outside instruction hours

Non Major Elective I & II – for those who studied Tamil under Part- I

i) Basic Tamil I & II for other language students

ii) Special Tamil I & II for those who studied Tamil up to 10th or +2 but opt for other languages in degree programme

Note:

	Internal Marks	External Marks
1. Theory	25	75
2. Practical	40	60
3. Separate passing minimum is prescribed for Internal and External marks		

NME Papers offered to Other Department

20UCS3NME1 - Working Principles of Internet (Theory)

20UCS4NME2 - Fundamentals of Information Technology (Theory)

FOR THEORY

The passing minimum for CIA shall be 40% out of 25 marks [i.e. 10 marks]

The passing minimum for Semester Examinations shall be 40% out of 75 marks [i.e. 30 marks]

FOR PRACTICAL

The passing minimum for CIA shall be 40% out of 40 marks [i.e. 16 marks]

The passing minimum for Semester Examinations shall be 40% out of 60 marks [i.e. 24 marks]

SEMESTER-I

Course Code: 20UCS1CC1
Instruction Hours: 5
Credits: 4

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-I PROGRAMMING IN C

Course Outcomes (CO):

On completion of the course, the student will be able to

- Demonstrate an understanding of computer programming language concepts.
- Able to define data types and use them in simple data processing applications
- Able to use the concept of array of structures. Student must be able to define union and enumeration user defined data types.
- Ability to design and develop Computer programs, analyzes, and interprets the concept of pointers, declarations, initialization, operations on pointers and their usage.
- Develop confidence for self-education and ability for life-long learning needed for Computer language.

UNIT - I

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical, Assignment and Conditional Operators - Library functions.

UNIT - II

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 - Comma operator.

UNIT - III

Functions -Definition - proto-types - Passing arguments - Recursions. Storage Classes - Automatic, External, Static, Register Variables - Multi-file programs.

UNIT - IV

Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures - Unions - Bit wise operations.

UNIT - V

Pointers - Declarations - Passing pointers to Functions - Operation in Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files: Creating Processing, Opening and Closing a data file.

TEXT BOOK:

1. E.Balagurusamy, "Programming in ANSI C", Fifth Edition, Tata McGraw Hill.

REFERENCE BOOKS:

1. B.W. Kernighan and D M.Ritchie, "The C Programming Language", 2nd Edition, PHI, 1988.
2. H. Schildt, "C: The Complete Reference", 4th Edition. TMH Edition, 2000.
3. Gottfried B.S, "Programming with C", Second Edition, TMH Pub. Co. Ltd., New Delhi 1996.

4. Kanetkar Y., "Let us C", BPB Pub., New Delhi, 1999.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
I	20UCS1CC1	PROGRAMMING IN C					5	4			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓	✓		✓		✓			
CO2	✓	✓	✓			✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓		✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓		✓	✓	✓	
Number of matches (✓) = 39, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-I

Course Code: 20UCS1CP1
Instruction Hours: 4
Credits: 3

Exam Hours: 3
Internal Marks: 40
External Marks: 60

PART-III

CORE COURSE PRACTICAL -I PROGRAMMING IN C LAB

Course Outcomes (CO):

On completion of the course, the student will be able to

- Read, understand and trace the execution of programs written in C language.
- Write the C code for a given algorithm.
- Implement Programs with pointers and arrays, perform pointer arithmetic, and use the pre-Processor.
- Write programs that perform operations using derived data types.
- Able to develop applications

I Summation of Series

1. Sin(x), 2. Cos(x), 3. Exp(x) (Comparison with built in functions)

II String Manipulation

1. Counting the number of vowels, consonants, words, white spaces in a line of text and array of lines.
2. Reverse a string and check for palindrome.
3. Sub string detection, count and removal.
4. Finding and replacing substrings.

III Recursion

1. nPr, nCr 2. GCD of two numbers 3. Fibonacci sequence 4. Maximum & Minimum

IV Matrix Manipulation

1. Addition and Subtraction 2. Multiplication 3. Transpose, and trace of a matrix 4. Determinant of a Matrix

V Sorting and Searching

1. Insertion Sort 2. Bubble Sort 3. Linear Search
4. Binary Search

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
I	20UCS1CP1	PROGRAMMING IN C LAB					4	3			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓	✓		✓				✓	
CO2	✓		✓	✓		✓	✓		✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CO4		✓			✓	✓	✓	✓	✓	✓	
CO5	✓	✓		✓	✓		✓	✓	✓		
Number of matches (✓) = 35, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-II

Course Code: 20UCS2CC2
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-II OBJECT ORIENTED PROGRAMMING USING C++

Course Outcomes (CO):

On completion of the course, the student will be able to

- Identify importance of object oriented programming and difference between structured oriented and object oriented programming features.
- Able to make use of objects and classes for developing programs.
- Able to use various object oriented concepts to solve different problems.
- To learn how inheritance and virtual functions implement dynamic binding with polymorphism.
- Understand advanced features of C++ specifically stream I/O, templates and operator overloading

UNIT I

Principles of Object- Oriented Programming – Beginning with C++ - Tokens, Expressions and Control Structures – Functions in C++

UNIT II

Classes and Objects – Constructors and Destructors – New Operator – Operator Overloading and Type Conversions

UNIT III

Inheritance: Extending Classes – Pointers- Virtual Functions and Polymorphism

UNIT IV

Managing Console I/O Operations – Working with Files – Templates – Exception Handling

UNIT V

Standard Template Library – Manipulating Strings – Object Oriented Systems Development

TEXT BOOK

1. Balagursamy E, Object Oriented Programming with C++, Tata McGraw Hill Publications, Sixth Edition, 2013

REFERENCE BOOK

1. Ashok Kamthane, Programming in C++, Pearson Education, 2013.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
II	20UCS2CC2	OBJECT ORIENTED PROGRAMMING USING C++					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓			✓	✓			
CO2	✓	✓					✓			✓	
CO3	✓	✓	✓	✓		✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓		✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Number of matches (✓) = 38, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-II

Course Code: 20UCS2CP2
Instruction Hours: 4
Credits: 3

Exam Hours: 3
Internal Marks: 40
External Marks: 60

CORE COURSE PRACTICAL -II OBJECT ORIENTED PROGRAMMING USING C++ LAB

Course Outcomes(CO):

On completion of the course, the student will be able to

- To familiarize the students with language environment.
- To implement various concepts related to language.
- Identify importance of object oriented programming and difference between structured oriented and object oriented programming features.
- Able to make use of objects and classes for developing programs.
- Able to use various object oriented concepts to solve different problems.

1. Classes

Write a Program using a class to represent a Bank Account with Data Members – Name of depositor, Account Number, Type of Account and Balance and Member Functions – Deposit Amount – Withdrawal Amount. Show name and balance. Check the program with own data.

2. Constructor & Destructor

Write a program to read an integer and find the sum of all the digits until it reduces to a single digit using constructor, destructor and default constructor.

3. Default & Reference Argument

Write a program using function overloading to read two matrices of different data types such as integers and floating point numbers. Find out the sum of the above matrices separately and display the total sum of these arrays individually.

4. Operator Overloading

- a. Addition of Two Complex Numbers.
- b. Matrix Multiplication

5. Inheritance

Prepare Pay Roll of an employee using Inheritance.

6. Pointers

- a. Write a Program to find the number of vowels in a given text
- b. Write a Program to check for Palindrome

7. Files

Prepare Students Mark List in a file with Student Number, Mark in four subjects and Mark Total. Write a program to arrange these records in the ascending order of Mark Total and write them in the same file overwriting the earlier records.

8. Exception Handling

Prepare Electricity Bill for customers generating and handling any two Exceptions.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
II	20UCS2CP2	OBJECT ORIENTED PROGRAMMING USING C++ LAB					4	3			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓				✓		✓			
CO2	✓	✓	✓	✓		✓	✓	✓			
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4		✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓		✓					✓	✓	
Number of matches (✓) = 35, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-III

Course Code: 20UCS3CC3
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-III PROGRAMMING IN JAVA

Course Outcomes(CO):

On completion of the course, the student will be able to

- Use an integrated development environment to write, compile, run, and test simple object-oriented Java programs.
- knowledge of the structure and model of the Java programming language.
- Able to understand the use of Packages and Interface in java.
- Able to understand the exception handling and develop applets for web applications with I/O streams.
- Able to design GUI based applications and Event handling

UNIT I

Genesis of Java: Creation of Java – why java is important to internet – The Java Buzz words – An overview of Java Object Oriented Programming. Data types – Variables – Type conversion and casting – Automatic type promotion in Expressions – Strings. Arrays: One Dimensional Array – Multi Dimensional Array – Operators – Control statements.

UNIT II

Class Fundamentals – Declaring objects – Assigning object Reference variables – Introducing Methods – Constructors – Garbage collection – Finalize () Method – Stack class. A Closer Look at Methods and classes: Overloading Methods – Argument passing – Nested and Inner classes – String class – Using command line arguments. Inheritance Basics & Types - Method overriding – Dynamic Method Dispatch – Using Abstract class – Using final with inheritance.

UNIT III

Packages & Interface - Exception Handling - Creating your own Exception subclasses. Multithreaded Programming: Java Thread Model – Main Thread – Creating a Thread - Creating Multiple Threads–Using is Alive () and join () – Thread priorities – Synchronization – Inter thread Communication.

UNIT IV

I/O & Applets : I/O Basics Reading console Input – writing console output – The Print Writer class – Reading and Writing Files. The Applet class: - Applet Architecture – Applet Skeleton – Applet Display method – Requesting Repainting – HTML APPLET tag- Passing Parameters to Applet – Audio Clip Interface. Event Handling Mechanisms – Delegation Event Model – Event classes – Sources of Events – Event Listener Interfaces – Adapter Classes.

UNIT V

AWT Classes – Window fundamentals – working with Frame Windows - working with Graphic Using AWT controls: Controls fundamentals – Labels – using Buttons – Applying check Boxes – Check Box group – Choice controls – Using a Text field – Using a Text Area – Understanding Layout Managers (Flow Layout only) – Menu Bars and Menus.

TEXT BOOK

1. Herbert Schildt, “Java - The Complete Reference”, Ninth Edition, McGraw-Hill Education, 2014

REFERENCE BOOKS

1. E. Balagurusamy, “Programming with Java”, Tata McGraw-Hill Education India, 2014
2. Sachin Malhotra & Saurabh Choudhary, “Programming in JAVA”, 2nd Ed, Oxford Press
3. Sagayaraj, Denis, Karthik and Gajalakshmi, “JAVA Programming for Core and Advanced Learners”, 2018

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
III	20UCS3CC3	PROGRAMMING IN JAVA					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓			✓				✓	
CO2	✓	✓	✓	✓		✓	✓		✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	
CO5	✓			✓	✓			✓	✓	✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-III

Course Code: 20UCS3CP3
Instruction Hours: 3
Credits: 3

Exam Hours: 3
Internal Marks: 40
External Marks: 60

CORE COURSE PRACTICAL-III PROGRAMMING IN JAVA LAB

Course Outcomes(CO):

On completion of the course, the student will be able to

- To familiarize the students with language environment.
- To implement various concepts related to language.
- Learn the basic concepts & techniques of java.
- Learn the advanced concepts of java.
- Generate an application based upon the concepts of java

1. Define a class called Student with the attributes name, reg_number and marks obtained in four subjects(m1,m2,m3,m4). Write a suitable constructor and methods to find the total mark obtained by the student and display the details of the student.
2. Write a Java program to find the area of a square, rectangle and triangle by
(i) Overloading Constructor (ii) Overloading Method.
3. Write a java program to add two complex numbers. [Use passing object as argument and return object].
4. Define a class called Student_super with data members name, roll number and age. Write a suitable constructor and a method output () to display the details.
5. Derive another class Student from Student_super with data members height and weight. Write a constructor and a method output () to display the details which overrides the super class method output(). [Apply method Overriding concept].
6. Write a java program to create an interface called Demo, which contains a double type constant, and a method called area () with one double type argument. Implement the interface to find the area of a circle.
7. Write a java program to create a thread using Thread class.
8. Demonstrate Java inheritance using extends keyword.
9. Create an applet with four Checkboxes with labels MARUTI-800, ZEN, ALTO and ESTEEM and a Text area object. The program must display the details of the car while clicking a particular Checkbox.
10. Write a Java program to throw the following exception,
1) Negative Array Size 2) Array Index out of Bounds
11. Write a java program to create a file menu with option New, Save and Close, Edit menu with option cut, copy, and paste.
12. Write a java programming to illustrate Mouse Event Handling

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
III	20UCS3CP3	PROGRAMMING IN JAVA LAB					3	3			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1		✓				✓					
CO2	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓		✓				✓	✓	✓		
Number of matches (✓) = 36, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-IV

Course Code: 20UCS4CC4
Instruction Hours: 4
Credits: 4

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-IV RELATIONAL DATABASE MANAGEMENT SYSTEMS

Course Outcome(CO):

On completion of the course, the student will be able to

- Understand database concepts and structures in relational algebra, ER model and relational model.
- To design and build a simple database system with the fundamental tasks of modelling, designing, and implementing a DBMS.
- Understand functional dependency and functional decomposition and apply various normalization techniques.
- Perform PL/SQL programming using concept of cursor management, error handling, Package and triggers.
- Execute various advance SQL queries related to transaction processing and locking using concept of concurrency control.

UNIT - I

Introduction: Database System Applications-DBMS Vs. File System - View of Data-Data Model Database Languages - Database users and Administrators - Transaction Management - Database System Structure - Application Architecture. Data Models: Basic Concepts - Constraint- Keys- ER Diagram - Weak Entity - Extended ER Features - UML; Relational Model: Structure of Relational Databases - Relational Algebra - Views.

UNIT – II

SQL: Background-Basic Structure-Set Operation-Aggregate Function-Null Values-Nested Sub Queries - Views - Modification of the Database - Data Definition Language - Embedded SQL - Dynamic SQL.

UNIT-III

Advance SQL : Integrity and Security: Domain - Constraint - Referential Integrity - assertions - Triggers - Security and Authorization - Authorization in SQL - Encryption and Authentication.

UNIT - IV

Relational Database Design: First Normal Form - Pitfalls in Relational Database Design-Functional Dependencies (Second Normal Form) - Boyce-Codd Normal Form - Third Normal Form - Fourth Normal Form - Overall Database Design Process.

UNIT-V

Transaction Management: Transaction concepts - States - Serializability. Lock based concurrency control: Locks - Granting - Two-Phase Locking protocol. Time stamp based protocol: Timestamps - Timestamp ordering protocol - Dead lock handling.

TEXT BOOK:

1. A Silberschatz, H Korth, S Sudarshan, "Database System and Concepts", 5th Edition McGraw-Hill, 2005. Tamilnadu State Council for Higher Education
13.

REFERENCE BOOKS :

1. Alexix Leon & Mathews Leon, "Essential of DBMS", 2nd reprint, Vijay Nicole Publications, 2009.
2. Alexix Leon & Mathews Leon, "Fundamentals of DBMS", 2nd Edition, Vijay Nicole Publications, 2014.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
IV	20UCS4CC4	RELATIONAL DATABASE MANAGEMENT SYSTEM					4	4			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-IV

Course Code: 20UCS4CP4
Instruction Hours: 3
Credits: 2

Exam Hours: 3
Internal Marks: 40
External Marks: 60

PART-III

CORE COURSE PRACTICAL -IV SQL AND PLSQL LAB

Course Outcomes (COs):

On completion of the course, the student will be able to

- 1) Enhance the knowledge and understanding of database analysis and design.
- 2) Enhance the knowledge of the processes of database development and administration using SQL and PL/SQL.
- 3) Solve Database problems using Oracle 9i SQL and PL/SQL.
- 4) To improve and enhance programming skills and techniques using SQL and PL/SQL.
- 5) Implement the software background using SQL and PL/SQL

Demonstrate the following SQL commands and can take any back end RDBMS system for implementation purpose.

1. Data Definition of Base Tables.
2. DDL with Primary key constraints
3. DDL with constraints and verification by insert command
4. Data Manipulation of Base Tables and Views
5. Demonstrate the Query commands
6. Write a PL/SQL code block that will accept an account number from the user and debit an amount of Rs. 2000 from the account if the account has a minimum balance of 500 after the amount is debited. The Process is to fired on the Accounts table.
7. Write a PL/SQL code block to calculate the area of the circle for a value of radius varying from 3 to 7. Store the radius and the corresponding values of calculated area in a table Areas. Areas – radius, area.
8. Write a PL/SQL block of code for reversing a number. (Example: 1234 as 4321).
9. Create a transparent audit system for a table Client master (client no, name, address, Bal_due). The system must keep track of the records that are being deleted or updated. The functionality being when a record is deleted or modified the original record details and the date of operation are stored in the audit_client (client_no, name, bal_due, operation, userid, Update) table, then the delete or update is allowed to go through.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
IV	20UCS4CP4	SQL AND PLSQL LAB					3	3			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓	✓				✓			
CO2	✓		✓	✓	✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CO5		✓	✓				✓				
Number of matches (✓) = 35, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-IV

Course Code: 20UCS4SBE1
Instruction Hours: 2
Credits: 2

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART-IV- SBE- 1.OFFICE AUTOMATION

Course Outcomes (COs):

On completion of the course, the student will be able to

- To understand the office automation work and multimedia concepts.
- To perform documentation using MS Word.
- To perform accounting operations using MS Excel and analyses the data using graphs for decision making.
- To perform presentation for effective teaching.
- Enhance the ability of information management using system.

UNIT I:

Computer Fundamentals: Computer Introduction–Operating system Fundamentals – Components of a computer system –Input and Output devices – Memory Devices.

UNIT II:

MS –Word: Working with documents -Opening and saving files, Editing text documents - Formatting documents -Header and footer -Creating tables -Inserting clip arts -Tools.

UNIT III:

MS – Excel: Spreadsheet –Formatting Cells / Worksheet – Working with Formula, Function and Charts – Sorting and Filtering data - Graphs

UNIT IV:

MS – Power Point: Introduction to MS Power Point –Slide Layout –Design Slides –Insert Pictures and Graphs – Slide show - Adding multimedia effects.

UNIT V:

Multimedia: Introduction to multimedia-Color models -Multimedia presentation -Images, pictures, text, animation, audio, video.

Text Book(s):

1. MS-Office and Internet by Alexis Leon.
2. Prabhat K AndleighKiranThakrar, Multimedia systems design, Prentice Hall of India, New Delhi, 2005.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
IV	20UCS4SBE1	OFFICE AUTOMATION					2	2			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓					✓	✓			
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓				✓		✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5CC5
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-V

PRAT-III OPERATING SYSTEMS

Course Outcome(CO):

On completion of the course, the student will be able to

- Acquire some knowledge of the services provided by operating systems.
- Exposure to some details of major OS concepts
- Describe and explain the fundamental components of a computer operating system.
- Define, restate, discuss, and explain the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems
- Describe and extrapolate the interactions among the various components of computing systems.

UNIT - I

Introduction - History of operating system- Different kinds of operating system – Operating system concepts - System calls-Operating system structure.

UNIT - II

Processes and Threads: Processes - threads - thread model and usage - inter process communication.

UNIT - III

Scheduling - Memory Management: Memory Abstraction - Virtual Memory - Page replacement algorithms.

UNIT - IV

Deadlocks: Resources- introduction to deadlocks - deadlock detection and recovery - deadlocks avoidance - deadlock prevention. Multiple processor system: multiprocessors - multi computers.

UNIT - V

Input / Output: principles of I/O hardware - principles of I/O software. Files systems: Files - directories - files systems implementation - File System Management and Optimization.

TEXT BOOK

1. Andrew S. Tanenbaum, "Modern Operating Systems", 2nd Edition, PHI private Limited, New Delhi, 2008.

REFERENCE BOOKS

1. William Stallings, "Operating Systems - Internals & Design Principles", 5th Edition, Prentice - Hall of India private Ltd, New Delhi, 2004.

2. Sridhar Vaidyanathan, "Operating System", 1st Edition, Vijay Nicole Publications, 2014.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5CC5	OPERATING SYSTEMS					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓			✓		✓	✓			
CO2	✓	✓	✓	✓	✓	✓	✓				
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓		
CO4	✓		✓	✓		✓	✓	✓	✓	✓	
CO5		✓		✓	✓	✓		✓	✓	✓	
Number of matches (✓) = 36, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5CC6
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-V

PRAT-III WEB TECHNOLOGY

Course Outcome(CO):

On completion of the course, the student will be able to

- To understand the concept of static web designing using HTML
- To understand the concept of dynamic web designing using Java Script and XML
- To understand the concept of server-side web designing using PHP
- To develop the different technologies used in the World Wide Web including XML, Perl, Rails and PHP

UNIT – I

Structuring Documents for the Web: Introducing HTML and XHTML, Basic Text Formatting, Presentational Elements, Phrase Elements, Lists, Editing Text, Core Elements and Attributes, Attribute Groups. Links and Navigation: Basic Links, Creating Links with the <a> Element, Advanced E- mail Links. Images, Audio, and Video: Adding Images Using the Element, Using Images as Links Image Maps, Choosing the Right Image Format, Adding Flash, Video and Audio to your web pages.

UNIT – II

Tables: Introducing Tables, Grouping Section of a Table, Nested Tables, Accessing Tables. Forms: Introducing Forms, Form Controls, Sending Form Data to the Server. Frames: Introducing Frameset, <frame> Element, Creating Links Between Frames, Setting a Default Target Frame Using <base> Element, Nested Framesets, Inline or Floating Frames with <iframe>

UNIT – III

Cascading Style Sheets: Introducing CSS, Where you can Add CSS Rules. CSS Properties: Controlling Text, Text Formatting, Text Pseudo Classes, Selectors, Lengths, Introducing the Box Model. More Cascading Style Sheets: Links, Lists, Tables, Outlines, The :focus and :activate Pseudo classes Generated Content, Miscellaneous Properties, Additional Rules, Positioning and Layout wit, Page Layout CSS , Design Issues.

UNIT - IV

Java Script: How to Add Script to Your Pages, Variables and Data Types – Statements and Operators, Control Structures, Conditional Statements, Loop Statements – Functions - Message box, Dialog Boxes, Alert Boxes, Confirm Boxes, Prompt Boxes.

UNIT – V

Working with JavaScript: Practical Tips for Writing Scripts, JavaScript Objects: Window Object - Document object - Browser Object - Form Object - Navigator object Screen object - Events, Event Handlers, Forms – Validations, Form Enhancements, and JavaScript Libraries.

TEXT BOOKS:

1. Jon Duckett, Beginning HTML, XHTML, CSS and Java script, Wiley Publishing

REFERENCES BOOKS :

1. Chris Bates, "Web Programming", Wiley Publishing 3d Edition.
2. M. Srinivasan, "Web Technology: Theory and Practice", Pearson Publication

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5CC6	WEB TECHNOLOGY					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5CC7
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

CORE COURSE-V

PRAT-III COMPUTER NETWORKS

Course Outcomes (CO):

On completion of the course, the student will be able to

- To make students to understand basic computer network technology and aware about various types of cables used in guided media like coaxial cable, optical fiber cable, twisted pair cables and its categories.
- To study transmission media and realization.
- To explain the role of protocols in networking and to analyze the services and features of the protocol stack.
- Able to understand network layer techniques for designing subnets and super nets and analyze packet flow on basis of routing protocols.
- To understand design issues in Network Security and to understand security threats, security services

UNIT – I

Introduction – Network Hardware – Software – Reference Models – OSI and TCP/IP Models – Example Networks: Internet, ATM, Ethernet and Wireless LANs - Physical Layer – Theoretical Basis for Data Communication - Guided Transmission Media

UNIT - II

Wireless Transmission - Communication Satellites – Telephone System: Structure, Local Loop, Trunks and Multiplexing and Switching. Data Link Layer: Design Issues – Error Detection and Correction.

UNIT - III

Elementary Data Link Protocols - Sliding Window Protocols – Data Link Layer in the Internet - Medium Access Layer – Channel Allocation Problem – Multiple Access Protocols – Bluetooth.

UNIT - IV

Network Layer - Design Issues - Routing Algorithms - Congestion Control Algorithms – IP Protocol – IP Addresses – Internet Control Protocols.

UNIT - V

Transport Layer - Services - Connection Management - Addressing, Establishing and Releasing a Connection – Simple Transport Protocol – Internet Transport Protocols (ITP) - Network Security: Cryptography.

TEXT BOOK:

1. A. S. Tanenbaum, “Computer Networks”, 4th Edition, Prentice-Hall of India, 2008.

REFERENCE BOOKS:

1. B. A. Forouzan, “Data Communications and Networking”, Tata McGraw Hill, 4th Edition, 2007.
2. F.Halsall, “Data Communications, Computer Networks and Open Systems”, Pearson Education, 2008.
3. D. Bertsekas and R. Gallager, “Data Networks”, 2nd Edition, PHI, 2008.
4. Lamarca, “Communication Networks”, Tata McGraw- Hill, 2002

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5CC7	COMPUTER NETWORKS					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1		✓			✓		✓		✓		
CO2	✓	✓	✓			✓	✓			✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓		✓	✓	✓	
CO5	✓		✓	✓	✓	✓		✓	✓	✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5CP5
Instruction Hours: 3
Credits: 3

Exam Hours: 3
Internal Marks: 40
External Marks: 60

PART-III

CORE COURSE PRACTICAL –V WEB TECHNOLOGY LAB

Course Outcomes (CO):

On completion of the course, the student will be able to

- Analyze a web page and identify its elements and attributes.
- Create web pages using XHTML and Cascading Style Sheets.
- Build dynamic web pages using JavaScript (Client side programming).
- Create XML documents and Schemas.

1. Create a form having number of elements (Textboxes, Radio buttons, Checkboxes, and so on). Write JavaScript code to count the number of elements in a form.

2. Create a HTML form that has number of Textboxes. When the form runs in the Browser fill the textboxes with data. Write JavaScript code that verifies that all textboxes has been filled. If a textboxes has been left empty, popup an alert indicating which textbox has been left empty.

3. Develop a HTML Form, which accepts any Mathematical expression. Write JavaScript code to Evaluates the expression and Displays the result.

4. Create a page with dynamic effects. Write the code to include layers and basic animation.

5. Write a JavaScript code to find the sum of N natural Numbers. (Use userdefined function)

6. Write a JavaScript code block using arrays and generate the current date in words, this should include the day, month and year.

7. Create a form for Student information. Write JavaScript code to find Total, Average, Result and Grade. 8. Create a form for Employee information. Write JavaScript code to find DA, HRA, PF, TAX, Gross pay, Deduction and Net pay.

9. Create a form consists of a two Multiple choice lists and one single choice list (a)The first multiple choice list, displays the Major dishes available (b)The second multiple choice list, displays the Starters available. (c)The single choice list, displays the Soft drinks available.

10. Create a web page using two image files, which switch between one another as the mouse pointer moves over the image. Use the on Mouse Over and on Mouse Out event handlers.

Tamilnadu State Council for Higher Education 21 13. CO

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5CP5	WEB TECHNOLOGY LAB					3	3			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5MBE1:1
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART - III DATA STRUCTURES AND ALGORITHMS

Course Outcomes (CO):

On completion of the course, the student will be able to

- Describe how arrays, linked structures, stacks, queues, trees, and graphs are represented in memory and used by algorithms
- Compare alternative implementations of data structures with respect to performance
- Compare and contrast the benefits of dynamic and static data structures implementations
- Discuss the computational efficiency of the principal algorithms for sorting, searching, and merging
- Efficient approach of solving problems by model of computations

UNIT I

Introduction of algorithms, analyzing algorithms, Arrays: Representation of Arrays, Implementation of Stacks and queues, Application of Stack: Evaluation of Expression - Infix to postfix Conversion - Multiple stacks and Queues, Sparse Matrices.

UNIT II

Linked list: Singly Linked list - Linked stacks and queues - polynomial addition - More on linked Lists - Doubly linked List and Dynamic Storage Management - Garbage collection and compaction.

UNIT III

Trees: Basic Terminology - Binary Trees - Binary Tree representations - Binary trees - Traversal - More on Binary Trees - Threaded Binary trees - counting Binary trees. Graphs: Terminology and Representations - Traversals, connected components and spanning Trees, Single Source Shortest path problem.

UNIT IV

Symbol Tables - Static Tree Tables - Dynamic Tree Tables - Hash Tables: Hashing Functions - overflow Handling. External sorting - Storage Devices - sorting with Disks: K-way merging - sorting with tapes.

UNIT V

Internal sorting - Insertion sort - Quick sort - 2 way Merge sort - Heap sort - shell sort - sorting on keys. Files: Files, Queries and sequential organizations - Index Techniques - File organization.

TEXT BOOKS

1. Ellis Horowitz, Sartaj Shani, Data Structures, Galgotia publication.

REFERENCE BOOKS

1. Data structures Using C Aaron M. Tenenbaum, Yedidyah Langsam, and Moshe J. Augenstein, Kindersley (India) Pvt. Ltd.,
2. Data structure and Algorithms, Alfred V. Aho, John E. Hopcroft, Jeffrey D. Ullman, Pearson Education Pvt. Ltd.,

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5MBE1:1	DATA STRUCTURE AND ALOGORITHMS					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓		✓		✓				
CO2	✓		✓	✓	✓	✓	✓		✓		
CO3	✓	✓		✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓		✓		✓	✓	✓	
CO5		✓	✓	✓		✓		✓	✓	✓	
Number of matches (✓) = 35, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5MBE1:2
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART - III

MICROPROCESSOR & ASSEMBLY LANGUAGE PROGRAMMING

Course Outcomes(CO):

On completion of the course, the student will be able to

- Describe the general architecture of a microcomputer system and architecture & organization of 8085 & 8086 Microprocessor and understand the difference between 8085 and advanced microprocessor.
- Discuss and write code using the seven basic programming modes in assembly language.
- Understand and realize the Interfacing of memory & various I/O devices with 8085 microprocessor Understand and classify the instruction set of 8085 microprocessor and distinguish the use of different instructions and apply it in assembly language programming.
- Understand the architecture and operation of Programmable Interface Devices and
- realize the programming & interfacing of it with 8085 microprocessor

UNIT - I

Architecture and Operation: Introduction to 8085, Microprocessor organization/ architecture & its operation Microprocessor based system, memory interfacing, basic interfacing concepts, and interfacing I/O devices

UNIT - II

Programming the 8085: Programming model, instruction classification, Instruction format, addressing modes, writing assembly level programs-overview of instruction set, timing diagrams data transfer, Arithmetic, Logic branch operations.

UNIT - III

Programming techniques- Looping Counting and Indexing, 16 bit arithmetic operations, logic operations Compare and rotate operations. Counters and Time delays, Generation of pulse waveforms. Stacks and subroutines- conditional CALL and RETURN instructions. Advanced subroutine concepts. BCD to Binary and Binary to BCD conversions, BCD to 7 segment conversion , Binary to ASCII and ASCII to Binary code conversion, BCD addition and subtraction , multiplication and division.

UNIT – IV

Memory Interface: Memory and I/O mapping and interfacing concepts. Interrupts: 8085 vectored interrupts, Restart as Software instructions, additional I/O concepts and processes.

UNIT – V

Interfacing of peripherals (I/Os) and applications: Interfacing Keyboard (linear and matrix) and 7 segment display including multiplexes, 8279 programmable keyboard /display interface, 8255 PPI , 8259 PIC , DMA and 8257 DMA controller , Serial communication using 8251, D to A converters and interfacing, RS323 serial Page 31 of 38 communication standards.

TEXT BOOKS:

1. R.S.Gaonkar – Microprocessor Architecture, Programming and Application with 8085. Penram Int., 3rd Edn.

REFERENCES BOOKS:

1. Kenneth L.Short - Microprocessor and Programmed Logic ‘’, PHI, 2nd Edn.
2. Aditya P. Mathur- Introduction to Microprocessors, 3RD Edn. TMH
3. Douglas V.Hall- Microprocessors and digital systems, McGraw Hill
4. Antonakos: Introduction to Intel family of Microprocessors Pearson Education

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5MB1:2	MICROPROCESSOR & ASSEMBLY LANGUAGE PROGRAMMING					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓		✓			✓			✓		
CO2	✓	✓	✓		✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓		✓	✓		✓	✓	✓	✓	
CO5		✓		✓		✓		✓		✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5MBE1:3
Instruction Hours: 5
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART - III

COMPUTER GRAPHICS

Course Outcomes(CO):

On completion of the course, the student will be able to

- Understand the basics of computer graphics, different graphics systems and applications of computer graphics.
- Discuss various algorithms for scan conversion and filling of basic objects and their comparative analysis.
- Use of geometric transformations on graphics objects and their application in composite form.
- Extract scene with different clipping methods and its transformation to graphics display device.
- Explore projections and visible surface detection techniques for display of 3D scene on 2D screen

UNIT - I

Overview of graphics Systems: Video Display Device - Refresh Cathode-Ray tubes Raster - Scan Displays Random - Scan Displays - Color CRT Monitors - Direct view Storage tubes Flat - Panel Displays Three - Dimensional Viewing Devices, Stereoscopic and Virtual - Reality Systems.

UNIT - II

Raster - Scan Systems Video Controller - Random - Scan Systems Video Controller - Random-Scan Systems - Input device – Keyboard- Mouse - Trackball - Space ball and Joysticks - Data Glove – Digitizers Image Scanners - Touch Panels - Light pens. Voice Systems - Hard-Copy Devices - Line Drawing Algorithms-DDA Algorithms - Circle generating Algorithm Properties of Ellipses.

UNIT - III

Two Dimensional Geometric Transformation: Basic Transformations - Translation - Rotation - Scaling - Matrix Representations and Homogeneous Coordinates - Other Transformations Reflections Two Dimensional Viewing : Windows to view point coordinate Transformations - Clipping Operations - Point Clipping - Line Clipping - Curve Clipping - Text Clipping - Exterior Clipping.

UNIT - IV

Three Dimensional Concepts: Three Dimensional Display method - Parallel projection - Depth cueing visible line and surface - Three Dimensional Geometric and modelling Transformations: Translation - Rotation - Scaling - Composite Transformations. Three Dimensional Viewing: Viewing pipeline - Viewing Coordinates - Projections - Parallel Projections - Perspective Projections.

UNIT – V

Visible Surface Detection Methods : Classification Visible Surface Detection Algorithms - Back Face Detection - Depth - Buffer Method - A-Buffer Method - Scan line method - Depth sorting method - BSP tree method - Area Subdivision Method.

TEXT BOOK

1. Donald Hearn and M. Pauline Baker , "Computer Graphics" , 2nd Edition, 1996

REFERENCE BOOK

1. John f. Hughes, Andries Van Dam, Morgan Mcguire, David F. Sklar, James D. Foley, Steven K. Feiner, Kurt Akeley, "Computer Graphics Principles and Practice" 3rd Edition, Pearson Education,2014.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5MBE1:3	COMPUTER GRAPHICS					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓			✓		✓			
CO2	✓	✓		✓		✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓		✓	✓		
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 38, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5SBE2
Instruction Hours: 2
Credits: 2

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART-IV

SBE 2- QUANTITATIVE APTITUDE

Course Outcomes(CO):

On completion of the course, the student will be able to

- Understand the basic concepts of quantitative ability
- Understand the basic concepts of logical reasoning skills
- Acquire satisfactory competency in use of verbal reasoning
- Solve campus placements aptitude papers covering Quantitative Ability, Logical Reasoning and Verbal Ability
- Compete in various competitive exams like TNPSC, UPSC, GPSC, CAT, CMAT, GRE, GATE, etc.

UNIT I

Numbers - HCF and LCM of numbers - Decimal fractions - Simplification - Square roots and cube roots - Average - problems on Numbers.

UNIT II

Problems on Ages - Surds and Indices - percentage - profits and loss - ratio and proportion - partnership - Chain rule.

UNIT III

Time and work - pipes and cisterns - Time and Distance - problems on trains - Boats and streams - simple interest - compound interest - Logarithms - Area - Volume and surface area - races and Games of skill.

UNIT IV

Permutation and combination - probability - True Discount - Bankers Discount - Height and Distances - Odd man out & Series.

UNIT V

Calendar - Clocks - stocks and shares - Data representation - Tabulation - Bar Graphs - Pie charts - Line graphs.

TEXT BOOK:

1. "Quantitative Aptitude", R.S. AGGARWAL., S. Chand & Company Ltd.,

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5SBE2	QUANTITATIVE APITUDE					2	2			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓			✓		✓					
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	
CO5		✓			✓	✓		✓			
Number of matches (✓) = 35, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-V

Course Code: 20UCS5SBE3
Instruction Hours: 2
Credits: 2

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART-IV

SBE 3 – ANDROID PROGRAMMING

Course Outcomes(CO):

On completion of the course, the student will be able to

- Understand the basic concepts of Android programming
- Install and configure Android application development tools.
- Design and develop user Interfaces for the Android platform.
- Save state information across important operating system events.
- Apply Java programming concepts to Android application development.

UNIT I

Introduction - History about Android operating system - Android program structure - User interface - Building blocks of User interface - Android Layout types - Layout attributes - Toasts - Activity.

UNIT II

Dialogs - Intent - types of intent - Explicit and Implicit intent - Intent data transfer from one activity to another - Android switch button.

UNIT III

Android life cycle: Android Activity life cycle - menus - menu Activity - Synchronous Task - RecyclerView view - Broadcast receiver and Notification.

UNIT IV

Shared preferences - sqlite Database - Alarm manager - alarm Types - Android services.

UNIT V

Testing Activity - Publishing App - steps of Publishing App.

TEXT BOOK

1."Android For Beginners " Pratiyash Guleria, BPB publications.

REFERENCE BOOKS

1. "Android programming for Beginners " - By John Horton, Packt
2. "Android system programming " By Roger Ye, Packt

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
V	20UCS5SBE3	ANDROID PROGRAMMING					2	2			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6CC8
Instruction Hours: 6
Credits: 6

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III SOFTWARE ENGINEERING

Course Outcomes(CO):

On completion of the course, the student will be able to

- An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
- An ability to apply engineering design to produce solutions that meet specified needs with consideration of public Needs,
- An ability to communicate effectively with a range of audiences to the software products.
- An ability to recognize ethical and professional responsibilities in engineering based on the software testing.
- To understand how to manage the software reliability and quality.

UNIT - I

Introduction - Software Engineering Discipline - Evolution and Impact - Programs Vs Software Products. Software Life Cycle Models: Use of a Life Cycle Models - Classical Waterfall Model - Iterative Waterfall Model - Prototyping Model - Evolutionary Model - Spiral Model. Software Project Management: Responsibilities of a Software Project Manager - Project Planning - Metrics for Project Size Estimation - Project Estimation Techniques -Risk Management.

UNIT - II

Requirements Analysis and Specification: Requirements Gathering and Analysis -Software Requirements Specification (SRS) - Formal System Development Techniques. Software Design: Characteristics of a Good Software Design - Cohesion and Coupling -Neat Arrangement - Software Design Approaches.

UNIT - III

Function-Oriented Software Design: Overview of SA/SD Methodology - Structured Analysis - Data Flow Diagrams (DFDs).Object Modeling Using UML: Overview of Object-Oriented Concepts - UML Diagrams - Use Case Model - Class Diagrams - Interaction Diagrams - Activity Diagrams - State Chart Diagram.

UNIT - IV

User Interface Design: Characteristics of a Good User Interface - Basic Concepts - Types of User Interfaces - Component-Based GUI Development; Coding and Testing: Coding - Testing - UNIT Testing - Black-Box Testing - White-Box Testing - Debugging -Integration Testing - System Testing.

UNIT - V

Software Reliability and Quality Management: Software Reliability - Statistical Testing -Software Quality - Software Quality Management System - ISO 9000.Computer Aided Software Engineering: CASE Environment - CASE support in Software Life Cycle - Characteristics of CASE Tools - Architecture of a CASE Environment. Software Maintenance: Characteristics of Software Maintenance - Software Reverse Engineering - Software Maintenance Process Models - Estimation of Maintenance Cost. Software Reuse: Issues in any Reuse Program - Reuse Approach.

TEXT BOOK:

1. Rajib Mall, "Fundamentals of Software Engineering", 3rd Edition, Prentice Hall of India Private Limited, 2008.

REFERENCE BOOKS:

1. Rajib Mall, "Fundamentals of Software Engineering", 4th Edition, Prentice Hall of India Private Limited, 2014.
2. Richard Fairley, "Software Engineering Concepts", TMGH Publications, 2004.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6CC8	SOFTWARE ENGINEERING					6	6			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1		✓			✓		✓			✓	
CO2	✓	✓	✓	✓	✓	✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓	✓	
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓				✓	✓		✓		✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6CC9
Instruction Hours: 6
Credits: 6

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III Programming in Python

Course Outcomes(CO):

On completion of the course, the student will be able to

- Understand why Python is a useful scripting language for developers.
- Understand the basic programming language concepts in the Python.
- Demonstrate the use of functions, lists, tuples and dictionaries and write control statements in Python.
- Understand the design of object-oriented programs with Python classes.
- Identify the tools support for Python program development environment.

UNIT-I

Introduction to Python - Why Python - Installing in various Operating Systems - Executing Python Programs - Basic Programming concepts - Variables, expressions and statements - Input/Output – Operators.

UNIT-II

Conditions - Functions - Arguments - Return values - Iteration - Loops - Strings -Data Structures - Lists - Dictionaries - Tuples - Sequences - Exception Handling.

UNIT-III

File Handling - Modules - Regular Expressions - Text handling - Object Oriented Programming - Classes - Objects - Inheritance - Overloading - Polymorphism Interacting with Databases - Introduction to MySQL - interacting with MySQL - Building a address book with add/edit/delete/search features.

UNIT-IV

Introduction to Graphics programming - Introduction to GTK - PyGTK - Developing GUI applications using pyGTK - Scientific Programming using NumPy / SciPy - Image Processing - Processing multimedia files -Network Programming, Web services using SOAP, Introduction to Graphics programming - PyGame

UNIT-V

Introduction to Version Control Systems - Subversion/Git, Writing Unit Tests, Creating Documentation, Contributing to Open Source Projects TEXT BOOK 1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist",1st Edition 2012, O'Reilly. REFERENCE BOOKS 1. Jeff McNeil ,"Python 2.6 Text Processing: Beginners Guide", 2010 ,Packet Publications 2. Mark Pilgrim ,"Dive Into Python " , 2nd edition 2009, Apress

TEXT BOOK

1. Allen B. Downey, "Think Python: How to Think Like a Computer Scientist",1st Edition 2012, O'Reilly. REFERENCE BOOKS 1. Jeff McNeil ,"Python 2.6 Text Processing: Beginners Guide", 2010 ,Packet Publications

2. Mark Pilgrim ,”Dive Into Python “ , 2nd edition 2009, Apress

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6CC9	PROGRAMMING IN PYTHON					6	6			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6CP6
Instruction Hours: 5
Credits: 4

Exam Hours: 3
Internal Marks: 40
External Marks: 60

Part-III

CORE COURSE PRACTICAL –VI PYTHON PROGRAMMING LAB

Course Outcomes(CO):

On completion of the course, the student will be able to

- Write, Test and Debug Python Programs
- Implement Conditionals and Loops for Python Programs
- Use functions and represent Compound data using Lists, Tuples and Dictionaries
- Read and write data from & to files in Python

1. Create a simple calculator to do all the arithmetic operations
2. Write a program to use control flow tools like if.
3. Write a program to use for loop
4. Data structures use list as stack use list as queue tuple, sequence
5. Create new module for mathematical operations and use in your program
6. Write a program to read and write files, create and delete directories
7. Write a program with exception handling
8. Write a program using classes
9. Connect with MySQL and create address book
10. Write a program using string handling and regular expressions
11. Program to parse apache log file
12. Create a GUI program using pygtk

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6CP6	PYTHON PROGRAMMING LAB					5	4			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓		✓		
CO3	✓	✓	✓	✓			✓	✓			
CO4	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 36, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6MBE2:1
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III – MULTIMEDIA SYSTEMS

Course Outcomes(CO):

On completion of the course, the student will be able to

- Describe the types of media and define multimedia system.
- Describe the process of digitizing (quantization) of different analog signals (text, graphics, sound and video).
- Use and apply tools for image processing, video, sound and animation.
- Apply methodology to develop a multimedia system.
- Apply acquired knowledge in the field of multimedia in practice and independently continue to expand knowledge in this field.

UNIT I

Multimedia Definition - Use Of Multimedia - Delivering Multimedia - Text: About Fonts and Faces - Using Text in Multimedia - Computers and Text - Font Editing and Design Tools - Hypermedia and Hypertext.

UNIT II

Images: Plan Approach - Organize Tools - Configure Computer Workspace - Making Still Images - Color - Image File Formats. Sound: The Power of Sound - Digital Audio - Midi Audio - Midi vs. Digital Audio - Multimedia System Sounds - Audio File Formats -Vaughan's Law of Multimedia Minimums - Adding Sound to Multimedia Project.

UNIT III

Animation: The Power of Motion - Principles of Animation - Animation by Computer - Making Animations that Work. Video: Using Video - Working with Video and Displays - Digital Video Containers - Obtaining Video Clips - Shooting and Editing Video.

UNIT IV

Making Multimedia: The Stage of Multimedia Project - The Intangible Needs - The Hardware Needs - The Software Needs - An Authoring Systems Needs- Multimedia Production Team.

UNIT V

Planning and Costing: The Process of Making Multimedia - Scheduling - Estimating - RFPs and Bid Proposals. Designing and Producing - Content and Talent: Acquiring Content - Ownership of Content Created for Project - Acquiring Talent.

TEXT BOOK:

1. Tay Vaughan, "Multimedia: Making It Work", 8th Edition, Osborne/McGraw-Hill, 2001.

REFERENCE BOOK:

1. Ralf Steinmetz & Klara Nahrstedt "Multimedia Computing, Communication & Applications", Pearson Education, 2012.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6MBE2:1	MULTIMEDIA SYSTEMS					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3		✓	✓	✓			✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6MBE2:2
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III – OPEN SOURCE TECHNOLOGY

Course Outcomes(CO):

On completion of the course, the student will be able to

- Write PHP scripts to handle HTML forms.
- Write regular expressions including modifiers, operators, and meta characters.
- Create PHP programs that use various PHP library functions, and that manipulate files and directories.
- Analyze and solve various database tasks using the PHP language.
- Analyze and solve common Web application tasks by writing PHP programs

UNIT I

Introduction : Open Source, Free Software, Free Software vs. Open Source software, Public Domain Software, FOSS does not mean no cost. History : BSD, The Free Software Foundation and the GNU Project.

UNIT II

Open Source History, Initiatives, Principle and methodologies. Philosophy : Software Freedom, Open Source Development Model Licences and Patents: What Is A License, Important FOSS Licenses (Apache,BSD,GPL, LGPL), copyrights and copylefts, Patents Economics of FOSS : Zero Marginal Cost, Income-generation opportunities, Problems with traditional commercial software, Internationalization

UNIT III

Community Building: Importance of Communities in Open Source Movement-JBoss Community- Starting and Maintaining an Open Source Project - Open Source Hardware

UNIT IV

Apache HTTP Server and its flavors- WAMP server (Windows, Apache, MySQL, PHP)- Apache, MySQL, PHP, JAVA as development platform.

UNIT V

Open source vs. closed source Open source government, Open source ethics. Social and Financial impacts of open source technology, Shared software, Shared source.

TEXT BOOKS

1. Sumitabha Das “Unix Concepts and Applications, Tata McGraw Hill Education 006
2. The Official Ubuntu Book, 8th Edition
3. Kailash Vadera, Bhavyesh Gandhi, “Open Source Technology”, University Science press, ker

REFERENCE BOOKS

1. Paul Kavanagh, “Open Source Software: Implementation and Management”, Elsevier Digital Press
2. The Linux Documentation Project : <http://www.tldp.org>
3. Docker Project Home : <http://www.docker.com>

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6MBE2:2	OPEN SOURCE TECHNOLOGY					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6MBE2:3
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III LINUX & SHELL PROGRAMMING

Course Outcomes(CO):

On completion of the course, the student will be able to

- To simulate the file commands
- To write shell program for handling files
- To write programs for familiarizing control statements
- To write programs for handling strings.

UNIT I

Introduction to Linux: operating system and Linux - History of Linux and Unix - Linux overview - Linux Distributions - Vi editors.

UNIT II

Shell - comparison of Shells - working in the shell - Learning Basic Commands - Compiler and interpreter differences - various directories - Drilling deep into process management, job control and Automation.

UNIT III

Text processing - Text filtering Tools - working with commands. - Logical operators. - local variables and its scope - working with arrays.

UNIT IV

Tricks with shell scripting - interactive shell scripts - The here document and << operator - sort command - WC command - file handling - Debugging -

UNIT V

Automating Decision - Making in scripts - Automating repetitive tasks - working with Functions.

TEXT BOOK

1. The Complete Reference LINUX - Richard L. Petersen, McGraw Hill,
2. LINUX shell scripting by Ganesh Naik, Packt Publishing Ltd.,

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6MBE2:3	LINUX & SHELL PROGRAMMIN6					5	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3		✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓		✓	✓	
CO5	✓		✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6PW
 Instruction Hours: 6
 Credits: 5

Exam Hours: 3
 Internal Marks: 25
 External Marks: 75

PART- III –MINI PROJECT

Course Outcomes(CO):

On completion of the course, the student will be able to

- Identify the requirements for the real world problems.
- Conduct a survey of several available literatures in the preferred field of study.
- Study and enhance software/ hardware skills
- Demonstrate and build the project successfully by hardware requirements, coding, emulating and testing.
- To report and present the findings of the study conducted in the preferred domain
- To report and present the findings of the study conducted in the preferred domain

- Students to do Mini Project in their respective Departments.
- The objective of the Mini Project is to enable the students to work in convenient groups of not more than Four members on a project with a Latest Software.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6PW	PROJECT WORK					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6MBE3 :1
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III – OPEN SOURCE TECHNOLOGY LAB

Course Outcomes(CO):

On completion of the course, the student will be able to

- Understand the installation of various packages in open source operating systems
- Create simple GUI applications using PHP function to develop program.
- Understand various versions of control system
- Understand the kernel configuration and virtual environment
- Implement various applications using build systems

1. Create a simple HTML form and accept the user name and display the name through PHP echo statement.
2. Write a PHP script to redirect a user to a different page.
3. Write a PHP function to test whether a number is greater than 30, 20 or 10 using ternary operator.
4. Create a PHP script which display the capital and country name from the given array. Sort the list by the name of the country
5. Write a PHP script to calculate and display average temperature, five lowest and highest temperatures.
6. Create a script using a for loop to add all the integers between 0 and 30 and display the total.
7. Write a PHP script using nested for loop that creates a chess board.
8. Write a PHP function that checks if a string is all lower case.
9. Write a PHP script to calculate the difference between two dates.
10. Write a PHP script to display time in a specified time zone.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6MBE3:1	OPEN SOURCE TECHNOLOGY LAB					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓	✓	✓		✓			
CO2	✓	✓				✓	✓	✓	✓	✓	
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓			✓		✓	✓	
CO5			✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 37, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-VI

Course Code: 20UCS6MBE3 :2
Instruction Hours: 6
Credits: 5

Exam Hours: 3
Internal Marks: 25
External Marks: 75

PART- III - SHELL PROGRAMMING LAB

Course Outcomes(CO):

On completion of the course, the student will be able to

- Possess good knowledge in script writing
- Process the text in the Linux environment
- Solve the practical issues in Linux shell scripting
- To understand the concept of file handling
- Able to write scripts with functions.

1. Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff.
2. Write a shell script to show the following system configuration:
 - a. currently logged user and his log name.
 - b. current shell, home directory, Operating System type, current Path setting, current working directory.
 - c. show currently logged number of users, show all available shells
 - d. show CPU information like processor type, speed
 - e. show memory information.
3. Write a Shell Script to implement the following: pipes, Redirection and tee commands.
4. Write a shell script for displaying current date, user name, file listing and directories by getting user choice.
5. Write a shell script to implement the filter commands.
6. Write a shell script to remove the files which has file size as zero bytes.
7. Write a shell script to find the sum of the individual digits of a given number.
8. Write a shell script to find the greatest among the given set of numbers using command line arguments.
9. Write a shell script for palindrome checking.
10. Write a shell script to print the multiplication table of the given argument using for-loop.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
VI	20UCS6MBE3:2	SHELL PROGRAMMING LAB					6	5			
Course Outcomes (Cos)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓		✓		✓			
CO2	✓	✓				✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓	✓	✓	✓		
CO4	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
CO5	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 40, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-III

Course Code: 20UCS3NME1
Instruction Hours: 2
Credits: 2

Exam Hours: 3
Internal Marks: 25
External Marks: 75

NON MAJOR ELECTIVE 1- WORKING PRINCIPLES OF INTERNET

Course Outcomes (COs):

On completion of the course, the student will be able to

- To understand the working principles of internet.
- To understand basic computer network technology.
- Aware about various types of transmission medias.
- To explain the role of protocols in networking.
- To understand network security concepts and services.

Unit I:

Introduction about Internet - The Internet's underlying Architecture

Unit II:

Connecting to the Internet – Communicating on the Internet

Unit III:

How the World Wide Web works. Common Internet tools

Unit IV:

Multimedia on the Internet – Intranet and shopping on the Internet

Unit V:

Safeguarding the Internet

Text Book(s):

1. "How the Internet Works", Preston Gralla, Pearson Education, Eighth Edition, 2006.

Reference Book(s):

1. "Internet for Everyone", Alexis Leon, S. Chand (G/L) & Company Ltd; Second Edition 2012.

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
III	20UCS3NME1	WORKING PRINCIPLES OF INTERNET					2	2			
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓	✓	✓		✓		✓	
CO2	✓	✓		✓		✓	✓		✓		
CO3	✓		✓	✓		✓	✓	✓	✓		
CO4		✓	✓		✓	✓	✓	✓	✓	✓	
CO5	✓	✓		✓	✓	✓	✓	✓	✓	✓	
Number of matches (✓) = 35 Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD:

SEMESTER-IV

Course Code: 20UCS4NME2
Instruction Hours: 2
Credits: 2

Exam Hours: 3
Internal Marks: 25
External Marks: 75

NON MAJOR ELECTIVE 2 - FUNDAMENTALS OF INFORMATION TECHNOLOGY

Course Outcomes (COs):

- To understand the basic concepts in Information Technology.
- Acquire the knowledge of computer fundamental components and it's working.
- Learn about the hardware, software, networking components, database and security techniques.
- Understand computer networking applications and it's uses.
- To adapt with emerging technologies used in the global marketplace.

Unit I

Introduction to Computers - Generation of Computers - Classification of Digital Computer - Anatomy of Digital Computer.

Unit II

CPU and Memory - Secondary Storage Devices - Input Devices - Output Devices.

Unit III

Introduction to Computer Software - Programming Language – Operating Systems - Introduction to Database Management System.

Unit IV

Computer Networks - WWW and Internet - Email - Web Design

Unit V

Computers at Home, Education, Entertainment, Science, Medicine and Engineering - Introduction to Computer Security - Computer Viruses, Bombs, Worms.

Text Book(s):

1. Fundamentals of Information Technology, Alexis Leon And Mathews Leon, Vikas Publishing House Pvt. Ltd, 2009

Reference Book(s):

1. Fundamentals of Computers and Information Technology, M.N Doja, 2005

Relationship Matrix for Course Outcomes, Programme Outcomes and Programme Specific Outcomes:

Semester	Code	Title of the Course					Hours	Credits			
IV	20UCS4NME2	FUNDAMENTALS OF INFORMATION TECHNOLOGY					2	2			
Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	✓	✓	✓	✓	✓	✓		✓		✓	
CO2	✓	✓		✓	✓	✓	✓	✓	✓		
CO3	✓	✓	✓	✓		✓		✓	✓	✓	
CO4		✓		✓	✓	✓	✓		✓	✓	
CO5	✓		✓		✓	✓	✓	✓		✓	
Number of matches (✓) = 38, Relationship: High											

Mapping	1-29%	30-59%	60-69%	70-89%	90-100%
Matches	1-14	15-29	30-34	35-44	45-50
Relationship	Very Poor	Poor	Moderate	High	Very High

Prepared by:

Checked by:

HOD: