HAJEE KARUTHA ROWTHER HOWDIA COLLEGE

(An Autonomous Institution Affiliated to Madurai Kamaraj University, Madurai.)
Re-Accredited with "A" Grade by NAAC.

UTHAMAPALAYAM - 625 533

DEPARTMENT OF COMPUTER SCIENCE

Bachelor of Science - Computer Science

Syllabus

(Effect from the Academic Year 2017 – 2018 onwards)

Program Specific Outcome

PSO1: Explicate proficiency in problem-solving techniques using the computer.

PSO2: Highlight proficiency for a minimum of two high-level programming languages and two operating systems.

PSO3: Ability to analyze complex problems and synthesize solutions to those problems.

PSO4: Understand modern software engineering principles.

PSO5: Demonstrate a wider understanding in the recent trends of computer science such as Multimedia and Web Technology.

HAJEE KARUTHA ROWTHER HOWDIA COLLEGE (AUTONOMOUS)
UTHAMAPALAYAM 625 533.

Programme Name: B.Sc., Computer Science
(Choice Based Credit System)
Programme Scheme, Scheme of Examinations & Syllabus
(Effect from the Academic Year 2017 – 2018 onwards)

Eligibility   :A pass in +2 examination conducted by the Board of Higher Secondary Education, Government of Tamil Nadu with Mathematicsas one of the subject OR any other examination accepted by the Syndicate as equivalent.

Duration of the Course: The students who are joining the degree shall undergo a study period of three academic years- Six Semesters.

Eligibility for the degree:
        A candidate shall be declared as passed the program if he/she scored a minimum of 40% of total marks (internal and External) in each course. Minimum required marks in external is 27.

Subjects ofstudy:

Medium of instruction : English

Part – I   - Tamil / Arabic / Malayalam
Part –II   - English
Part –III -1.Core Subjects - Computer Science
            2.Allied Subject-Mathematics
Part –IV -1.Non-Major subject
            2.Skill Based Subjects
            3.Environmental Studies
            4.Value Education
Part-V -   Extension Activities

Evaluation:

Theory: Internal – 25 marks   **Practical:**Internal – 40 marks
        External –   75 marks   External – 60 marks
         Total – 100 marks   Total   – 100 marks

Internal Examination : 25 Marks

   1. Two Tests to be conducted - 20 marks (average of 2 tests to be taken).
   2. Seminar / Assignment / Quiz- 5 marks.
   3. Third Test may be allowed for absentees of any one of the two tests.

External Examination: **75 Marks -Time: 3 hours.**

The pattern of External Examination Question Paper for **Part I, Part III and IV** will be as follows :

Section – A (10 X 1 = 10 Marks)

Question numbers 1 to 10 - Answer all questions. (multiple choice)
Two questions from each unit.
Four choices in each question.

Section – B (5 X 7 = 35 Marks)

Question numbers 11to 15.
Answer all questions choosing either A or B.
One question from each unit.

   11 A or 11 B
   12 A or 12 B
   13 A or 13 B
   14 A or 14 B
   15 A or 15 B

Section – C(3 X 10 = 30 Marks)

Question numbers 16 to 20.
Answer any three out of five.
One question from each unit.

The pattern of External Examination Question Paper for **Part II** will be as follows :

Section –A: Prose   16 Marks.

Section –B: Poetry   11 Marks.

Section –C: Short Story   13 Marks.

Section –D: Grammar   19 Marks.

Section– E: Composition   16 Marks.

The pattern of External Examination Question Paper for **Part IVEnvironmental Studies and**

Value Education will be as follows :

Section –A:(5 X 6 = 30 Marks)
Question numbers 1 to 5 – Answer all questions choosing either (a) or (b).
One question from each unit.
Descriptive Type – 100 words each.

Section – B(3 X 15 = 45 Marks)
Question numbers 6 to 10.
Answer any three out of five.
One question from each unit.
Descriptive and Analytical Type – 250 words each.

Sem	Part	Course Category	Course Code	Title of the Course	Credits	Hours	Int. Marks	Ext. Marks	Total Marks
				Hajee Karutha Rowther Howdia College (Autonomous)					
				B.Sc., Computer Science - Programme Content & Syllabus (2017-2018 onwards)					
1	I	Language	17UTAL11/ 17UARL11/ 17UMAL11	Tamil / Arabic / Malayalam	3	6	25	75	100
	II	Language	17UENL11	English – I	3	6	25	75	100
	III	Core	17UCSC11	Programming in C	4	6	25	75	100
	III	Core	17UCSC1P	Lab 1 : Programming in C	4	6	40	60	100
	III	Allied	17UCSA11	Mathematical Foundations I	4	4	25	75	100
	IV	NME	17UCSN11	Computer Fundamentals and Office Automation	2	2	25	75	100
				Total	**20**	**30**	**165**	**435**	**600**
2	I	Language	17UTAL21/ 17UARL21/ 17UMAL21	Tamil / Arabic / Malayalam	3	6	25	75	100
	II	Language	17UENL21	English – II	3	6	25	75	100
	III	Core	17UCSC21	Object Oriented Programming using C++	4	6	25	75	100
	III	Core	17UCSC2P	Lab2:Object Oriented Programming using C++	4	6	40	60	100
	III	Allied	17UCSA21	Mathematical Foundations II	4	4	25	75	100
	IV	NME	17UCSN21	Introduction to Internet and HTML	2	2	25	75	100
				Total	**20**	**30**	**165**	**435**	**600**
3	I	Language	17UTAL31/ 17UARL31/ 17UMAL31	Tamil / Arabic / Malayalam	3	6	25	75	100
	II	Language	17UENL31	English – III	3	6	25	75	100
	III	Core	17UCSC31	Programming in Java	4	4	25	75	100
	III	Core	17UCSC3P	Lab 3: Programming in Java	4	6	40	60	100
	III	Allied	17UCSA31	Operations Research	4	4	25	75	100
	IV	SBS	17UCSS31	Digital Principles and Applications	2	2	25	75	100
	IV	SBS	17UCSS3P	Lab 4: Linux Shell Programming	2	2	40	60	100
				Total	**22**	**30**	**205**	**495**	**700**

Sem	Part	Course Category	Course Code	Title of the Course	Credits	Hours	Int. Marks	Ext. Marks	Total Marks
4	I	Language	17UTAL41/ 17UARL41/ 17UMAL41	Tamil / Arabic / Malayalam	3	6	25	75	100
	II	Language	17UENL41	English – IV	3	6	25	75	100
	III	Core	17UCSC41	Data Base Management Systems	4	4	25	75	100
	III	Core	17UCSC4P	Lab 5 : RDBMS	4	6	40	60	100
	III	Allied	17UCSA41	Numerical Methods	4	4	25	75	100
	IV	SBS	17UCSS41	Quantitative Aptitude	2	2	25	75	100
	IV	SBS	17UCSS42	Data Structures	2	2	25	75	100
	V	EA		Extension Activities	2	0	25	75	100
				Total	**24**	**30**	**215**	**585**	**800**
5	III	Core	17UCSC51	Operating System	4	4	25	75	100
	III	Core	17UCSC52	Software Engineering	4	4	25	75	100
	III	Core	17UCSC53	Computer Networks	4	4	25	75	100
	III	Elective Core	17UCSE51	Computer Algorithms	3	4	25	75	100
			17UCSE52	Computer System Architecture					
	III	Core	17UCSC5P	Lab 6 : .Net Programming	4	6	40	60	100
	III	Core	17UCSC5Q	Lab 7: Advanced Java Programming	4	6	40	60	100
	IV	EVS	17UEVS51	Environmental Studies	2	2	25	75	100
				Total	**25**	**30**	**205**	**495**	**700**
6	III	Core	17UCSC61	Computer Graphics	4	4	25	75	100
	III	Core	17UCSC62	Web Technology & Design	4	4	25	75	100
	III	Core	17UCSC63	Multimedia Technology	4	4	25	75	100
	III	Elective Core	17UCSE61	Project Work	3	4	25	75	100
			17UCSE62	MobileApplicationDevelopment					
	III	Core	17UCSC6P	Lab 8 : Web Programming	4	4	40	60	100
	III	Core	17UCSC6Q	Lab 9 : Multimedia	4	4	40	60	100
	III	Core	17UCSC6R	Lab10: Data Structures Lab	4	4	40	60	100
	IV	VE	17UVED61	Value Education	2	2	25	75	100
				Total	**29**	**30**	**245**	**655**	**800**
				Grand Total	**140**		**1200**	**3000**	**4200**

Department of Computer Science
Details of number of Courses and Credits

PART/SEM	I	II	III	IV	V	VI	Courses		Credits
I / Tamil	1T	1T	1T	1T			4	4x3	**12**
	6 hrs	6 hrs	6 hrs	6 hrs					
II /English	1T	1T	1T	1T			4	4x3	**12**
	6 hrs	6 hrs	6 hrs	6 hrs					
III / Core	1T+1P	1T+1P	1T+1P	1T+1P	3T+2P	3T+3P	19	19x4	**76**
	6+6 hrs	6+6 hrs	4+6 hrs	4+6 hrs	12+12	12+12			
Elective	-	-	-	-	1T	1T	2	2x3	**6**
					4 hrs	4 hrs			
Allied	1T	1T	1T	1T			4	4x4	**16**
	4hrs	4 hrs	4 hrs	4 hrs					
IV / NME	1T	1T					2	2x2	**4**
	2 hrs	2 hrs							
SBS			1T+1P	2T			4	4x2	**8**
			4 hrs	4 hrs					
VE						1T	1		**2**
						2 hrs			
ES					1T		1		**2**
					2 hrs				
V / EA				1			1		**2**
						0 hrs			
Total Hours	30	30	30	30	30	30			
Total Courses	**6**	**6**	**7**	**8**	**7**	**8**	**42**		
Total Marks							**4200**		
Total Credits	**20**	**20**	**22**	**24**	**25**	**29**			**140**

Course Name : Programming in C   **Part : III / Core**

Course Code   : 17UCSC11   **Semester : I / Hours : 6 / Credits : 4**

Course Outcome: To learn concepts in problem solving, and understand how to write a program using Cprogram operators, statements, functions, and parameter passing options, and use the arrays, strings, pointers and files.

UNIT I
Overview of C: History of C – Importance of C – Basic structure of C – Programming style – Constants, variables and Data types – declaration of variables, storage class – defining symbolic constants – declaring a variable as constant, volatile – overflow and underflow of data. Operators and expressions: arithmetic, relational, logical, assignment operators – increment and decrement operators, conditional operators, bitwise operators, special operators – arithmetic expression – evaluation of expressions – precedence of arithmetic operators – type conversions in expression – operator precedence and associativity – mathematical functions – managing I/O operations: reading and writing a character – formatted input, output.

UNIT II
Decision making and branching: if statement, if….else statement – nesting of if ….else statement – Else if Ladder – Switch statement – the ?: operator – go to statement.
The While statement – do statement – The for statement – jumps in loops

UNIT III
Arrays: one dimensional array – declaration, initialisation – two dimensional array – multi dimensional array – dynamic arrays – initialisation. Strings: declaration, initialisation of string variables – reading and writing string – arithmetic operations on strings – putting strings together – comparison – string handling function – table of strings – features of string.

UNIT IV
User defined functions: need – multi function program – elements of user defined function – definition – return values and their types – function calls, declaration, category – all types of arguments and return values – nesting of functions – recursion – passing arrays, strings to functions – scope visibility and life time of variables – multi file programs. Structures and unions: defining a structure – declaring structure variables – accessing structure members – initialisation – copying and comparing – operations on individual members – arrays of structures – arrays within structures – structures within structures – structures and functions – Unions – size of structures – bit fields.

UNIT V
Pointers: accessing the address of a variable – declaring, initialisation of pointer variables – accessing a variable through its pointer – chain of pointers – pointer expressions – pointer increment and scale factors – pointers and arrays – pointers and character strings – array of pointers – pointers as function arguments – function returning pointers – pointers to functions – pointers and structures. Files: defining, opening, closing a file. I/O operations on files – error handling during I/O operations – random access to file – command line arguments.

Text Book:
  1. Programming in ANSI C, E. Balagurusamy, Edition3, Tata McGraw Hill Publishing Company, 2005.

Course Name : Lab 1: Programming in C   **Part : III / Core**

Course Code   : 17UCSC1P   **Semester : I / Hours : 6 / Credits : 4**

Course Outcome: Understand concepts in problem solving ,programming in C Languageand to write diversified solutions using C Language.

Write and execute C programs

1. To find Sum of Digits of a number
2. To reverse a given number and check if it is a palindrome
3. To evaluate Sine Series
4. To find the nth Fibonacci Number
5. To check if a number is Prime Number or not
6. To Sort an Array
7. To count the occurrences of a number in a set
8. To check if a number is Adam Number
9. To reverse a given string and check if it is a palindrome
10. To find Factorial value, Fibonacci, GCD value using Recursion
11. To add and subtract two Matrices
12. To multiply two matrices
13. To find row wise sum of a matrix of order m x n
14. To solve Quadratic Equation – Switch
15. To perform binary search using Function
16. To find NCR and NPR values using Function
17. To calculate mean, variance and standard deviation using function
18. To prepare Pay Bill – Structure
19. To prepare Mark Sheet – Structure
20. To perform inventory calculations - Structure
21. To demonstrate the use of bitwise operators
22. To prepare Mark Sheet – File
23. To prepare EB Bill – File

Course Name : Mathematical Foundations I   **Part : III / Allied**

Course Code   : 17UCSA11   **Semester : I / Hours : 4 / Credits : 4**

Course Outcome: Seek logical notation to define fundamental mathematical concepts such as sets, relations, functions, logic, matrices, graphs and trees.

UNIT I
        Set Theory – Relations, equivalence relations – partial order - Function – binary operations – groups: definitions and examples – elementary properties

UNIT II
Logic: introduction – connectives – truth table – Tautology implication and equivalence of formulae.

UNIT III
        Matrices: Elementary transformation – Inverse of a matrix - Rank of a matrix – Simultaneous linear equations – Eigen values and Eigen vectors-Cayley Hamilton theorem.

UNIT IV
Graph theory: Introduction – definition and examples – degrees and subgraphs – matrices - connectedness: walks, trials and paths, connectedness and components.

UNIT V
        Eulerian graphs – Hamiltonian graph – trees:characterisation of trees, centre of a tree.

Text Books:

1. Modern Algebra, S. Arumugam& A. ThangapandiIssac, Scitech publications, 2005 (for Units I and III)

2. Discrete Mathematics, Dr.M.K.Venkaatraman, Dr.N.Sridharan and Dr.N.Chandrasekaran, National Publishing Company, 2000. (for Unit II)

3. Invitation to Graph Theory, S.Arumugam and S.Ramachandran, Scitech Publications, 2005, Chennai. (for Units IV and V)

Course Name : Computer Fundamentals and Office Automation Part : IV / NME

Course Code : 17UCSN11   **Semester : I / Hours : 2 / Credits : 2**

Course Outcome: Comprehend the basic principles of a personal computer, including the internal hardware, the operating system, software applicationsand major applications such as word processors, spreadsheets, and presentation software.

UNIT I

Introduction to Computer and Information Technology: Brief History of Development of Computers – Other Computer Developments – Computer System Concepts and Characteristics – Capabilities and Limitations – Types and Generation of Computers – Personal Computers – Newer PCs – Introduction to Windows Operating System.

UNIT II

Working with Document in Word 2007 - I Introduction – Saving the File – Formatting the Text – Alignment of Text – Applying Fonts – Spell Checking – Consulting Thesaurus – Assign Character Styles – Borders and Shading – Closing of the File – Save as Option – Printing your Document.

UNIT III

Working with Document in Word 2007 - II Editing the Document – Editing Tools – Auto Correct – Auto Format – Find and Replace – Page Numbering – Header and Footer – Footnotes and Endnotes – Splitting Panes – Tiling of Documents.

UNIT IV

Microsoft Office Excel 2007: Understanding Spreadsheets – Creating a Worksheet in Excel 2007 – Copying Formula – Decisions – Styles – Functions – Auto Calculate – References – Sum – Average – Charts.

UNIT V

Microsoft Office PowerPoint 2007: Creating Presentation – Views –Entering the Text – Moving the Text – Changing the Color – Adding Graphics – Reordering, Duplicating, Deleting Slides – Adding an Animated Cartoon, Slide Transitions, Text Transitions – Viewing a Presentation – Making Slideshows.

Text Book:

Learning computer Fundamentals, MS Office and Internet & Web Technology
            - Dinesh Maidasani – FIREWALL MEDIA, Third Edition 2016.

Course Name : Object Oriented Programming using C++   Part : III / Core

Course Code : 17UCSC21   Semester : II / Hours : 6 / Credits : 4

Course Outcome: Apply C++ features to program design and implementation and explain object-oriented concepts in C++.

Unit-I
Basic concepts of object oriented programming-Benefits of OOP's-Application of OOP-Structure of C++ program-Basic data type-Derived data type-User defined data type, operators in C++, Control statements.

Unit-II
Inline function, function overloading-specifying a class-defining member function-nesting of member function-array of object-friend function-constructor-parameterized constructor-copy constructor-destructor.

Unit III
Defining operator overloading-overloading unary operator-overloading binary operator-rules for operator overloading-inheritance-single inheritance-multilevel inheritance-multiple inheritance-hierarchical inheritance-hybrid inheritance-virtual base class.

Unit IV
polymorphism-pointer-pointer to object-this pointer-virtual function-pure virtual function.C++ streams-C++ stream classes-unformatted I/O operations-Formatted console I/O operations-Managing output with manipulators.

Unit V
Classes for file stream operations-opening and closing a file - detecting end –of file , more about open ( )- File modes-File pointers and their manipulations-sequential input and output operations-updating a file-random access.

Text Book:

Object Oriented Programming with C++ , E. Balagurusamy 2015 , TMH Sixth Edition

Course Name: Lab 2: Object Oriented Programming using C++   Part : III / Core

Course Code   : 17UCSC2P   Semester : II / Hours : 6 / Credits : 4

Course Outcome: Demonstrate the process of writing, compiling and executing programs in C++, implement the object oriented concepts such as inheritance and polymorphism in developing applications, studypointers, stream I/O, Files and usage of the classes in C++ language.

Write and execute C++ programs

1. To perform overloaded constructor.

2. To perform copy constructor.

3. To perform Dynamic constructor.

4. To perform Area calculation using Function overloading (Min three functions).

5. To perform String manipulation (three different types) using function overloading.

6. To swap two values between two class objects using friend function.

7. To find minimum of two numbers between two class objects using friend function.

8. To overload unary minus operator which changes sign of given vector (3 elements)

9. To overload Binary + operator which adds two complex numbers.

10. To perform single inheritance using public derivation and private derivation.

11. To perform multilevel inheritance.

12. To process students mark list using multiple inheritance

13. Process employee details using hierarchical inheritance

14. To process family details using hybrid inheritance

15. To perform the use of pointers to object.

16. To process electricity billing using binary file.

17. To process mark listing using binary file.

Course Name : Mathematical Foundations II   **Part : III / Allied**

Course Code : 17UCSA21   **Semester : II / Hours : 4 / Credits : 4**

Course Outcome: Analyze statistical data, dispersion, correlations, regression, events , sets and sampling distributions.

UNIT I *(without proof)*
Introduction to Statistics – Primary and Secondary data – Classification, tabulation and diagrammatic representation of statistical data - Bar-charts, Pie-diagrams - Graphical Representation of data – Histograms, Frequency polygon, Ogives

UNIT II *(without proof)*
Measures of dispersion – characteristics – coefficient of dispersion – coefficient of variation – moments - Skewness and Kurtosis – Pearson's coefficient of Skewness – Bowley's coefficient of Skewness – coefficient of Skewness based upon moments.

UNIT III *(without proof)*
Simple correlation – Karl Pearson's coefficient. of correlation – correlation coefficient for a bivariate frequency distribution – Rank correlation – Regression – lines of regression – properties of regression coefficient

UNIT IV *(without proof)*
Events and sets – sample space – concept of probability – addition and multiplication theorem on probability – conditional probability and independence of events – Baye's Theorem- Concept of random variable – Mathematical expectation

UNIT V *(without proof)*
Concept of sampling distributions – standard error – Tests of significance based on t, chi-square and F distributions with respect to mean, variance .

Text Book:

Statistical Methods, S.P. Gupta, Sultan Chand and Sons, 2004.

Reference Book: Statistics, Dr.S.Arumugam&A.ThangapandiIssac, New Gamma Publishing House,2002

Course Name : Introduction to Internet and HTML   **Part : IV / NME**

Course Code : 17UCSN21   **Semester : II / Hours : 2 / Credits : 2**

Course Outcome: Understand and differentiate client & server, web browsers and services, E-mail, HTML, hyperlinks and creating frames and tables.

UNIT I:
Internet and World Wide Web: The Internet –How the Internet Began – TCP/IP – IP Addressing – Servers and Clients – Intranets – World Wide Web – Pages – Home Page – Web Browsers and Web Servers – Hyperlinks – URLs – Email.

UNIT II:
E-mail: Introduction – Services – How does it Works – How to make E-mail ID – Advantages and Limitations of E-mail – Receiving and Sending E-mail Messages – Search Engines – Web Directory & Web Search Engine.

UNIT III:
Introduction to HTML: Introduction – HTML Editor – Creating Basic HTML Documents – The Structure of HTML Program – Enhancing the Web Page – Working with Lists – Unordered, Ordered, Definition Lists.

UNIT IV:
Hyperlinking Websites: Hyperlinking – Types of Hyperlink – Linking with Images and Graphics – Linking with Specific Mail Address.

UNIT V:-
Creating Frames and Tables: Introduction – The <FRAMESET> Tag – Create Tables – Using the BGColor Attribute – Using the Colspan and Rowspan Attributes – Using the Width and Border Attributes – Using the Cell spacing and Cell padding Attributes.

Text Book: Learning computer Fundamentals, MS Office and Internet & Web Technology
                Dinesh Maidasani – FIREWALL MEDIA, Third Edition 2016.

Course Name : Programming in JAVA   **Part : III / Core**

Course Code : 17UCSC31   **Semester : III / Hours : 4 / Credits : 4**

Course Outcome: Delineate the structure of the Java programming language, use the Java programming language for various programming technologies, develop software in the Java programming language.

UNIT I
Overview of Java Language: Simple Java Program – Java Program Structure – Java Tokens- Java Statements – Implementing a Java Program – Java Virtual Machine – Command Line Arguments. Constants- Variables- Data types- Declaration of Variables- Giving Values to variables- Scope of Variables-Symbolic Constants-Type Casting.

UNIT II
Operators and Expressions: Operators –Mathematical Functions
Class, Objects and Methods: Defining a Class – Fields Declaration – Methods Declaration – Creating Objects – Accessing class members – Constructors – Methods Overloading – Static Members – Nesting of Methods – Inheritance – Overriding Methods – Final Variables and Methods – Final Classes –Finalizer Methods – Abstract Methods and Classes – Visibility Control.

UNIT III
Arrays, Strings and Vectors: One-dimensional Arrays-creating an Array – Two dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types.
Multiple Inheritance: Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.
Packages: Java API Packages – Using system Packages – Naming Conventions – Creating Packages – Accessing a Package – Using a Package – Adding a Class to a Package – Hiding Classes – Static Import.

UNIT IV
Multithreaded Programming: Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread – Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization-Implementing the Runnable Interface.
Managing Errors and Exceptions: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for debugging.

UNIT V
Graphics Programming: The Graphics Class- Lines and Rectangles- Circles and Ellipses, Drawing Arcs-Drawing Polygons- Line Graphs- Drawing Bar Charts.
Managing Input/ Output Files in Java: Concept of Streams-Stream Classes-Byte Stream Classes-Character Stream Classes- Using Streams- Other Useful I/O Classes-Using the file Class- I/O Exceptions- Creation of Files-Reading / Writing Characters- Reading / Writing Bytes- Handling Primitive Data Types- Concatenating and Buffering Files-Random Access Files – Interactive Input and Output.

Text Book

1. Programming with Java, A primer, 3e, E.Balagurusamy, TATA McGraw-Hill Company, 2008.

Course Name : Lab 3: Programming in Java   **Part : III / Core**

Course Code   : 17UCSC3P   **Semester : III / Hours : 6 / Credits : 4**

Course Outcome: Ability to write, compile, and execute Java programs that include basic data types, control flow constructs, object oriented class structures with parameters, constructors, inheritance, exception handling, manipulating Strings, Files using Integrated Development Environments (IDEs).

Write Java programs

1. To create the Fibonacci series.

2. To perform volume calculation using method overloading

3. To illustrate the command line arguments.

4. Using multilevel inheritance process student marks

5. Implement multiple inheritance for payroll processing

6. Create a package called "Arithmetic" that contains methods to deal with all arithmetic operations. Also, write a program to use the package

7. Create two threads such that one of the thread print even no's and another prints odd no's up to a given range.

8. Define an exception called "Marks Out Of Bound" Exception, that is thrown if the entered marks are greater than 100.

9. String manipulation using string methods (Use of any five String methods preferred)

10. File – byte stream

11. File – character stream

Course Name : Operations Research   **Part : III / Allied**

Course Code : 17UCSA31   **Semester : III / Hours : 4 / Credits : 4**

Course Outcome: Seek solutions to linear programming problems, assignment problems and transportation problems based on Operations Research.

UNIT I
Development of OR – Definition of OR – Modeling – Characteristics & Phases – tools, techniques & methods – Scope of OR

UNIT II
Linear Programming Problem – Formulation – Slack & Surplus variables – Graphical solution of LPP

UNIT III
Simplex method – Computational procedure – Artificial variables techniques – Big M Method

UNIT IV
Mathematical formulation of assignment problem – Methods for solving the assignment problems

UNIT V
Mathematical formulation of transportation problem – Methods for solving the transportation problem

Text Book:

Operation Research, S. D. Sharma, KedarNath Ram Nath& Co, 2004

Reference Books:

1.   Operations Research, Nita H.Shah,RaviM.Gor and HardikSoni, Prentice-Hall of
         India Pvt.Ltd, New Delhi, 2008.

2.   Operation Research , R Sivarethinamohan, Tata McGraw Hill , 2005

Course Name : Digital Principles and Applications   **Part : IV / SBS**

Course Code : 17UCSS31   **Semester : III / Hours : 2 / Credits : 2**

Course Outcome: Know the Binary Number system, Basic Gates,Universal Logic Gates, Boolean laws and theorems , Multiplexers, Binary addition and subtraction, and 2's complement arithmetic.

UNIT I

  Binary Number system – Binary to decimal –decimal to binary – Octal-hexa decimal- – ASCII code – Excess-3 Code – Gray code.

UNIT II

  The Basic Gates – NOT, OR, AND - Universal Logic Gates – NOR, NAND.

Unit III

  Boolean Laws and Theorems. - Sum of Products method - Truth table to Karnaugh Map – Pairs, Quads, Octets – Don't Care Conditions- Product-of sums   method -Product-of sums Simplifications.

UNIT IV

  Multiplexers – Demultiplexers-1-of-16 Decoder – BDC-to-decimal Decoders – Seven-segment Decoders – Encoders – Exclusive-OR Gates- Parity Generators and Checkers.

UNIT V

  Binary Addition- Binary Subtraction – 2'S Complement Representation -   2'S Complement Arithmetic – Aritmetic Building Blocks.

Text Book

   1. Digital Principals and Applications – Donald P Leach, Albert Paul Malvino, GoutamSaha,Seventh edition ,The McGraw-Hill Companies - 2012

Course Name : Lab:4   Linux Shell Programming   **Part : IV / SBS**

Course Code   : 17UCSS3P   **Semester : III / Hours : 2 / Credits : 2**

<u>**Course Outcome:**</u>Demonstrate a basic knowledge of Linux and Shell Programming.

1. Find the sum of the digits of a given number.
2. Find the reverse of a number.
3. Perform basic arithmetic operations using case.
4. Display multiplication table.
5. Check whether a number is prime or not using while.
6. Convert lowercase to uppercase using to statement.
7. Check for an adam number.
8. Check pattern matching using grep.
9. Find the number of users who have logged in
10. Check for palindrome
11. Find age of a person using set date
12. Write a menu driven program to display today's date,
     Processes of the system, user's of the system, list files of
the system.
13. Write a Shell Script to read 10 names from a file and sort in
      a. Ascending order b. Descending order.
14. Get mark details of a student and display total and grade.
15. Prepare electricity bill.
16. To set the attributes of a given file.
17. To check the given file is a directory or not.
18. To create and append a file.
19. To compare two files.
20. To perform string manipulation.

Course Name : Data Base Management Systems　　　　　　　　**Part : III / Core**

Course Code : 17UCSC41　　　　　　　　**Semester : IV / Hours : 4 / Credits : 4**

Course Outcome: Elicit architecture and functioning of data base management systems, associated tools, queries and normalization techniques.

UNIT – I
OVERVIEW OF DATABASE SYSTEMS: File Systems Versus a DBMS – Advantages of a DBMS – Describing and Storing Data in a DBMS – Queries in a DBMS – Transaction Management – Structure of a DBMS – People Who Work with Databases.

INTRODUCTION TO DATABASE DESIGN: Database Design and ER Diagrams – Entities, Attributes, and Entity Sets – Relationships and Relationship Sets – Additional Features of ER Model

UNIT – II
THE RELATIONAL MODEL: Introduction to the Relational Model – Integrity Constraints over Relations – Enforcing Integrity Constraints – Querying Relational Data – Logical Database Design: ER to Relational – Introduction to Views – Destroying / Altering Tables and Views.

UNIT – III
RELATIONAL ALGEBRA AND CALCULUS: Preliminaries – Relational Algebra: Selection and Projection – Set Operations –Renaming – Joins – Division.

UNIT – IV
SQL:QUERIES, CONSTRAINTS, TRIGGERS: The Form of a Basic SQL Query - UNION, INTERSECT, and EXCEPT – Nested Queries – Aggregate Operators – Null Values – Complex Integrity Constraints in SQL – Triggers and Active Databases.

UNIT - V
SCHEMA REFINEMENT AND NORMAL FORMS: Introduction to Schema Refinement – Functional Dependencies –Normal Forms –Normalization.

TEXT BOOK
　　Database Management Systems – Raghu Ramakrishnan & Johannes Gehrke, McGraw Hill International Edition – Third Edition – 2003

Course Name : Lab 5: RDBMS   **Part   : III / Core**

Course Code   : 17UCSC4P   **Semester : IV / Hours : 6 / Credits : 4**

Course Outcome: Design, develop and query a database by using **Oracle**, database schema, adopt normalization techniques for realistic problems, formulate queries using SQL commands and Triggers, Procedures, Functions and Packages.

SQL

Creating a Table - Creating a Table with a Primary Key - Inserting Tuples - Deleting Tuples - Updating Column values - Getting the Value of a Relation - Modifying the structure of Tables - Getting Rid of Your Tables and attributes - Getting Information about Your Database - Quitting sqlplus - Executing SQL from a File - Editing Commands in the Buffer - Working with an ASCII Editor - Recording Your Session - Oracle Data Types

Querying the Tables.

Implement the Bank Database and execute the given queries/updates

Bank Database Schema:
account(account_number, branch_name, balance)
branch (branch_name, branch_city, assets)
customer (customer_namecustomer_street, customer_city)
loan (loan_number, branch_name, amount)
depositor((customer_name, account_number)
borrower(customer_name, loan_number)

Queries/Updations on Bank Database

Retrieving records from a table:
1. List all branch names and their assests
2. List all accounts of Brooklyn branch
3. List all loans with amount > 1000.
4. List all accounts of Perryridge branch with balance < 1000.
5. List Numbers of accounts with balances between 700 and 900
Updating records from a table:
6. Change the assests of Perryridge branch to 340000000.
7. Transfer the accounts and loans of Perryridge branch to Downtown branch.
8. Transfer Rs. 100 from account A-101 to A-215.

Deleting records from a table:
9. Delete the branch Perryridge.
10. Waive off all the loans with amount < 1000.
11. Delete the accounts and loans of Downtown branch.

Modifying the structure of tables:
12. Add a column phoneNo to customer table.
13. Change the size of the branch_city to varchar(20).
14. Drop the column phoneNo from customer table.

Retrieving records from multiple tables

15**.** For all customers who have a loan from the bank, find their names, loan numbers, and loan amount.

16. Find the customer names, loan numbers, and loan amounts, for all loans at the Perryridge branch.

String Operations (Use %, _, LIKE)

17. Find the names of all customers whose street address includes the substring 'Main'.

Ordering the display of Tuples(Use ORDER BY ASC   DESC)

18. List loan data, ordered by decreasing amounts, then increasing loan numbers.

Implement the following Queries on Bank Database:

Set Operations

UNION (Use union all to retain duplicates):

19. Find all the bank customers having a loan, an account, or both at the bank.

INTERSECT (Use intersect all to retain duplicates):

20. Find all the bank customers having both a loan and an account at the bank

EXCEPT(Minus):

21. Find all customers who have an account but no loan at the bank.

Aggregate Functions (avg,min,max,sum,count) / Group By:

22. Find the average account balance at the Perryridge branch.
23. Find the average account balance at each branch.
24. Find the number of depositors for each branch (Use distinct).
25. Find those branches where the average accounts balance is more than Rs. 1200.
26. Find the number of branches of the bank.
27. Find the average balance for each customer who lives in Harrison and has at least three accounts.

Course Name : Numerical Methods   **Part : III / Allied**

Course Code : 17UCSA41   **Semester : IV / Hours : 4 / Credits : 4**

Course Outcome: Enumerate common numerical methods, obtain approximate solutions to simultaneous equations, mathematical problems such as interpolation, numerical differentiationand solution of differential equations.

UNIT I
Errors in computer Arithmetic –Empirical relations and Curve Fitting & Transcendental Equations: Iteration method – Bisection method – Regula Falsi method – Newton Raphson method.

UNIT II
Simultaneous Equations: Gauss elimination method –Gauss Jordan, Gauss Seidel iteration methods.

UNIT III
Interpolation: Newton's interpolation formulae – Central difference interpolation formulae – Lagrange's interpolation formula – Inverse interpolation.

UNIT IV
Numerical differentiation: Newton's Forward and Backward difference formulae – Numerical Integration: Trapezoidal rule – Simpson's rule. Eigen values and Eigen vectors of a matrix.

UNIT V
Numerical solution of differential equations: Euler's method – Taylor's series method – Range-Kutta methods.

Text book:

1. Numerical Methods, T. Veerarajan and T. Ramachandran, 2nd edition, Tata McGraw Hill, 2006

Reference Books:

1. Numerical Methods by S. Arumugam& A. Thangapandi Issac, A. Somasundaram, Sci Tech Publication, Chennai, 2002.

2. Introductory Methods of Numerical Analysis, S.S.Sastry, Prentice Hall of India Pvt.Ltd, New Delhi, 4th Edition, 2008.

3. Computer-Oriented Numerical Methods, P.Thangaraj, Prentice Hall of India Pvt.Ltd, New Delhi, 2008

Course Name : Quantitative Aptitude   **Part : IV / SBS**

Course Code   : 17UCSS41   **Semester : IV / Hours : 2 / Credits : 2**

Course Outcome: Elicit the concepts of quantitative aptitude.

Unit I
HCF & LCM of numbers.

Unit II
Square roots & Cube roots.

Unit III
Percentage – Profit & Loss.

Unit IV
Time & Work.

Unit V
Time & Distance

Text Book

Quantitative Aptitude,R.S.Aggarwal, Reprint 2007, S.Chand& Company Ltd,

Course Name : Data Structures   **Part : IV / SBS**

Course Code   : 17UCSS42   **Semester : IV / Hours : 2 / Credits : 2**

Course Outcome: Design and analyze programming problem statements, select appropriate data structures and algorithms for a given problem.

Unit I
Arrays - Introduction – Linear Arrays – Representation of Linear arrays in memory – Traversing linear arrays – inserting and deleting

Unit II
Sorting – Bubble sort- Searching - Linear Search – Binary Search – Multidimensional array – Pointers – Records - Record structure– Representation of Records in memory

Unit III
Linked List – Introduction – representation of linked list in memory – Traversing a linked list – searching a linked list – memory allocation – insertion and deletion in a linked list

Unit IV
Stacks- Array representation of stacks- - linked representation of stack–Queues – Linked representation of queues.

Unit V
Trees – Introduction – Binary Trees – Types of Binary Trees – Representation of Binary Trees – Binary Tree Traversals – Binary search trees .

Text Book:

Data Structures – Seymour Lipschutz – Tata McGrawhill – Year 2006 (Adapted by G A V Pai)

Reference Book:

Data Structures and Algorithms – S.Sharanya – Charulatha Publications, Chennai.

Course Name : Operating System   **Part : III / Core**

Course Code : 17UCSC51   **Semester : V / Hours : 4 / Credits : 4**

Course Outcome: Understand the fundamental components of a computer operating system, the policies for scheduling, deadlocks, memory management, synchronization, system calls, and file systems.

UNIT I:
        Introduction to Operating Systems: Introduction,Operating systems architecture.
Process Concepts: Introduction,Process States,Process Management,Interrupts,Inter-process Communication.
UNIT II:
        Asynchronous Concurrent Execution: Introduction,Mutual Exclusion,Implementing Mutual Exclusion Primitives,Software solutions to the Mutual Exclusion Problem,Hardware solution to the Mutual Exclusion Problem,Semaphores. Concurrent Programming: Introduction,Monitors.
UNIT III:
        Deadlock and Indefinite Postponement: Introduction,Examples of Deadlock,Related Problem Indefinite Postponement,Resource concepts,Four Necessary conditions for Deadlock,Deadlock solution,Deadlock Prevention,Deadlock Avoidance with Dijkstra's Banker's algorithm,Deadlock Detection,Deadlock Recovery.
        Processor Scheduling: Introduction,Scheduling levels,Preemptive Vs Non-Preemptive
Scheduling Priorities,Scheduling objective,Scheduling criteria, scheduling algorithms.
UNIT IV:
        Real Memory Organization and Management: Introduction,Memory organization,Memory Management,Memory Hierarchy,Memory Management Strategies,Contiguous Vs Non-Contiguous Memory allocation,Fixed Partition Multiprogrammimg,Variable Partition multiprogramming.
        Virtual Memory Management: Introduction,Page Replacement,Page Replacement Strategies,Page Fault Frequency (PFF) Page Replacement,Page Release,Page Size.
UNIT V:
        Disk Performance Optimization: Introduction,Why Disk Scheduling is necessary,Disk Scheduling strategies,Rotational optimization.
        File and Database Systems: Introduction,Data Hierarchy,Files,File Systems,File Organization,File Allocation,Free Space Management,File Access control.

Text Book:

Operating Systems, Deitel Deitel Choffnes-Pearson education Third edition-2008

Reference Book:

Operating Systems, W. Mary Magdalene Viola, Charulatha Publicatios, Chennai.

Course Name : Software Engineering   **Part : III / Core**

Course Code : 17UCSC52   **Semester : V / Hours : 4 / Credits : 4**

Course Outcomes: Explore the various phases in a software project, fundamental concepts of requirements and Analysis Modelling, major considerations for enterprise integration and deployment of various testing and maintenance measures.

Unit – I
Introduction to Software Engineering: Size factors – Quality and Productivity Factors – Managerial Issues.Planning a Software Project**:** Defining the Problem – Developing a Solution Strategy – Planning the Development Process – Planning an Organizational Structure – Other Planning Activities.

Unit – II
Software Cost Estimation: Software Cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Maintenance Costs.

Unit – III
Software Requirements Definitions:The Software Requirements Specification –Specification Technique – Languages and Processors for Requirements.

Unit – IV
Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Design Notations – Design Techniques – Detailed Design Considerations – Real-time and Distributed System Design – Test Plans – Milestones, Walkthroughs and Inspections - Design Guidelines.

Unit – V
Verification and Validation Techniques: Quality Assurance –– System Testing.
Software Maintenance:Enhancing Maintainability during Development –Configuration Management.

Text Book
Software Engineering Concepts– Richard Fairley – Tata McGraw - Hill Publishing Company Limited, NewDelhi 1997.

Reference Book:
Software Engineering– A.K.R.S.Anusha – Charulatha Publications, Chennai2016.

Course Name : Computer Networks **Part : III / Core**

Course Code   : 17UCSC53 **Semester : V / Hours : 4 / Credits : 4**

Course Outcome: Explain basic terminologiesin computer networks, protocols in networking, services and features of protocol stack, network services, security and mechanisms to counter network threats.

Unit I
Data communication: characteristics and components – Networks: Distributed processing, Network criteria, applications. Topologies, Network classifications.OSI reference model: Layers and Functions. TCP/IP Layers

Unit II
Transmission Media: Guided media – Twisted pair, Coaxial cable, optical fibers. Unguided media - Microwave, Satellite, Cellular telephony. Errors: types, Detection techniques Vertical and Longitudinal redundancy checks, CRC, Checksum.

Unit III
Data-link Control – Line Discipline – Flow Control – stop and wait, Sliding Window flow controls Error control using different ARQ techniques. Data-link Protocols: Character oriented protocol: BSC, Bit oriented protocol: HDLC.

Unit IV
Local Area Networks: Project 802 – layers, PDU formats. Ethernet – CSMA/CD Access methods, Ethernet MAC frame structure-Token BUS, Token Ring.

Unit V
Switching: Circuit and Packet switching.ISDN: Services. ISDN layers and functions of layers.

Text Book

Data Communications and Networking, Behrous A. Forouzan, Tata McGraw-Hill Edition 2007,

Reference Books
Data Communications and Networking – A.K.R.S.Anusha, Charulatha Publications, Chennai.

Course Name : Computer Algorithms   **Part : III / ElectiveCore**

Course Code : 17UCSE51   **Semester : V / Hours : 4 / Credits : 3**

Course Outcome: Ability to design and analyze efficient algorithms, understand the necessary methods such as Divide and Conquer Dynamic Programming, Greedy and Backtracking.

UNIT I

Algorithms : Importance of developing efficient algorithms – Analysis – Order.

UNIT II

Divide and Conquer : Binary Search – Merge Sort – The divide and conquer approach – Quick Sort –When not to use divide and conquer.

UNIT III

Dynamic Programming : Binomial coefficients – Floyds algorithm for shortest paths- Dynamic programming and optimization problems – Chained matrix multiplication – Optimal binary search tree – The traveling salesperson problem.

UNIT IV

Greedy Approach : Minimum spanning trees – Dijkstra's algorithm for single source shortest path – Scheduling – Huffman code – The Knapsack problem.

UNIT V

Backtracking: The Backtracking techniques – n Queens Problem –Sum of Subsets – Graph Colouring – Hamiltinian circuits.

Text Book

Foundations of Algorithms Using C++ Pseudocode, Third edition, Richard Neapolitan, KumarssNaimipour.Narosa publication, 2004.

Course Name : Computer System Architecture   **Part : III / Elective Core**

Course Code : 17UCSE52   **Semester : V / Hours : 4 / Credits : 3**

Course Outcome:

UNIT I:
Basic Computer Organization and Design:
Instruction codes – Computer registers – Computer Instructions – Timing and Control –
Instruction Cycle – Memory reference instructions – Input-output and Interrupt.

UNIT II:
Central Processing Unit:
Introduction – General register organization – Stack organization – Instruction formats –
Addressing modes – Data transfer and manipulation – Program control – Reduced instruction
set computer (RISC).

UNIT III:
Computer Arithmetic:
Introduction – Addition and Subtraction – Multiplication Algorithms – Division Algorithms.

UNIT IV:
Input-output Organization:
Peripheral devices – Input-output interface – Asynchronous data transfer – Modes of transfer
– Priority interrupt – Direct Memory Access.

UNIT V:
Memory Organization:
Memory hierarchy – Main memory – Auxiliary memory – Associative memory – Cache
memory – Virtual memory.

Text Book:
Computer System Architecture, M. Moris Mano, Revised 3rd Edition, Pearson 2019

Course Name :Lab 6 : .Net Programming   **Part : III / Core**

Course Code   : 17UCSC5P   **Semester : V / Hours : 6 / Credits : 4**

Course Outcome: Create validation forms, user interface components, event driven programs and system application programs .

1. Create a login screen with validation of login name and password with the following conditions
      a. check for empty user id and password
      b. check for leading and trailing white spaces
2. Program to create color mixture using scroll bar control
3. Creation of Arithmetic Calculator
4. Create MDI form with file and edit options and write code for file open dialog.
5. Program to create a file open dialog to load a picture.
6. Write code for Drag and Drop using Mouse-Down Event.
7. Program using timer control to animate an object
8. Program to design analog clock
9. Design a simple Media Player
10. Program for sequential file writing & reading
11. Design a form using data grid control and bind the control with an MS Access database.
12. Creation of A Simple Address Book Using ADO.Net Data Reader
13. Processing of Employee Pay bill Using ADO.NetData Set

Course Name : Lab 7: Advanced Java Programming   Part : III / Core

Course Code   : 17UCSC5Q   Semester : V / Hours : 6 / Credits : 4

<u>**Course Outcome:**</u>Create validation forms, user interface components, event driven programs, database connectivity and socket programs .

1. Write a program to design a form using components textbox, text field,checkbox, buttons, list and handle various events related to eachcomponent.
2. Write a program to design a calculator using Java components andhandle various eventsrelated to each component and apply properlayout to it.
3. Write a program to demonstrate use of Grid Layout.
4. Write a program to demonstrate use of Flow Layout.
5. Write a program to demonstrate use of Card Layout.
6. Write a program to demonstrate use of Border Layout.
7. Write a program to display any string using available Font and withevery mouse click change the size and / style of the string. Make useof Font and Font metrics class and their methods.
8. Write a program to create a menu bar with various menu items andsub menu items. Also create a checkable menu item. On clicking amenu Item display a suitable Dialog box.
9. Write a program to increase the font size of a font displayed when thevalue of thumb in scrollbar increases at the same time it decreases thesize of the font when the value of font decreases.
10. Write a program to retrieve hostname using methods in Inet Address class.
11. Write an Application program /Applet to make connectivity with database using JDBC API
12. Write an Application program/Applet to send queries through JDBC bridge& handle result.
13. Write a program to design a form using basic swing components.
14. Write a program to demonstrate the use of scroll panes in Swing.
15. Write a Java program to demonstrate the use of Tables.

Course Name : Environmental Studies Part : IV

Course Code : 17UEVS51 **Semester : V / Hours : 2 / Credits : 2**

Course Outcomes:

CO1: Demonstrate basic knowledge about Ecology, Living Organisms and its allied problems.

CO2: Acquire skills to help individuals in identifying and solving problems related to pollution.

CO3: Motivate public to understand the values of Conservation of Biodiversity.

UNIT – I: Earth and its Environment

a) Earth- formation and Evolution of Earth over time - structure of Earth and its components – Atmosphere, Lithosphere, Hydrosphereand Biosphere

b) Resources – renewable and non renewable resources

UNIT – II: Ecology and ecosystem concepts

a) Ecology – definition - Ecosystem : Definition – structure and function – energy flow – food chain and Food web – one example for an ecosystem

b) Biogeochemical cycles – Nitrogen, carbon, Phosphorous and Water

UNIT – III: Biodiversity of India

a) Introduction – definition – Values of Biodiversity _ Threat to Biodiversity –Conservation of Biodiversity

b) Biodiversity of India – as a megadiversity nation – bio-geographical distribution – Hot spots of biodiversity – National Biodiversity conservation Board and its function

UNIT – IV: Pollution and Global issues

a) Definition , causes, effects and control measures of Air, Water, Soil, Marine, Noise, Thermal and Nuclear pollution

b) Global issues: Global Warming and Ozone layer Depletion

UNIT – V: Development and Disaster Management

a) Sustainable Development – Sustainable Agriculture – Organic farming, Irrigation – Waterharvesting and Waste recycling – Cyber waste and management

b) Disaster Management – Flood and Drought – Earthquake and Tsunami – Landslides and Avalanches – Cyclones and Hurricanes –Precautions, Warnings, Rescue and Rehabilitation.

Text:

1. Environmental studies – Published by Madurai Kamaraj University.

References:

1. Environmental Studies by Dr.N.Arumugam&Prof.V.Kumarasan, Saras Publication-2009.
2. Environmental Studies by Bharathiar University, Coimbatore – 2004.

Course Name : Computer Graphics   **Part : III / Core**

Course Code   : 17UCSC61   **Semester : VI / Hours : 4 / Credits : 4**

Course Outcome: Illustrate computer graphics systems, design algorithms, two dimensional transformations, and techniques of clipping.

UNIT – I
A survey of computer graphics: Computer-Aided Design - Presentation Graphics – Computer Art – Entertainment – Education and Training – Visualization – Image Processing – Graphical User Interfaces

Overview of Graphics Systems: Video Display Devices – Raster Scan Systems – Random Scan Systems – Input Devices – Hard Copy Devices.

UNIT – II
Output Primitives: Points and Lines – Line Drawing Algorithms – Circle Generating Algorithms –Filled Area primitives

UNIT – III
Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Gray Scale Levels – Area Fill Attributes – Character Attributes – Bundled Attributes – Inquiry Functions – Antialiasing

UNIT – IV
Two –Dimensional Geometric Transformations : Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations – Transformations between Coordinate Systems

UNIT – V
Two –Dimensional Viewing : The Viewing Pipeline – Viewing Coordinate Reference Frame – Window –to- Viewport Coordinate Transformation – Two-Dimensional Viewing Functions – Clipping Operations – Point Clipping – Line Clipping – Polygon Clipping – Curve Clipping – Text Clipping – Exterior Clipping.

Text Book
Computer Graphics – Donald Hearn ,M.Pauline Baker
Prentice Hall of India Pvt. Ltd., New Delhi ,SECOND EDITION, 1994

Course Name : Web Technology & Design   **Part : III / Core**

Course Code : 17UCSC62   **Semester : VI / Hours : 4 / Credits : 4**

Course Outcome: Explain internet principles, HTML frames and forms, objects and events, JSP Architecture, JSP Servers, JSP Tags, Request Object, and Response Object.

UNIT I

INTERNET PRINCIPLES : Introduction to Internet – Client Server Model- Protocol-Internet IP Address-Domain name-Internet Services-Electronic Mail-World Wide Web- Internet Security-Electronic Commerce and Electronic Data Interchange(EDI).
INTRODUCTION TO HTML:A Brief History-HTML Tags- HTML Documents –Header Section-Body Section-Headings-Link Documents using Anchor Tag- Formatting Characters- Font Tag- Images and Pictures – Listing- Tables in HTML

UNIT II

FRAMES AND FORMS:Frameset Definition-Frame Definition- Nested Framesets-HTML forms-Elements of a Form.
ELEMENTS OF JAVASCRIPT: Data Types-Variables-Operators-Conditional Statements-Array objects-String Objects.

UNIT III

OBJECTS AND EVENTS: Document Object Model-The Document Object-Image Object-Forms and Elements-Event Handling-Browser Object-Submit Event and Data Validation.
USER INPUT PROCESSING:ParseInt() Function-ParseFloat() Function-Recursive Functions-Simple Interest Example-Income Tax Example-Sales Commission Example-Circle Object Example-Quadratic Equation Example-Prime Number Checking Example.

UNIT IV

SERVER SIDE SCRIPT WITH JSP:Client Responsibilities-Server Responsibilities-Introduction to JSP-JSP Architecture-JSP Servers-JSP Tags-Request Object-Response Object.

UNIT V

JSP WITH JDBC: Creating ODBC Data Source Name-Introduction to JDBC-Prepared Statement Class(SQL Statement)- Telephone Directory with JDBC-A Simple Internet Banking Application-User Profile with JSP –Case Study.

Text Book:

WEB TECHNOLOGY & DESIGN,C.Xavier, New Age International Publishers, New Delhi- 110 002. First edition 2010

Course Name : Multimedia Technology   **Part : III / Core**

Course Code   : 17UCSC63   **Semester : VI / Hours : 4 / Credits : 4**

Course Outcome: Formulate interactive multimedia devices, basic images, image formats, text compression techniques.

UNIT I

Multimedia-an overview: Introduction,Multimedia presentation and production,characteristics of a multimedia presentation, Multiple Media, Utilities of multisensory perception,Hardware and software requirements,Uses of multimedia, steps for creating multimedia presentation.

UNIT II

Visual display Systems: Introduction, Cathode Ray Tube (CRT), Video Adapter Card, Video Adapter cable, Liquid Crystal Display (LCD), Plasma Display Panel (PDP).

UNIT III:

Text: Introduction,Types of Text,Unicode Standard,Font,Insertion of Text,Text compression,File Formats.
Image: Introduction,Image Types,Seeing color,color models,Basic steps for Image Processing,Scanner,Digital Camera,Interface Standards,Image Processing software,File formats,Image output on monitor,Image output on printer.

UNIT IV:

Audio: Introduction, Fundamentals Characteristics of sound,Elements of Audio systems,Microphone,Amplifier,Loudspeaker,Audio mixer,Audio and multimedia,Audio Processing software.

UNIT V:

Animation: Introduction,Uses of animation,Key frames and Tweening,Types of animation,Computer Assisted Animation,Creating movements,Principles of animation,Some Techniques of Animation,Animation on the web,3D Animation,Special Effects, Animation software.

Text Book:
Principles of Multimedia,Ranjan Parekh- the Tata McGraw Hill companies.-Sixth Reprint 2008

Reference Book:
Multimedia System Design ByPrabhatK.Andleigh and Kiran Thakrar – PHI-2008

Course Name : Project Work   **Part : III / Elective Core**

Course Code   : 17UCSE61   **Semester : VI / Hours : 4 / Credits : 3**

Course Outcome: Apply programming skills to bring out solutions to global, economic, environmental and societal problems.

Students are asked to follow the instructions given below to complete their Project Work.

01. Head of the Department will allocate guides to each student.

02. One project work will be carried out by two students.

03. The Project work should be carried out by using the available software in the lab.

04. Students have to select a project topic in consultation with their guide. Each student will work under the overall supervision and guidance of a guide.

05. It is the student's responsibility to ensure continuous contact and interaction with their guide.

06. The guide will evaluate all the components such as knowledge of concepts, intellectual ability, ability to conceive new and useful idea, documentation and expression, originality, punctuality, reliability and self-reliance.

07. The dissertation outline (synopsis) along with the signature of guide must reach HOD on or beforethe reopen day of even semester.

08. The Synopsis should be written not exceeding 10 lines on A4 size stationary, in typed format.

09. The full dissertation document in neat written format should be submitted to their respective guide as scheduled by the Head of the Department.

10. The formats of the first page of dissertation and certificates are to be obtained from the guideand should be bound along with the dissertation report.

11. Each group must prepare three typed copies of the final dissertation report (Two original reports for each student and one copy of the report is for the department library) to be properly certified by their guide and submit the same as per the schedule.

12. The guide will evaluate the dissertation and conduct the viva-voce examination along with the panel of examiners.

    Total Marks:100 (Internal: 25 marks, External : 75 marks)

    Internal Marks: Two review meetings 2 x 10 = 20 marks

                        Overall performance   = 05 marks

    External marks: Project Report   = 15 marks

                      Project demo & presentation = 30 marks

                      Viva-Voce   = 30 marks

Course Name : Mobile Application Development   **Part : III / Elective Core**

Course Code   : 17UCSE62   **emester : VI / Hours : 4 / Credits : 3**

Course Outcome: Understand Android programming, Android user interface, Displaying pictures and menus and its views, content providers, Coding the Application, Understanding Android Resources and Publishing the App to the Google Play Store.

UNIT I:
Your First Android Project:
Starting a new project in Android Studio-Responding to errors-Setting Up an Emulator-Running the Hello Android App.

UNIT II:
Creating the User Interface:
Creating the Silent Mode Toggle Appication-Laying out the Appication-Adding an image to your Application-Creating a Launcher icon for the Application-Previewing the Application in the Visual Designer.

UNIT III:
Coding your Application:
Understanding Activities and the Activity Lifecycle-Creating your first Activity-Working with the Android Framework Classes-Installing your Appication-Material Design-Responting to errors-thinking beyond the Application Boundaries.

UNIT IV:
Understanding Android Resources:
Understanding Resources-Working with Resources-Resource Qualifier Directories.
Turning your Application into an App Widget:
Working with App Widgets in Android-Working with Intents and Pending Intents-Creating the App Widget-Placing your Widget on the Home Screen.

UNIT V:
Publishing your App to the Google Play Store:
Creating a Distributable File-Creating a Google Play Developer Profile-Pricing your Application-Getting Screen Shots for your Application-Uploading your Application to the Google Play Store-Watching the Number of Installs Soar.

Text Book: Android Application Development For Dummies- Michael Burton- John Wiley & Sons Inc,-3rd Edition 2015.

Course Name : Lab 8 : Web Programming   **Part : III / Core**

Course Code : 17UCSC6P   **Semester : VI / Hours : 4 / Credits : 4**

Course Outcome: Ability tocreatedynamic WebPagesusingJavaScript, code forserver side java application and develop database connectivity code.

1. Creation of different text styles using Cascaded Style Sheets

2. Simple JavaScript to handle mouse events (mousein, mouseover etc.)

3. Simple Java Script for Email ID Validation

4. Java Script to Greet the user as good morning / good afternoon depending on the time of day

5. HTML Forms using Java Script

6. Creation of cookies using java script

7. Create a JSP file and print "Hello Welcome" in Bold Text

8. Create two JSP files called "a.jsp" and "b.jsp" then forward b.jsp file from a.jsp.

9. Program using HTTP Get Request / Post Request etc.

10. Database Search Utility with JSP and JDBC

Course Name : Lab 9 : Multimedia　　　　　　　**Part : III / Core**

Course Code   : 17UCSC6Q　　　**Semester : VI / Hours : 4 / Credits : 4**

Course Outcome: Create and manipulate images, 2D interactive clips using flash.

Adobe Photoshop (Bitmap Tool)(Self Learning)

1. Create a Heading Banner with different text pattern.
2. Create a Bathing Soap Model using embossing effect.
3. How to use Photoshop to change a B/W photo into Color Photo.

Adobe Illustrator (Vector Graphics Tool)(Self Learning)

1. Design a Business card/Merit certificate
2. Design a digital flex banner for a college day function.

Flash Designing

1. Perform different Transformations like rotation, skewing, flipping, and scaling an object of your choice.
2. Design a flash movie which incorporates the use of the following symbols
a). Graphic symbol b). Button symbol c). Movie clip symbol
3. Create a movie which includes frame-by-frame animation of an object (or) an image of your choice.
4. Create a movie which includes an object animation using Motion Tweening. (Ex. A ball bouncing across the screen along the specified path). Also add appropriate sound effects.

Course Name: Lab 10 : Data Structures Lab   **Part : III / Core**

Course Code   : 17UCSC6R   **Semester: VI / Hours: 4 / Credits: 4**

Course Outcome: Understand the basic concepts of Algorithms and implement the algorithms using appropriate data structures with C language.

1.Write a C program to implement linear search.

2.Write a C program to implement binary search using iterative/recursive technique.

3.Write a C program to merge two sorted arrays into one sorted array.

4. Write a C program to perform the swapping of two numbers using call by value and call by reference.

5.Write a C program to implement stack using array.

6.Write a C program to implement queue using array.

7.Write a C program that uses functions to perform the following:
a) Create a singly linked list of integers.
b) Delete a given integer from the above linked list.
c) Display the contents of the above list after deletion.

8.Write a C program to implement merge sort.

Course Name : Value Education   **Part : IV**

Course Code : 17UVED61   **Semester : VI / Hours : 2 / Credits : 2**

Course Outcomes:
CO1: Develop the overall personality including physical, mental, emotional and spiritual aspects

CO2: Demonstrate good manners and cooperative citizenship

CO3: Develop respect for the dignity of individual and society

UNIT – I: Values and the Individual
Values meaning – The Significance of Values – Classification of Values – Need of Value Education – Values and the individual: Self Discipline, Self Confidence, Self Initiative, Empathy, Compassion, Forgiveness, Honesty and Courage.

UNIT – II: Values and Religion
Karmayoga in Hinduism – Love and Justice in Christianity – Brotherhood in Islam – Compassion in Buddhism – Ahimsa in Jainism – and Courage in Sikhism – Need for Religious Harmony.

UNIT – III Values and Society
Definition of Society – Democracy – Secularism – Socialism – Gender Justice – Human Rights – Socio-Political Awareness – Social Integration – Social Justice.

UNIT – IV Professional Values
Definition – Accountability – Willingness to learn – Team Spirit – Competence Development – Honesty – Transparency – Respecting Others – Democratic Functioning – Integrity and Commitment.

UNIT: V Role of Social Institutions in Value Formation
Role of Family – Peer Group – Society – Educational Institutions – Role Models, and Mass Media in value formation.

Text Book:
Value Education, Madurai Kamaraj University Publications

REFERENCE BOOKS
Subramanyam, .K , values in Education. Madurai; RamanaPublicaltions, 1995.

Doss. A. G. Indian Social Insititutions, Delhi: Forward Publishing Company, 2000.

Joseph.K.P, e.d., Peace and Value Education : A Creative Response to Consumerism and Communalism, Hyderabad: National Institute of Peace and Value Education. 2003.

BediKiran, What Went Wrong….and Continues, Delhi: UBS Publishers and Distributors Pvt.Ltd., 2005.

Sekar, Vincent, Quest for Harmony: An Anthology of Religions in Dialogue, Bangalore: Claretian Publications, 2001.

METHODOLOGY: The each above mentioned values may be taught through parables, new analysis, role play, group discussions, debates, case studies and field work.