BACHELOR OF SCIENCE (COMPUTER SCIENCE) REGULATIONS

ELIGIBILITY

A candidate who has passed in Higher Secondary Examination with any Academic stream or Vocational stream as one of the subject under Higher Secondary Board of Examination, Tamilnadu as per the norms set by the Government of Tamilnadu or an Examination accepted as equivalent thereto by the Academic Council, subject to such conditions as may be prescribed thereto are permitted to appear and qualify for the B.Sc Computer Science of this College after a course of study of three academic years.

OBJECTIVES OF THE COURSE

The Curriculum is designed to attain the following learning goals which students shall accomplish by the time of their graduation:

1. To provide adequate basic understanding about computer science and its application to the students.
2. To prepare students to exploit newly created opportunities in the field of computer science and its related field.
3. To give adequate exposure to the computing environment in the field of Software Development, Testing, Animation etc.
4. To inculcate training & practical approach by giving them internship training amongst the students in the field of computer science.
5. To create awareness of the global economy and training the players in the international business area.

SCHEME OF EXAMINATIONS

Subject Code	Subject	Hrs. of Instruction	Max Marks				
			Exam Duration (Hrs.)	CA	CE	Total	Credit points
FIRST SEMESTER							
PART - I							
16UTL11T/ 15UHL11H/ 15UML11M/ 15UFL11F	Tamil-I/ Hindi-I/ Malayalam-I/ French-I	6	3	25	75	100	4
PART - II							
16UEG12E	English-I	6	3	25	75	100	4
PART - III							
16UCS13A	Core - I : C Programming	4	3	25	75	100	4
16UCS13B	Core - II : Digital Fundamentals and Architecture	4	3	25	75	100	4
16UCS13P	Core Practical - I : C Programming	3	3	40	60	100	4
16UMA1AD	Allied -I: Mathematical Structures for Computer Science	5	3	25	75	100	4
PART - IV							
15UFC1FA	Value Education –Environmental Studies #	2	3	-	50	50	2
		30				650	26
SECOND SEMESTER							
PART - I							
16UTL21T/ 15UHL21H/ 15UML21M/ 15UFL21F	Tamil-II/ Hindi-II/ Malayalam-II/ French-II	6	3	25	75	100	4

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PART - II							
16UEG22E	English-II	6	3	25	75	100	4
PART - III							
16UCS23A	Core - III : C++ programming	5	3	25	75	100	4
16UCS23P	Core Practical - II : C++ programming	4	3	40	60	100	4
16UCS23Q	Core Practical - III : Internet & Office Automation	2	3	20	30	50	2
16UMA2AD	Allied - II : Computer Based Optimization Techniques	5	3	25	75	100	4
PART IV							
15UFC2FA	Value Education -Human Rights #	2	3	-	50	50	2
		30				**600**	**24**
THIRD SEMESTER							
PART – III							
16UCS33A	Core - IV : Data Structures	6	3	25	75	100	4
16UCS33B	Core - V : Java Programming	6	3	25	75	100	4
16UCS33P	Core Practical - IV : Java Programming	5	3	40	60	100	4
16UCS3AA	Allied - III: XML & Web Services	5	3	25	75	100	4

PART IV							
16UCS3SA	Skill Based Subject - I : Multimedia and Animation	4	3	20	55	75	3
15UFC3FA/ 15UFC3FB/ 15UFC3FC/ 15UFC3FD/ 15UFC3FE	Tamil# / Advanced Tamil# (OR) Yoga for Human Excellence # / Women's Rights# / Constitution of India#	2	3	-	50	50	2
	NMEC- I	2	3	-	50	50	2
		30				**575**	**23**
FOURTH SEMESTER							
PART – III							
16UCS43A	Core - VI : System Software and Operating Systems	6	3	25	75	100	4
16UCS43B	Core - VII : Relational Database Management System	6	3	25	75	100	4
16UCS43P	Core Practical - V: Programming in RDBMS	6	3	40	60	100	4
15UCS4AA	Allied - IV: Cyber Law & Security	5	3	25	75	100	4

PART – IV							
16UCS4SP	Skill Based Practical- I: Multimedia and Animation	3	3	30	45	75	3
15UFC4FA/ 15UFC4FB/ 15UFC4FC	Tamil # /Advanced Tamil # (OR) General Awareness #	2	3	-	50	50	2
	NMEC- II	2	3	-	50	50	2
		30				**575**	**23**
FIFTH SEMESTER							
PART – III							
16UCS53A	Core - VIII: Data Communication And Networks	6	3	25	75	100	4
16UCS53B	Core - IX:. NET Programming	6	3	25	75	100	4
16UCS53P	Core Practical - VI: Programming in . NET	5	3	40	60	100	4
	Elective - I	5	3	25	75	100	4
PART – IV							
15UCS5SA	Skill Based Subject - II: Software Testing	4	3	20	55	75	3
15UCS5SP	Skill Based Practical - II : Software Testing	4	3	30	45	75	3
16UCS53T	Industrial Training	Grade A to C					
		30				**550**	**22**

SIXTH SEMESTER							
PART – III							
16UCS63A	CORE- X: PHP & MySQL	6	3	25	75	100	4
16UCS63V	CORE -XI : Project Work	6	3	40	60	100	4
16UCS63P	Core Practical - VII : PHP & MySQL	6	3	40	60	100	4
	Elective II	6	3	25	75	100	4
	Elective III	6	3	25	75	100	4
PART – V							
16UEX65A	Extension Activity@	-	-	50	-	50	2
		30				**550**	**22**
			Grand Total			**3500**	**140**

@ Extension Activities –Sports/NSS/NCC/YRC/ Association activities/Club activities- No End semester Examinations. Only Internal Assessment (IA)

 # No Continuous Internal Assessment (CIA). Only End semester Examinations.

ELECTIVE –I

(Student shall select any one of the following subject as Elective-I in fifth semester)

S.No.	Subject Code	Name of the Subject
1	15UCS5EA	E-Learning
2	15UCS5EB	Computer Networks
3	15UCS5EC	Unified Modeling Language

ELECTIVE –II

(Student shall select any one of the following subject as Elective- II in sixth semester)

S.No.	Subject Code	Name of the Subject
1	15UCS6EA	Network Security and Cryptography
2	15UCS6EB	Artificial Intelligence & Expert System
3	15UCS6EC	Mobile Computing

ELECTIVE –III

(Student shall select any one of the following subject as Elective-III in sixth semester)

S.No.	Subject Code	Name of the Subject
1	15UCS6ED	Data Mining
2	15UCS6EE	Open Source Software
3	16UCS6EF	Management Information System

Non Major Elective Courses offered by the Department of Computer Science

No.	emester	Course Code	Course Title
NMEC- I	III	16UNM34L	Basics of HTML
NMEC- II	IV	16UNM44L	Hardware and Networking

Total Credit Distribution:

Part	Subject	Papers	Credit	Total credits	Papers	Marks	Total marks
Part I	Language	2	4	8	2	100	200
Part II	English	2	4	8	2	100	200
Part III	Core Subjects	17	4	68	17	100	1700
	Core Subject	1	2	2	1	50	50
	Allied	4	4	16	4	100	400
	Electives	3	4	12	3	100	300
Part IV	Basic Tamil/Advanced Tamil & others	4	2	8	4	50	200
	Skill Based	4	3	12	4	75	300
	NMEC	2	2	4	2	50	100
Part V	Extension	1	2	2			50
Total				**140**			**3500**

FOR COURSE COMPLETION

A student has to complete the following:-

Industrial training: Subject code: 16UCS53T.

- Students must undergo Industrial training for 15 – 30 days during IV Semester Summer Vacation. Evaluation of the Report is done by the Internal and External Examiner in the V Semester. Based on their performance Grade will be awarded as A to C.

  A- 75marks and above

  B- 60-74 marks

  C- 40-59 marks

  Below 40 marks - (Re-Appear)

Earning Extra credits is not mandatory for course completion
Extra credits

Part	Subject	Credit	Total credits
1	BEC/ Self study courses	1	**1**
2	Hindi / French/ Other foreign Language approved by certified Institutions	1	**1**
3	Type Writing / Short Hand Course	1	**1**
4	Diploma/certificate/CPT/ ACS Inter/ NPTEL Course	1	**1**
5	Representation – Academic/Sports /Social Activities/ Extra Curricular / Co-Curricular activities at University/ District/ State/ National/ International	1	**1**
Total			**5**

Rules:

The students can earn extra credits only if they complete the above during the course period (I to V sem) and based on the following criteria. Proof of Completion must be submitted in the office of the Controller of Examinations before the commencement of the VI Semester. (Earning Extra credits are not mandatory for Course completion)

1. Student can opt BEC course/ Self study course to earn one credit. They have to Enroll and complete any one of the course during their course period before fifth semester (I Sem to V Sem).

Self study paper offered by the Computer Science Department

S. No.	Semester	Course Code	Course Title
1.	Semester I to V	16UCSSS1	Data Science and Big Data Analytics
2.		16UCSSS2	Enterprise Resource Planning

2. Student can opt Hindi/ French/ Other foreign Language approved by certified Institutions to earn one credit. The certificate (Hindi) must be obtained from **Dakshina Bharat Hindi Prachar Sabha** and He/ She has to enroll and complete during their course period (**first to fifth semester).**

3. Student can opt for Type writing /short hand course to earn one extra credit. He/She has to enroll and complete the course during their course period to obtain certificate through **Tamil Nadu Board of Technical Education.**

4. Student can opt for Diploma/certificate/CPT/ACS Inter/ NPTEL Course to earn one extra credit. Student who opt for Diploma/ Certificate course have to enroll any diploma/certificate course offered by Bharathiar University through our Institution. Student who opt for CPT/ ACS/CMA have to enroll and complete the foundation level during the course period. Students who opt for NPTEL course should complete the course certificate through NPTEL.

5. Award Winners in Academic/ Representation in Sports /Social Activities/ Extra Curricular/ Co-Curricular Activities at University/ District/ State/ National/ International level can earn one extra credit.

16UCS13A	CORE- I: C PROGRAMMING	SEMESTER - I

Total Credits: 4
Hours Per week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To develop problem-solving strategies, techniques and skills that can be applied to computers and problems in other areas.
2. To help students develop the logic, ability to solve the problems efficiently using C programming.
3. To learn various concepts and techniques for problem solving and will implement those ideas using C programs.

CONTENTS

UNIT - I

Overview of C: History of C – Importance of C – Basic structure of C programs. Constants, variables and data types: Character set – C Tokens – Keywords and identifiers – Constants – Variables – Declaration of storage classes – Assigning values to variables Defining symbolic constants. Operators and expression – Evaluation of expressions – Precedence of arithmetic operators – Type conversions in expressions – Operator precedence and associatively – Mathematical functions. Managing input and output operations: Reading and writing a character – Formatted input and output.

UNIT - II

Decision making and branching: Simple IF, IF-ELSE, Nesting of IF-ELSE, ELSE-IF ladder, Switch statements – GOTO statements. Decision making and looping: WHILE statement – DO statement – FOR statement – Jumps in loops. Arrays: Definition & Declaration – One dimensional – Two dimensional – Multi dimensional arrays.

UNIT - III

Character arrays and strings: Introduction – Declaring and initializing string variables – Reading strings from terminal – Writing strings to screen – String handling functions. User Defined functions: Introduction – Needs & Elements of User Defined function –Definition – Return values and their types – Function calls – Function declaration – Category of functions – Nesting of functions – Recursion – Passing arrays and Strings to functions – The scope, lifetime & Visibility of Variables.

UNIT - IV

Structures and Unions: Introduction – Defining a structure – Declaring structure variables – Accessing structure members – Structure initialization – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions – Bit fields. Pointers: Introduction – Understanding pointers – Accessing the address of a variable – Initializing of pointer variables. Pointers and arrays – Pointers and character strings – Pointers as function arguments.

UNIT - V

File Management: Introduction – Defining and opening a file –Closing a file – Input / Output operation on files – Error handling during I/O operations – Random access files – Command line arguments.

TEXT BOOK:

1. Programming in ANSI C, *E. Balagurusamy* Tata McGraw Hall, New Delhi, 5th Edition.

REFERENCE BOOK:

1. "C: The complete Reference —, *Herbert Schildt*, Mc Graw Hill, New Delhi, 4Th Edition 2. PROGRAMMING IN C, B.L.JUNEJA, Cengage Learning India

16UCS13B	CORE -II : DIGITAL FUNDAMENTALS AND ARCHITECTURE	SEMESTER - I

Total Credits: 4
Hours Per week: 4

OBJECTIVES:

To inculcate knowledge on the

1. Digital behavior of the computer system
2. Ideas behind the organization of various core component of the computer system

CONTENTS

UNIT - I

Digital Logic Circuits: Digital Computers –Logic Gates – Boolean Algebra-Map Simplification- Combinational Circuits- Flip flops
Digital Components: Integrated Circuits- Decoders – Multiplexers – Registers – Shift Registers

UNIT - II

Data Representation: Data Types – Complements –Fixed Point Representation – floating Point Representation – Other Binary Codes – Error Detection Codes

UNIT - III

Central Processing Unit: Introduction – General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulation – Program Control

UNIT - IV

Input – Output Organization: Peripheral Devices - Input – output interface- Asynchronous data transfer-Modes of Transfer- Priority Interrupt – Direct Memory Access – Input- Output Processor

UNIT - V

Memory Organization: Memory Hierarchy – Main Memory- Auxiliary Memory - Associative memory- Cache Memory- Virtual Memory

TEXT BOOK:

1. *M. Morris Mano*. 1993.Third Edition . "COMPUTER SYSTEM ARCHITECTURE", PHI.

REFERENCE BOOKS:

1. *V. K. Puri*. 2004. DIGITAL ELECTRONICS CIRCUITS AND SYSTEMS, Tata McGraw Hill Publication.

2. *M. Carter*. 2006. COMPUTER ARCHITECTURE, Schaum's outline series, Tata McGraw Hill Publication

16UCS13P	PRACTICAL -I : C PROGRAMMING	SEMESTER - I

Total Credits: 4
Hours Per week: 3

OBJECTIVES:

1. To impart knowledge on C programming.
2. To gain experience about structured programming
3. To understand the implementation of C language

CONTENTS

1. Write a C program to find the sum, average, standard deviation for a given set of numbers.
2. Write a C program to generate "n" prime numbers.
3. Write a C program to generate Fibonacci series.
4. Write a C program to print magic square of order n where n > 3 and n is odd.
5. Write a C program to sort the given set of numbers in ascending order.
6. Write a C program to check whether the given string is a palindrome or not using pointers.
7. Write a C program to count the number of Vowels in the given sentence.
8. Write a C program to find the factorial of a given number using recursive function.
9. Write a C program to print the student's Mark sheet assuming roll no, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.
10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.
11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.
12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write the total
    i) no of chars ii) no. of words and iii) no. of lines.

16UMA1AD	ALLIED – I : MATHEMATICAL STRUCTURES FOR COMPUTER SCIENCE	SEMESTER - I

Total Credits : 4
Hours Per Week:5

OBJECTIVES:

1. On successful completion of this subject the students should have Understanding the concepts of mathematics.
2. To know about the applications of statistical and numerical methods for Computer Science.

CONTENTS

UNIT -I

Matrices - Introduction - Determination - Inverse of a matrix - Rank of a Matrix - Eigen Value and Eigen vector Problems - Cayley's Hamilton Theorem.

UNIT -II

System of Simultaneous Linear algebraic Equation : Gauss elimination - Gauss Jacobi Gauss Jordon - Gauss Seidal methods.

UNIT -III

Numerical Differentiations - Newton's forward Difference - Backward Difference -Stirling's formula.

UNIT-IV

Numerical Integration - Trapezoidal Rule & Simpson's rule - Numerical solutions of ordinary differential Equations -Taylor series for first order derivative.

UNIT-V

Measures of central tendency : Mean – Median – Mode - Measures of dispersion :Range – Mean deviation - Quartile deviation - Standard deviation.

TEXT BOOKS:

1. *Navanitham, P.A*. 2013. Business Mathematics & Statistics. Jai Publishers, Trichy (Unit I and V).
2. *Venkataraman , M.K.* 2004. Numerical Methods in science & Engineering . NPC . Revised Edition - (Unit II , III &IV)

REFERENCE BOOKS:

1. *Gupta, S.P.* and *Gupta, M.P.* 2002. Business Statistics. Sultan Chand and Sons.
2. *Kandasamy.P.* and *Thilagavathi .K*. 2004. Numerical Methods .S.Chand and Company Ltd., New Delhi.

16UCS23A	CORE - III : C++ PROGRAMMING	SEMESTER - II

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

To instill the knowledge on the

1. Basic Object-Oriented programming concepts
2. Object Oriented Programming Language C++

CONTENTS

UNIT - I

Introduction to C++: key concepts of Object-Oriented Programming – Advantages – Object Oriented Languages

I/O in C++: Streams in C++-Predefined Streams-Buffering – Stream Classes- Formatted and Unformatted data- Unformatted Console I/O Operation – Type casting with cout statements- C++ Declarations.

Control Structures: Decision Making and Statements: If Else, Jump, Goto, Break, Continue, Switch Case statements. Loops in C++: For, While, Do.

UNIT - II

Functions in C++: Parts of Function – Passing Arguments - Inline functions –Function overloading .

Classes and Objects: Classes in C++- Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions.

Constructor and Destructor: Constructor and Destructor - Characteristics – Application with constructors-Overloading Constructor-Destructors.

UNIT - III

Operator Overloading: The Keyword Operator- Overloading unary, binary operators – Overloading Friend functions – type conversion.

Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes.

UNIT - IV

Pointers: Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes.

Arrays: Characteristics – Initialization of arrays using functions-Memory models – new and delete operators – dynamic object.

Virtual Functions: Rules for Virtual Functions -Pure Virtual Functions.

UNIT - V

String – Declaring and Initializing string objects – String Attributes.

Files – File stream classes – file modes – Sequential Read / Write operations- Error Handling Functions-Exception Handling.

TEXT BOOK:

1. *Ashok N. Kamthane*. 2013. Object-Oriented Programming with ANSI and TURBO C++, Pearson Education Publication.

REFERENCE BOOKS:

1. *E. Balagurusamy*. 1998. Object-Oriented Programming with C++, Tata Mc-Graw Hill Publication.
2. *Yashvant. P. Kanetkar*. 2007. Let us C++, BPB, New Delhi.

16UCS23P	CORE PRACTICAL -II : C++ PROGRAMMING	SEMESTER - II

Total Credits: 4
Hours Per week: 4

OBJECTIVES:

1. To inculcate knowledge on Object-oriented programming concepts using C++.
2. Introduce different techniques pertaining problem solving skills
3. Arm the students with the necessary constructs of C++ programming.

CONTENTS

1. Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write a Member function ADD (), SUB (), MUL (), DIV () to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values.
2. Write a C++ Program to create a class using array of objects.
3. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.
4. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.
5. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display strings. Overload the Operator —+‖ to Concatenate two Strings, —= =‖ to Compare two strings.
6. Write a C++ Program to create class, which consists of EMPLOYEE Detail like E_Number, E_Name, Department, Basic Salary, Grade.

Write a member function to get and display them. Derive a class PAY from the above class and write a member function to calculate DA, HRA and PF depending on the grade using Multiple Inheritance.

7. Write a C++ Program to create a class SHAPE which consists of two VIRTUAL FUNCTIONS Calculate_Area() and Calculate_Perimeter() to calculate area and perimeter of various shapes. Derive three classes SQUARE, RECTANGLE, TRIANGLE from class Shape and Calculate Area and Perimeter of each class separately and display the result.
8. Write a C++ Program using FRIEND FUNCTION
9. Write a C++ 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 two matrices separately and display the sum of these arrays individually.
10. Write a C++ Program to check whether the given string is a palindrome or not using Pointers.
11. Write a C++ Program to create a File and to display the contents of that file with line numbers.
12. Write a C++ Program to merge two files into a single file.

16UCS23Q	CORE PRACTICAL - III: INTERNET AND OFFICE AUTOMATION	SEMESTER - II

Total Credits: 2
Hours Per week: 2

OBJECTIVES:

1. To learn basic computer skills with Microsoft Word, Microsoft Excel, Microsoft PowerPoint and Microsoft Access.
2. To learn internet skills for searching.
3. To learn ICT based skill development.

CONTENTS

1. To create an email-id, compose and send a mail.
2. To send a mail with an attachment and download the attached document of a mail received.
3. To send a mail to a large number of recipients using cc and bcc options.
4. To search a thing using a search engine.
5. To open and read newspaper sites, TV programmes
6. Create a resume format using MS WORD.
7. Create a class time table using MS WORD
8. Prepare mail merge for parent meeting using MS WORD
9. Prepare Student mark sheet using MS EXCEL
10. Create a chart for result analysis using MS EXCEL
11. Prepare a mark list for following conditions using data filter and data sort in MS EXCEL
    a. Prepare mark list in ascending order.
    b. Average is greater than or equal to 60.
    c. Average is between 50 and 60.
    d. Average is below 40

12. Design organizational chart for Arts and Science College using POWER POINT
13. Create a power point presentation to advertise a product using Slide Transition and Custom animation
14. Create a database for student's Mark sheet using MS Access
15. Create a database for employee pay roll using MS Access

16UMA2AD	ALLIED -II : COMPUTER BASED OPTIMIZATION TECHNIQUES	SEMESTER- II

Total Credits: 4
Hours Per Week:5

OBJECTIVES:

1. On successful completion of this subject the students should have: -

   Understanding various mathematical applications in industries.

2. Decision making for real time environment.

CONTENTS

UNIT-I

Linear Programming -Mathematical formulations of linear Programming -Graphical method - Simplex method.

UNIT -II

Transportation problem - Assignment problem - Traveling Salesman Problem.

UNIT-III

Game Theory -Concept of Pure and Mixed Strategies -Solving 2 x 2 matrix with and without saddle point -n x 2 -2 x m games.

UNIT-IV (Derivations not included)

Queueing Theory : Introduction – Queueing system – Characteristics of Queueing system – symbols and Notation – Classifications of queues – Problems in (M/M/1) : (∞/FIFO).

UNIT-V

PERT & CPM -Network representation -Backward pass -Forward pass -Computation -PERT Network -Probability factor .

TEXT BOOK:

1. *Manmohan, Gupta, P.K* and *Kanthiswarup.* 1997. Operations Research. S. Chand & sons.

REFERENCE BOOKS:

1. *Hamdy A Taha*. 2002. Operations Research**.** Pearson Education. 7th edition.
2. *Gupta, P.K.* and *Hira*, D.S. 2004. Problems In Operations Research**.** S. Chand Publication.

16UCS33A	CORE - IV: DATA STRUCTURES	SEMESTER - III

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To understand and analyze algorithms
2. To learn fundamentals of linear and non-linear Data structures
3. To be familiar with searching and sorting

CONTENTS

UNIT - I

Introduction: Introduction of Algorithms, Performance Analysis. Arrays and structures: Representation of Arrays, Array create, insert and delete of data elements - Sparse Matrices Stacks and Queues: Stacks - Queues - Circular Queues - Evaluation of Expression -Infix to Postfix Conversion.

UNIT - II

Linked List: Singly Linked List: Insertion – Deletion – Reverse the elements - Linked Stacks and Queues - Polynomial Addition – Circular Linked Lists - Doubly Linked List.

UNIT - III

Trees: Basic Terminology and Representation - Binary Trees - Binary Tree Representations - Binary Trees Traversals - Threaded Binary Trees - Binary Search Trees – Search, Insert, Delete

UNIT - IV

Graphs: Terminology and Representations – Traversals: Depth First Search, Breath First Search – Minimum cost Spanning Trees- Shortest Paths and Transitive Closure

UNIT - V

Searching: Linear and Binary Search Sorting: Bubble sort - Insertion Sort - Quick Sort - Merge Sort - Heap Sort - Hashing Techniques : Static Hashing : Hash Tables - Hashing Functions -

TEXT BOOK:

1. *Horowitz, Shani, Anderson* -Fundamentals of Data Structures in C [2nd Edition] Universities Press.

REFERENCE BOOKS:

1. *Ellis Horowitz, Sartaj Shani*, "Data and File Structures", Galgotia Publication.

2. *Malik,D,S.,* 2003. Data structures using C++ [1st Edition] Cengage learning

3. *Vaugha H.Patil*, 2012. Data Structures Using C++[1st Edition] Oxford Higher Education

16UCS33B	CORE - V: JAVA PROGRAMMING	SEMESTER - III

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

To inculcate knowledge on the

1. Basic Object-oriented programming concepts
2. Object Oriented Programming Language Java

CONTENTS

UNIT - I

Introduction to Object-Oriented Programming – The Java language – Variable Declarations and Arrays – Operators in Java.

Control Statements: An Introduction – Selection Constructs – Iteration Constructs – Jump Constructs . Introduction to Classes: Instance variables – Class variables – Instance Methods – Constructors – Class Methods – Declaring Objects

UNIT - II

Classes and Methods in Detail: Method Overloading – Constructor Overloading – The this Reference – Using Objects in Method – Recursion – Access Modifiers – Inner Classes – Command Line Arguments. Inheritance: Basics of Inheritance – Super Class Variable and Subclass Object – The super reference – Constructor Chaining – Method Overriding – The final Keyword.

Abstract Classes and Interfaces: The abstract Classes and Methods – Defining Interface – Implementing Interfaces – Extending Interface – Interface Reference

Exception Handling: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – User Defined Exceptions

UNIT - III

Multithreaded Programming: Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock.

Packages and Access Modifiers: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages.

Handling Strings: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods

UNIT - IV

Input Output Classes: Input and Output Operations – Hierarchy of classes in java.io Package – File class – Input Stream and Output Stream-Random Access File Class.

Applets: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class

UNIT - V

Abstract Windowing Toolkit: AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus. Layout Management and Event Handling: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarchy of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes

TEXT BOOK:

1. Instructional Software Research and Development (ISRD) Group.2007. "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi.

REFERENCE BOOKS:

1. *E.Balagurusamy*, 2007. Third Edition.“ Programming with JAVA – A Primer”, Tata McGraw-Hill Publishing Company Limited, Third Edition.
2. *John R. Hubbard*. 2007. “Schaum’s Outline of Programming with Java”, Tata McGraw- Hill Publishing Company Limited, Second Edition.

16UCS33P	CORE PRACTICAL -IV: JAVA PROGRAMMING	SEMESTER - III

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.
2. To be able to use the Java SDK environment to create, debug and run simple Java programs.
3. This subject deals with Java Programming concepts where it enables us to create wide range of Applications and Applets using Java.

CONTENTS

1. Write a Java program using stack functions.
2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.
3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.
4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.
5. Write a Java Program to draw several shapes in the created windows.
6. Write a Java Program to create a frame with four text fields name, street, city and pin code with suitable tables. Also add a button called ―my details, when the button is clicked its corresponding values are to be appeared in the text fields.

7. Write a Java Program to demonstrate the Multiple Selection List-box.
8. Write a Java Program to create a frame with three text fields for name, age and qualification and a text field for multiple line for address.
9. Write a Java Program to create Menu Bars and pull down menus.
10. Write a Java Program to create frames which respond to the mouse clicks. For each event with mouse such as mouse up, mouse down, etc., the corresponding message to be displayed.
11. Write a Java Program to draw circle, square, ellipse and rectangle at the mouse click positions.
12. Write a Java Program which open an existing file and append text to that file.

16UCS3AA	ALLIED - III: XML & WEB SERVICES	SEMESTER - III

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. To get practiced with creating the schemas and XML Document.
2. To acquire knowledge on creating web services to deploy the web applications.

CONTENTS

UNIT – I

Role of XML – XML and The Web – XML Language Basics – SOAP – Web Services– Revolutions of XML – Service Oriented Architecture (SOA).

UNIT – II

XML – Name Spaces – Structuring With Schemas and DTD – PresentationTechniques – Transformation – XML

UNIT – III

Overview of SOAP – HTTP – XML-RPC – SOAP: Protocol – Message Structure –Intermediaries – Actors – Design Patterns And Faults – SOAP With Attachments.

UNIT – IV

Overview – Architecture – Key Technologies - UDDI – WSDL – ebXML – SOAP AndWeb Services In E-Com – Overview Of .NET And J2EE.

UNIT – V

Security Overview – Canonicalization – XML Security Framework – XML Encryption– XML Digital Signature – XKMS Structure – Guidelines For Signing XML Documents – XML In Practice.

TEXT BOOK:

1. *Frank. P. Coyle*, XML, Web Services and The Data Revolution, Pearson Education, 2002.

REFERENCE BOOKS:

1. *Ramesh Nagappan, Robert Skoczylas* and *Rima Patel Sriganesh*, "Developing Java Web Services", Wiley Publishing Inc., 2004.

2. *Sandeep Chatterjee, James Webber*, "Developing Enterprise Web Services", Pearson Education, 2004.

3. *McGovern*, et al., "Java Web Services Architecture", Morgan Kaufmann Publishers, 2005.

16UCS3SA	SKILL BASED SUBJECT – I: MULTIMEDIA AND ANIMATION	SEMESTER - III

Total Credits: 3
Hours Per week: 4

OBJECTIVES:

1. To get acquainted with the concepts of multimedia
2. To acquire knowledge in the area of animation

CONTENTS

UNIT - I

Multimedia-An Overview: Introduction -Multimedia Presentation and Production-Characteristics of a Multimedia Presentation-Hardware and Software Requirements -Uses of Multimedia Analog and Digital Representations -Digitization -Text: Types of Text – Unicode Standard – Font – Insertion of Text – Text compression – File formats.

UNIT - II

Image: Image Types – Seeing Color – Color Models – Basic Steps for Image Processing – Scanner – Digital Camera – Interface Standards – Specification of Digital Images – CMS – Device Independent Color Models – Image Processing software – File Formats – Image Output on Monitor and Printer.

UNIT - III

Audio: Introduction – Acoustics – Nature of Sound Waves – Fundamental Characteristics of Sound – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio – Synthesizers – MIDI – Basics of Staff Notation – Sound Card – Audio Transmission – Audio File formats and CODECs – Audio Recording Systems – Audio and Multimedia – Voice Recognition and Response - Audio Processing Software.

UNIT - IV

Video: Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Television Broadcasting Standards – PC Video – Video File Formats and CODECs – Video Editing – Video Editing Software.

UNIT - V

Animation: Types of Animation – Computer Assisted Animation – Creating Movement – Principles of Animation – Some Techniques of Animation – Animation on the Web – Special Effects – Rendering Algorithms. Compression: MPEG-1 Audio – MPEG-1 Video - MPEG-2Audio – MPEG-2 Video.

TEXTBOOK:

1. PRINCIPLES OF MULTIMEDIA – *Ranjan Parekh*, 2007, TMH.

REFERENCE BOOK:

1. MULTIMEDIA: Making it Work – *Tay Vaughan*, 7th edition,

16UCS43A	CORE-VI: SYSTEM SOFTWARE AND OPERATING SYSTEM	SEMESTER - IV

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To introduce the concepts of the functionalities of various system software
2. To inculcate the common functionality of operating system

CONTENTS

UNIT - I

Assembler: Elements of assembly Language programming-A simple assembly scheme-Pass structure of assemblers-Design of Two Pass assembler. Macros and macro processor: Macro Definition and call-Micro Expansions-Nested macro calls. Compilers and Interpreters: Aspects of compilation-Memory allocation-Compilation of expressions –Compilation of control structures-Code optimization-Interpreters.

UNIT - II

Evolution of OS Functions: OS Functions-Evolution of OS functions-Batch processing systems-Multiprogramming systems-Time sharing systems-Real time operating systems-OS structure. Processes: Process definition – Process Control- Interacting Processes-Implementation of Interacting Processes-Threads.

UNIT - III

Scheduling: Scheduling policies-Job scheduling-Process Scheduling -Process management in unix-Scheduling in multiprocessor OS. Deadlocks: Definition-Resource status modeling-Handling deadlocks-Deadlock detection and resolution-deadlock Avoidance-Mixed approach to deadlock handling.

UNIT - IV

Process Synchronization: Implementing control synchronization-Critical sections-Classical process synchronization problems-Evolution of Language features for process synchronization-Semaphores-Critical regions-Conditional critical regions-Monitors. Inter-process Communication: Inter-process messages-Implementation issues- Mailboxes.

UNIT - V

Memory Management: Memory allocation preliminaries-Contiguous memory allocation-Non contiguous memory allocation-Virtual memory using paging-Virtual memory using segmentation. File Systems: Directory Structures-File production-Allocation of Disk space-Implementing file access-File sharing-File system reliability- Unix File System.

TEXT BOOK:

1. *D M Dhamdhere*. 1999.2nd Revised Edition,"Systems Programming And Operating Systems", Tata McGraw-Hill Publishing.

REFERENCE BOOKS:

1. *Leland L. Beck*. Third Edition. 2003. System Software-An Introduction to Systems Programming, Pearson Education Publishers.
2. *H.M. Deitel.* Second Edition. 2003. Operating Systems, Pearson Education Publication.
3. *Achyut S. Godbole*. 2002. Operating Systems, Tata McGraw Hill Publications.

16UCS43B	CORE-VII: RELATIONAL DATABASE MANAGEMENT SYSTEM	SEMESTER - IV

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

To inculcate knowledge on

1. RDBMS concepts and Programming with Oracle.
2. Oracle SQL and PL/SQL

CONTENTS

UNIT - I

Database Concepts: A Relational approach: Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. Database Design: Data Modeling and Normalization: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams – De -normalization – Another Example of Normalization.

UNIT - II

Oracle9*i*: Overview: Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.

UNIT - III

Working with Table: Data Management and Retrieval: DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. Functions and Grouping: Built-in functions –Grouping Data. Multiple Tables: Joins and Set operations: Join – Set operations.

UNIT - IV

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements. PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Exceptions – Types of Exceptions.

UNIT - V

PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers.

TEXTBOOK:

1. Database Systems Using Orcle – Nilesh Shah, 2nd edition, PHI.

REFERENCE BOOKS:

1. Database Management Systems – *Arun Majumdar* & *Pritimoy Bhattacharya*, 2007, TMH.
2. Database Management Systems – *Gerald V. Post*, 3rd edition, TMH

16UCS43P	CORE PRACTICAL - V: PROGRAMMING IN RDBMS	SEMESTER - IV

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To inculcate Knowledge in Relational Database Concepts.
2. To understand transaction management concepts in database system.
3. To instill facts about PL/SQL programs.

CONTENTS

1. Create a table for Employee details with Employee Number as primary key and following fields: Name, Designation, Gender, Age, Date of Joining and Salary. Insert at least ten rows and perform various queries using any one Comparison, Logical, Set, Sorting and Grouping operators.

2. Create tables for library management system which demonstrate the use of primary key and foreign key. Master table should have the following fields: Accno, Title, Author and Rate. Transaction table should have the following fields: User id, Accno, Date of Issue and Date of Return. Create a Report (Select verb) with fields Accno, Title, Date of Issue for the given Date of Return with column formats.

3. Write a PL/SQL to update the rate field by 20% more than the current rate in inventory table which has the following fields: Prono, ProName and Rate. After updating the table a new field (Alter) called for Number of item and place for values for the new field without using PL/SQL block.

4. Write a PL/SQL to split the student table into two tables based on result (One table for “Pass” and another for “Fail”). Use cursor for handling records of student table. Assume necessary fields and create a student details table.

5. Create a database trigger to implement on master and transaction tables which are based on inventory management system for checking data validity. Assume the necessary fields for both tables.

6. Write a PL/SQL to raise the following Exception in Bank Account Management table when deposit amount is zero.

7. Create the following table *(PK - Primary Key, FK – Foreign Key)* cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head with the mapping given below:

   cat_head route_head *(cat_code PK) (cat_code FK)* route_head route_detail *(route_id PK) (route_id FK)* ticket head ticket detail *(tick_no PK) (tick_no FK)* place_head route_detail *(place_id PK) (place_id FK)*

   a. Alter the table ticket header to add a check constraint on ticket_no to accept values between 1 and 500
   b. (ii) Alter table route header to add a column with data type as long. Data Manipulation Basics

8. Perform the following operations using the tables created above:
   a. Insert values to above tables
   b. Display only those routes that originate in madras and terminate at cochin
   c. Display only distinct category code from the table route_header in descending manner.
   d. Update the table route_header to set the distance between madras and coimbatore as 500

9. Write a PL/SQL block to update the bus_station to be ―ERODE‖ where place_id is '01' or _05' [place_header]

   a. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 than update the fare to be 200
   b. Write a Database trigter before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday
   c. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details

10. Develop a Simple Project for Student Database Management System.

15UCS4AA	ALLIED - IV: CYBER LAW AND SECURITY	SEMESTER - IV

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. An overview of Information Security and Assurance.
2. An exposure to the spectrum of security activities, methods, methodologies, and procedures
3. Emphasis on practical aspects of Information laws and security.

CONTENTS

UNIT - I

Overview of cyber law-Copy Right-Sources of risk-Infringement-Sources of risk-Criminal Liability-Privacy Act-Criminal Liability-Electronic contracts and digital signatures.

UNIT - II

Is there security problem in Computing? What does security mean? – Attacks- The meaning of Computer security-Computer Criminals-Methods of Defense- Hardware and software security.Elementary Cryptography: Terminology & background- Substitution Ciphers-Transpositions- Making good Encryption Algorithms- DES.

UNIT - III

Program Security: Secure Programs- Non malicious Programs Errors-Viruses & other Malicious code- Targeted Malicious code- Controls against Program Threats.

UNIT - IV

Operating System: Protected objects & methods of Protections- Memory and Address protection - User Authentication. Designing trusted Operation operating system: What is trusted system?- Security policies-Models of security- Trusted OS design.

UNIT - V

Database Security: Introduction to Database, Security Requirements- Reliability & Integrity- Sensitive data- Inference- Multilevel Database- Proposal for Multilevel Security.

TEXT BOOKS:

1. *Jonathan Rosenoer*, "Cyber Law-The Law of Internet", Springer. 2nd edition,1996.
2. *Charles P. Pfleeger* and *Shari L. Pfleeger*."Security in Computing" Prentice-Hall. 3rd Edition.

REFERENCE BOOK:

1. *Dieter Gollmann* "Computer Security". John Wiley & Sons, 2nd Edition.

16UCS4SP	SKILL BASED PRACTICAL – I: MULTIMEDIA AND ANIMATION	SEMESTER - IV

Total Credits: 3
Hours Per week: 3

OBJECTIVES:

1. To put on knowledge on the basic concepts of Photoshop
2. To expand information on the concepts of Animation

CONTENTS

1. Create Sun Flower using Photoshop.
2. Animate Plane Flying in the Clouds using Photoshop.
3. Create Plastic Surgery for the Nose using Photoshop.
4. Create See-through text using Photoshop.
5. Create a Web Page using Photoshop.
6. Convert Black and White Photo to Color Photo using Photoshop.
7. Design a Visiting Card containing at least One Graphic and Text Information.
8. Take a photographic image. Give a title for the Image. Put the border. Write your names. Write the name of the institution and place.
9. Prepare a cover page for the book in your Subject area. Plan your own design.
10. Adjust the brightness and contrast of the Picture so that it gives an elegant look.

16UCS53A	CORE -VIII: DATA COMMUNICATION AND NETWORKS	SEMESTER - V

Total Credits:4
Hours per Week: 6

OBJECTIVES:

1. To instill the knowledge on network communication.
2. To inculcate the knowledge on internet working concepts.

CONTENTS

UNIT - I

Introduction to Data Communications and Networking – Information Encoding – Analog and Digital Transmission Methods.

UNIT - II

Modes of Data Transmission and Multiplexing -Transmission Errors: Introduction –Error Classification -Types of error- Error Detection and Correction. Transmission Media: Guided Media, Unguided Media – Network Topologies: Mesh, Star, Tree, Ring, Bus – Switching: Circuit switching, Message switching, Packet switching.

UNIT - III

Routing Algorithms**:** Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms-Network Protocols and OSI Model-Integrated Services Digital Network (ISDN).

UNIT - IV

Internetworking Concepts: Introduction – The Problems in Internetworking - Internetworking Devices- Introduction to TCP / IP, IP, ARP, RARP, ICMP

UNIT - V

TCP: Features of TCP, Relationship between TCP and IP, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format – User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP).

TEXT BOOK:

1. *Achyut S.Godbole*. 2007. Data Communications and Networks, Tata McGraw Hill Publications.

REFERENCE BOOKS:

1. *Behrouz A. Forouzan*. 19th reprint, 2007. Data Communications and Networking – SECOND EDITION UPDATE, Tata McGraw-Hill Publication.
2. *Andrew S. Tanenbaum*. 3rd Edition, 2000. Computer Networks, Prentice Hall of India.

16UCS53B	CORE - IX: . NET PROGRAMMING	SEMESTER - V

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To gain knowledge about the methodologies behind VB.Net and ASP.Net
2. To develop Dot Net based application using ADO.NET and SQL Managed
3. Provide-OLEDB Managed Provider.

CONTENTS

UNIT - I

What is .NET? Introduction - The Vision: Web Services - Heterogeneous Environment - Smart Devices -The Platform - The .NET Framework: Common Language Runtime Class Libraries - Development Tools: Programming Languages-The .NET Framework SDK- Visual Studio .NET- Foundation Services: User Authentication Service.From C++ to C# : Simple Hello User program C# for C++ Programmes : Primitive Data Types- Member Accessibility - Field Initialization - Type Constructors, Reference and Value Types Arrays , Properties , Indexes , Delegates and Evens - Method Parameters - Implementation Inheritance - Error Handling -Garbage Collections. Common Programming Paradigms: Client-Server Programming - Interface-Based Programming Deployment - Diagnostics & Support: Tracing - Using the Debugger - Documentation.

UNIT - II

Essential of the .NET Framework: .Net Frame Work Overview - Anatomy of the Framework - Installing the Framework- Managed Code Execution. Overview Common Language Runtime: Common Type System - Common Language Specification - Value Types and Reference Types. Microsoft Intermediate Language - Managed Code Execution: Metadata Validation- Code Validation & Verification- JIT Compilation- Code execution. Automatic Memory Management- Garbage Collection- Generations – Finalization- Disposing Resources- Using I Disposable objects.

UNIT - III

Server controls - post back -Data Binding - Web Server Controls -HTML Server Controls- Validation Controls. Database Access: Error Handling - Database Access Using ADo.NET - Connection - Command, Data Adapter & Dataset - Data Reader, Connection Pooling.
Creating More Advanced ASP.NET Pages: Communicating with the Browser - The Response Object - Cookies - Query String and Forms Collections- WebConfig- Session Management and Variable Scope- Session Events- Session Variables- View State Variables - Application Variables.

UNIT - IV

ASP.NET Server Controls. Web Forms Server Controls Recommendation: Validation Controls-Controls that incorporate logic to validate user inputs like a required field, between ranges, or pattern matching. ASP.NET Data Access: Data Binding Server Controls-Viewing Data Collections in a Grid. ASP.NET Caching Mechanism for caching - Dynamic response data. Page Output Caching.

UNIT – V

Web Services: Introduction to web services-Architecture of Web service: Universal Discovery Description and Integration-Web Service Description Language –Accessing-Web service using different Clients.

TEXT BOOKS:

1. *Pradeep Tapadiya* ".NET Programming – A practical guide using C#", Pearson education, 2002.
2. *Chris Ullman, John Kauffman*, Beginning ASP.NET 1.1 with VB.NET 2003, Wrox Publications.
3. *Hank Meyne & Scott Davis* Developing Web Applications with ASP.NET with C#, Wiley Publishing Company, 2002.

REFERENCE BOOKS:

1. *Richard Blair, Mathew Renolds*, Beginning VB.NET 2003, 3rd edition, Wrox Publication
2. *Deitel and Deitel*, Visual Basic.NET How to Program, Pearson Education, 2nd edition, Greg Buczek, ASP.NET Developer's Guide, Tata McGraw-Hill, 2002.

16UCS53P	CORE PRACTICAL - VI: PROGRAMMING IN .NET	SEMESTER - V

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. To enable the students to acquire basic knowledge in Dot net Programming.
2. The .net framework is one of the tools provided by the .net platform.
3. It provides an Environment for building, deploying and running web services and other applications like Console applications; Windows based applications, Web sites.

CONTENTS

1. Write a Simple program to display current data and time using delegates and events.
2. Create a C# .Net program to add a string to Combo box with value of Textbox when user clicks button control.
3. Create a C# .Net program to display hierarchical representations of items with tree view control using Runtime coding.
4. Create a C#.Net program to handle user defined Exceptions.
5. Create a C# .Net program for Employee details to read and display the data using constructors and member functions.
6. Create an application in C# .Net to demonstrate the following events:
7. Click ii. Mouse Down iii. Key Down iv. Form Load
8. Create an application in C# .Net for File Menu with Menu items New, Open, Save, Print and Exit & Edit Menu with Menu items Cut, Copy, Paste, Find and Undo.

9. Create an application in C# .Net for student information database and perform the following operations:

   i. Addition ii. Deletion iii. Updation

10. Create a login form to check the authentication of the user.
11. Design a simple calculator.
12. Design a notepad like application using menu editor.
13. Create a web form to display the data in a data grid control (purchase database).
14. Validate the personal information using the validate controls.
15. Design a simple web site that makes use of Master Pages.

15UCS5SA	SKILL BASED SUBJECT –II : SOFTWARE TESTING	SEMESTER - V

Total Credits: 3
Hours Per week: 4

OBJECTIVES:

1. To discuss the distinctions between validation tests and defect testing.
2. To describe the principles of system and component testing.
3. To describe strategies for generating system test cases.
4. To understand the essential characteristics of tool used for test automation.

CONTENTS

UNIT - I

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

UNIT - II

Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash.

UNIT - III

System and Acceptance Testing: System Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT - IV

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – Tools for Performance Testing – Process for Performance Testing – Challenges. Regression Testing: What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT - V

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

TEXTBOOK:

1. *Srinivasan Desikan & Gopalswamy Ramesh*, Software Testing Principles and Practices**,** Pearson Education, 2006.

REFERENCE BOOKS:

1. *William E.Perry*, Effective Methods of Software Testing, Third Edition, Wiley Publishing, Inc.
2. *Renu Rajani, Pradeep Oak*, Software Testing - Effective Methods, Tools and Techniques, Tata McGraw-Hill, 2003.

15UCS5SP	SKILL BASED PRACTICAL –II : SOFTWARE TESTING	SEMESTER - V

Total Credits: 3
Hours Per week: 4

OBJECTIVES:

The subject aims to build the concepts regarding:

1. To learn and develop test cases.
2. To learn and development testing strategy.
3. To learn and development various testing tools.

CONTENTS

1. Performing a test in the Win Runner Testing Tool to analyze the suitable problem and displaying the results.
2. Performing a test in the Load Runner Testing Tool to analyze the suitable problem and displaying the results.
3. Write at least 10 TEST CASES for the programs of your choice. Test cases can be for input data, conditional expressions, control transfer, output, etc. Run-Test-Debug- until all the test cases are in success status.

TEST CASE EXAMPLES:

Test-Id	Test Description	Test Steps	Expected Output	Actual Output	Status
TC-01	Acceptance of 10 digit input data	Input 10 Digit Number	Accepting 10 digit number	Accepted 10 digit number	Success
TC-02	Non- acceptance of character data	Input a character data X	Character X should not be accepted	Accepting Character data	Failure
Modify PIC X(10) into PIC 9(10) and then run program for Test-id TC-02 again					
TC-02	Non- acceptance of character data	Input a character data X	Character X should not be accepted	Character data not accepted	Success
TC-03	Sum of 10 digit is in single digit	Output data	Single digit sum	Single digit Sum	Success

4. Creating test cases and testing the functionality of calculator.
5. Creating test cases and testing the C Program which generates sum of a individual digit of a 5-digit number until a single digit is produced.
6. Testing the C program: Sort and store the elements of two arrays of integers into the third list.
7. Testing the C program: Experiment the operations of STACK using array implementation.
8. Testing the C++ Program: Palindrome string checking program. (Using Pointers)

16UCS63A	CORE – X: PHP & MySQL	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To implement the web applications using PHP
2. To know about PHP in a detailed manner.

CONTENTS

UNIT - I

Essential PHP: Enter PHP - Creating your development environment-creating and running first PHP-mixing HTML and PHP - printing some text - adding comments to PHP code - working with variables - creating variables - creating constants - internal data types – Operators - Control Structure Statements- Branching and Looping.

UNIT - II

Strings and Array: The string functions, converting to and from strings - formatting text strings - building yourself some arrays - modifying the data in arrays - deleting array elements Creating Functions - Creating function in PHP, Passing functions some data - introducing variable scope in PHP - Accessing global data, working with static variables - PHP conditional functions - PHP variable functions - nesting functions - creating include files - returning errors from functions.

UNIT - III

Reading Data in Web Pages - Setting up web pages to communicate with PHP- handling text fields- handling text areas - handling check boxes - handling radio buttons - handling list boxes -handling password controls - handling hidden controls - handling image maps - handling file uploads - handling buttons.

UNIT - IV

PHP Browser : Handling Power – using PHP server variable, using HTTP Headers- getting browser type, redirecting browsers with HTTP headers- Dumpling a form's data all once- Handling form data with custom array- performing data validation- checking the user entered data, requiring numbers- requiring text- persisting user data.
File handling : fopen, feof, fgetc, file_get_contents, reading a file into an array with file, file_exists, filesize, fread, fscanf,, parse_ini_file, getting file

info with stat, fseek, copy, unlink, fwrite, reading and writing binary files, fwrite, file_put_contents, locking files.

UNIT - V

Working with databases: What is database? : creating a MySql database- creating a new table- putting data into the new database - accessing the database in PHP- updating databases- inserting into database- deleting records- creating new table- creating new database- sorting your data.

TEXT BOOK:

1. *Steven Holzner*, 2008. "Complete Reference PHP", Tata Mc Graw Hill.

REFERENCE BOOKS:

1. *Steve Suehring, Tim Converse, Joyce Park*. 2009. PHP6 MySQL (Bible).
2. *Vikram Vaswani*.2004. The Complete Reference MYSQL, TMH Publications

16UCS63P	CORE PRACTICAL - VII: PHP & MySQL	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. Understand the basics of the Web Technology
2. Learn all major concepts of PHP and MySQL that beginner developers need to master
3. Gain the PHP programming skills needed to successfully build interactive, data-driven sites

CONTENTS

1. Write a program to send a HTML formatted Email in PHP.
2. Write a program to do different types of Sorting in PHP.
3. Write a program to do String Manipulation in PHP.
4. Write a PHP program to get color code from the user which displays the color name.
5. Write a PHP program to do calculator functions
6. Write a program to upload a file in PHP.
7. Write a program for login authentication using PHP and MySQL
8. Create a Pay slip for an employee using PHP and MySQL
9. Create an Electricity bill using PHP and MYSQL, and generate the reports
10. Create a student data base with DML Queries.
11. Write a program to demonstrate how a web page can communicate with a web server while a user types characters in an input field
12. Download a small project module and convert into our Requirement

    Example website

    a. www.phpclasses.com
    b. www.codeguru.com

15UCS5EA	ELECTIVE- I :E-LEARNING	SEMESTER - V

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. E-Learning can accommodate different learning styles and facilitate learning through a variety of activities
2. Develops knowledge of the Internet and computers skills that will help learners throughout their lives and careers.
3. To learn development of E-Learning Contents.

CONTENTS

UNIT - I

E-Learning Evolution - Advantages and Disadvantages of E-Learning - Instructional design Models for E-Learning -Applying User-Centered Design to E-Learning - Methods and Measures to Retain Students Enrolled in Online Education -Choosing an Effective Communication Tool.

UNIT - II

Flash: Geometric shape tools – Drawing tools- fill and stroke controls- Selection Tools.

UNIT - III

Creating Animation and Effects: Animation strategies – TimeLine Animation – Character animation Techniques – fundamentals of Editing.

UNIT - IV

Sound: Import and Export formats – Importing sound to flash – adding sound to timeline – synchronizing audio to animations- stopping sounds – Working with sound forge.

UNIT - V

Video: Integrating and Importing Video – Editing video with Adobe Premiere – Organizing & Editing clips – Adding Transition between clips – Adding special effects to video.

TEXT BOOKS:

1. *Robert Reinhardt* and *Snow Dowd*, Macromedia flash 8 Bible, First Edition, Wiley India (P) Ltd, 2006.
2. *Pamela Berman*, E-Learning Concepts and Techniques, Institute for Interactive Technologies, Bloomsburg University of Pennsylvania, USA (e-book), 2006.

REFERENCE BOOKS:

1. *Dinesh Maidasani* , Flash 8, First Edition, Firewall Media Publications, 2006.
2. *Fred T.Hofstetter,* MultiMedia Literacy, Tata McGraw Hill, 2001.

15UCS5EB	ELECTIVE- I: COMPUTER NETWORKS	SEMESTER – V

Total Credits: 4
Hours Per week: 5

OBJECTIVES:

1. To inculcate knowledge on networking concepts and technologies like wireless, broadband and Bluetooth.
2. Understand state-of-the-art in network protocols, architectures, and applications.
3. Exposure to the TCP/IP protocol suite.

CONTENTS

UNIT - I

Network Hardware: LAN – WAN – MAN – Wireless – Home Networks. Network Software: Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. Reference Models: OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

UNIT - II

PHYSICAL LAYER - Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. Communication Satellites: Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

UNIT - III

DATA-LINK LAYER: Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. MEDIUM-ACCESS CONTROL SUB LAYER: Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

UNIT - IV

NETWORK LAYER: Routing algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements of Transport Protocols – Internet Transport Protocols: TCP.

UNIT - V

APPLICATION LAYER: DNS – E-mail. NETWORK SECURITY: Cryptography– Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

TEXTBOOK:

1. *Andrew S. Tanenbaum*, COMPUTER NETWORKS, Pearson Education, Fourth Impression,2010.

REFERENCE BOOKS:

1. *Achyut Godbole* , DATA COMMUNICATION AND NETWORKS , Tata MaGraw-Hill, Seventh Reprint 2007..
2. *Uyless Black*, COMPUTER NETWORKS - Protocols, Standards, and Interfaces , Prentice-Hall International, 1993.

15UCS5EC	ELECTIVE - I : UNIFIED MODELING LANGUAGE	SEMESTER - V

Total Credits: 4
Hours Per week:5

OBJECTIVES:

1. Introducing students to the concepts and terms used in the object-oriented approach to systems analysis and design
2. Highlighting the importance of object-oriented analysis and design and its limitations.
3. Showing how to apply the process of object-oriented analysis and design to software development.

CONTENTS

UNIT - I

UML : Introduction to UML – Basic Structural Modeling: Classes – Relationships-Common Mechanism – Diagrams – Class diagrams.

UNIT - II

Advanced Structural Modeling: Advance classes – Advance relationships – Interfaces - Types and Roles – Packages - Instances – Object diagrams.

UNIT - III

Basic Behavioral Modeling – Interactions – Use Cases –Use Case diagrams- Interaction Diagrams – Activity diagram.

UNIT - IV

Advanced Behavioral Modeling: Events and Signal – State machines – Process and Threads – Time and Space – State chart diagrams.

UNIT - V

Architectural Modeling – Components –Deployment –Collaborations.

TEXT BOOK :

1. *Grady Booch, James Rumbaugh and Ivar Jacobson,* "The Unified Modeling Language User Guide", Second Edition, Pearson Education, Fourth Impression, 2008.

15UCS6EA	ELECTIVE – II : NETWORK SECURITY AND CRYPTOGRAPHY	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. Extensive, detailed and critical understanding of the concepts, issues, principles and theories of computer network security.
2. Detailed and practical understanding of formalisms for specifying security related properties and validating them, using model checking.
3. Critical theoretical and detailed practical knowledge of a range of computer network security technologies as well as network security tools and services.

CONTENTS

UNIT - I

Service mechanism and attacks – The OSI security architecture – A model for network security – symmetric Cipher model – Substitution techniques – transposition techniques – simplified des – block chipper principles – the strength of des – block chipper design principles and modes of operation.

UNIT - II

Triple des-blow fish – RCS Advanced Symmetric Block Ciphers –RC4 stream Cipher confidentially using symmetric encryption – introduction to number theory – public – key cryptography and RSA.

UNIT - III

Key management – Diffle Hellman key exchange – message authentication and hash function – hash algorithm – digital signature and authentication protocols – digital signature standard.

UNIT - IV

Authentication application – pretty good privacy – S/MIME – ip security – web security considerations –secure socket layer - transport layer security –secure electronic transaction.

UNIT - V

Intruders –intrusion detection – password management –viruses and related threats – virus countermeasures – fire wall design principles – trusted systems

TEXTBOOK:

1. *William Stallings*, Cryptography and Network Security Principles and Practices, Fourth edition, Pearson Education Limited.

REFERENCE BOOKS:

1. *Atul kahate* —Cryptography and Network Security, Third Edition, McGraw Hill Education(India) Private Limited.

2. *Behrouz A Forouzan* and *Debdeep Mukhopadhyay*, Cryptography and Network Security,Second Edition, Tata MaGraw-Hill.

15UCS6EB	ELECTIVE – II : ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM	SEMESTER-VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. Understand the strengths and limitations of various state-space search algorithms, and choose the appropriate algorithm for a problem.
2. Formulate and solve problems in the framework of constraint programming.
3. Represent domain knowledge in propositional and first-order logic. To have enriched knowledge regarding heuristic search, Knowledge representation and Expert systems.

CONTENTS

UNIT - I

Introduction: AI Problems – AI techniques – Criteria for success. Problems, Problem Spaces, Search: State space search – Production Systems – Problem Characteristics – Issues in design of Search.

UNIT - II

Heuristic Search techniques: Generate and Test – Hill Climbing – Best-Fist, Problem Reduction, Constraint Satisfaction, Means-end analysis.

UNIT - III

Knowledge representation issues: Representations and mappings – Approaches to Knowledge representations – Issues in Knowledge representations – Frame Problem.

UNIT - IV

Using Predicate Logic: Representing simple facts in logic – Representing Instance and Isa relationships – Computable functions and predicates – Resolution – Natural deduction.

UNIT - V

Representing knowledge using rules: Procedural Vs Declarative knowledge – Logic programming – Forward Vs Backward reasoning – Matching – Control knowledge-Brief explanation of Expert Systems-Definition- Characteristics-architecture-Knowledge Engineering- Expert System Life Cycle-Knowledge Acquisition Strategies-Expert System Tools.

TEXT BOOK:

1. *Elaine rich* and *Kelvin Knight*, Artificial Intelligence, Tata McGraw-hill,Second Edition, 1991.

REFERENCE BOOKS:

1. *Stuart Russell & Peter Norvig*, Artificial Intelligence a modern Approach, Second Edition Pearson Education.
2. *George F Luger* Artificial Intelligence, Fourth Edition, Pearson Education, 2002.
3. *V S Janaki Raman, K Sarukes* and *P Gopalakrishnan*, Foundations of Artificial Intelligent and Expert Systems, MacMillan India limited.

15UCS6EC	ELECTIVE – II : MOBILE COMPUTING	SEMESTER - VI

Total Credits: 4
Hours Per week:6

OBJECTIVES:

1. To introduce the mobile communication fundamentals.
2. To enable the students for writing android based script for application development.
3. To learn and understand eclipsed based IDE programming for the mobile environment.

CONTENTS

UNIT - I

Introduction - History of Wireless communication-Applications - Market for Mobile communications - Characteristics of Wireless Technologies - Cellular System infrastructure – A simplified reference model. Medium access control – Motivation for a specialized MAC-SDMAFDMA-TDMA-CDMA.

UNIT - II

Telecommunication systems – GSM - Mobile services - System architecture - Radio interface – Protocols - Localization and calling – Handover – Security - new data services – DECT – System architecture -. Satellite systems – Applications – Basics – GEO – LEO – MEO.

UNIT - III

Android: Introduction to Android-Eclipse -Downloading and installing Eclipse –Downloading and installing the JRE & Eclipse.

UNIT - IV

Downloading and installing the android SDK-Downloading and installing the android plugin for Eclipse-configuring the Android plug in for eclipse-Exploring the Android SDK- Contents in the Android SDK-Application Life Cycle

UNIT - V

Application: Hello World!-Creating Your First Android Project in Eclipse-Examining the Android created files-Hello World!-Creating the Hello World! Activity in the Windows CLI Editing the project files-Adding the JAVA_HOME Variable-Compiling and Installing the Application.

TEXTBOOKS:

1. *J. Schiller*, Mobile Communications, Second Edition, Second Impression, Pearson Education Limited.
2. *Jerome (J.F.)* and *DiMarzio,* Android- A Programmer's Guide, First Edition, McGraw Hill,2008.

15UCS6ED	ELECTIVE – III : DATA MINING	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. To introduce students to the basic concepts and techniques of Data Mining.
2. To develop skills of using recent data mining software for solving practical problems.
3. To gain experience of doing independent study and research.

CONTENTS

UNIT - I

Basic Data Mining Tasks – Data Mining Versus Knowledge Discovery in Data Bases – Data Mining Issues – Data Mining Matrices – Social Implications of Data Mining – Data Mining from Data Base Perspective.

UNIT - II

Data Mining Techniques – a Statistical Perspective on data mining – Similarity Measures– Decision Trees – Neural Networks – Genetic Algorithms.

UNIT - III

Classification: Introduction – Statistical – Based Algorithms – Distance Based Algorithms – Decision Tree – Based Algorithms – Neural Network Based Algorithms – Rule Based Algorithms – Combining Techniques.

UNIT - IV

Clustering: Introduction – Similarity and Distance Measures – Outliers – Hierarchical Algorithms . Partitional Algorithms.

UNIT - V

Association Rules: Introduction - Large Item Sets – Basic Algorithms – Parallel & Distributed Algorithms – Comparing Approaches – Incremental Rules – Advanced Association Rules Techniques – Measuring the Quality of Rules.

TEXT BOOK:

1. *Margaret H.Dunbam*, Data Mining Introductory and Advanced Topics, Pearson Education, 2003.

REFERENCE BOOK:

1. *Jiawei Han & Micheline Kamber*, Data Mining Concepts & Techniques, Academic Press, 2001.

15UCS6EE	ELECTIVE – III : OPEN SOURCE SOFTWARE	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. Discuss the issues and currents in open source and open source development
2. Describe the history and philosophy of an open source project
3. Choose between the various open source licenses understanding the implications for users, developers, and the software community in general

CONTENTS

UNIT - I

Introduction to open sources – Need of open sources – advantages of open sources – application of open sources. Open source operating systems: LINUX : Introduction – general overview –Kernel mode and user mode –process – advanced concepts –scheduling – personalities – cloning – signals – development with Linux.

UNIT - II

MySQL : Introduction – setting up account – starting, terminating and writing your own SQL programs-record selection Technology – working with strings – Date and Time – sorting query results – generating summary –working with meta data –using sequences – MySQL and Web.

UNIT - III

PHP: Introduction –programming in web environment –variables-constants – data types – operators – statements – functions – arrays – OOP – string manipulations and regular expression – file handling and data storage – PHP and SQL database – PHP and LDAP – PHP connectivity – sending and receiving E-mails – debugging and error handling – security –templates.

UNIT - IV

Python: Platforms-Data types and operations-Main control structure-Functions-File I/O-OOP basics-Network programming-Basics of image processing-CGI scripting -Online resources & communities.

UNIT - V

Perl: Platforms-Data types and operations-Control structures-Subroutines-Regular expressions-CGI scripting-Online resources & communities.

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TEXT BOOKS:

1. *Remy Card, Eric* and *Frank Mevel*, The Linux Kernel book, Wiley Publications, 2003.
2. *Steve Suchring* , MySQL Bible, Wiley Publications, 2002.

REFERENCE BOOKS:

1. *Rasmus Lerdorf* and *Levin Tatroe* , Programming PHP , O'Reilly, 2002.
2. *Wesley J. Chun* , Core Python Programming Prentice Hall, 2001.
3. *Martin c. Brown* , *Perl* : The Complete Reference, Second Edition, Tata McGraw-Hill, 2009
4. *Vikram Vaswani* ,MySQL:The Complete Reference, Second Edition, Tata McGraw-Hill 2009.
5. *Steve Holzner*, PHP : The Complete Reference, Second Edition, Tata McGraw-Hill, 2009.

16UCS6EF	ELECTIVE – III : MANAGEMENT INFORMATION SYSTEM	SEMESTER - VI

Total Credits: 4
Hours Per week: 6

OBJECTIVES:

1. Discuss the roles played by information technology in today's business and define various technology architectures on which information systems are built.
2. Define and analyze typical functional information systems and identify how they meet the needs of the firm to deliver efficiency and competitive advantage.
3. Identify the basic steps in systems development.

CONTENTS

UNIT - I

System and Information Concepts: General Model, Types of Systems, Subsystems, Feedback control, Systems approach to organization, Law of requisite variety, Control by exception, Information Concepts, Types of Information, Quality of Information, Value of Information.

UNIT - II

Management Information System: Definitions, Role of MIS, MIS in Academics, Structure of MIS based on management activity and functions, System and Information concepts to MIS.

UNIT - III

Decision Making Systems, Modeling and Analysis: Decision Making Definition and Concept, Phases of Decision Making Process, Modeling Process, Static and Dynamic Models, Sensitivity Analysis, Heuristic programming, Simulation.

UNIT - IV

Decision Support System: DSS Definition, Characteristics & Capabilities of DSS15, DSS Application.
Expert System: Basic concepts of Expert System, Structure of Expert System, How Expert System works, Expert System Application, Comparison of Conventional & Expert System

UNIT - V

Executive Information and Support Systems: Enterprise & Executive Information System Concept and Definition, Enterprise & Executive Support System Concept and Definition, Information needs of Executives, Characteristics and benefits of EIS, Comparing and Integrating EIS and DSS.

TEXT BOOKS:

1. *GordanDevis* and *Margrethe H. Oison*, Management Information System, Second Edition, Tata McGraw-Hill, 21st reprint 2008.
2. *Robert Murdick, Joel e. Ross*, Information Systems for Modern Management - Prentice-Hall, 1995.

REFERENCE BOOKS:

1. *Efraim Turban*, Decision Support & Intelligent System, Second Edition, Pearson/Prentice Hall, 2005.
2. *WamanS..Jawadekar*, Management Information System, Third Edition, Tata McGraw-Hill, Eighth reprint 2008.

16UNM34L	PART IV: NMEC-I : BASICS OF HTML	SEMESTER - III

Total Credits: 2
Hours per Week: 2

OBJECTIVES:

1. To present the fundamental concepts of Internet and its technologies
2. To furnish the knowledge on HTML

CONTENTS

UNIT - I

Introduction to the Internet - Computers in Business, Networking, Internet, E-mail, Resource Sharing, Gopher, World Wide Web, Usenet, Telnet, Bulletin Board Service, Wide Area Information Service.

UNIT - II

Internet Technologies - Modem, Internet Addressing, Physical Connections, Telephone Lines - Internet Browsers - Internet Explorer, Netscape Navigator.

UNIT - III

Introduction to HTML - History of HTML, HTML Documents, Anchor Tag, Hyper Links - Head and Body Sections - Header Section - Title, Prologue, Links, Colorful Web Page, Comment Lines.

UNIT - IV

Designing the Body Section - Heading Printing, Aligning the Headings, Horizontal Rule, Paragraph, Tab Settings, Lists, Unordered Lists, Ordered Lists.

UNIT - V

Table Handling – Tables, Tables Creation in HTML - Frames – Frameset Definition, Frame Definition, Nested Framesets.

TEXT BOOK:

1. *C. Xavier*, World Wide Web Design with HTML, TMH, 19th Reprint, 2008.

REFERENCE BOOKS:

1. *Thomas A. Powell*, HTML& XHTML, TMH, Fourth Edition, Thirteenth Reprint, 2007.
2. *N.P. Gopalan and J. Akilandeswari*, Web Technology A Developer's Perspective, PHI, Second Printing, July 2008.

16UNM44L	PART IV : NMEC- II : HARDWARE AND NETWORKING	SEMESTER - III

Total Credits: 2
Hours per Week: 2

OBJECTIVES:

To instill knowledge on the

1. Basics of Computer Hardware
2. Basics of Networking

CONTENTS

UNIT - I

Evolution of personal computers – Overview of system and Components – Input and Output Devices. Number Systems : Decimal Number, Binary Number, Octal , HexaDecimal.

UNIT - II

Computer Memory: RAM, ROM, Random Access – Volatile Versus Non Volatile – Bits, Bytes – Memory Speed – Ram Types: Cache Memory, Static Ram – Cache Memory Types.

UNIT - III

System Resources – Interrupt Request – Checking Out (IRQ), IRQ settings, IRQ Connections, IRQ Assignments, Configuring IRQ settings – Input Output addresses – Memory address- DMA.

UNIT - IV

Network and communications – Network Basics – Network structure – Network components – servers – cabling- Cable types, Cable characteristics- Network topology – Network devices.

UNIT - V

Network addressing – MAC address – IP address – PC Configuring – Modem types – Internal versus external modem – Dial up connection – Wireless Network – Access Point and Network Adapters – Bluetooth.

TEXT BOOK:

1. "PC Hardware a Beginner's Guide" Ron Gilster, Tata McGraw Hill, Edition 2001.

16UCSSS1	DATA SCIENCE AND BIGDATA ANALYTICS	SEMESTER - I TO V

Total Credits: 1

OBJECTIVES:

1. To expand knowledge on handling the big data
2. To Develop Hadoop applications

CONTENTS

UNIT - I

Big Data- From the Business Perspective –Characteristics Of Big Data – Importance Of Big Data- Big Data Analytics

UNIT - II

Introduction to data science – Working with data at scale – Data scientist – SMAQ for Big Data - Big data and semantic web

UNIT - III

History of hadoop – Components of Hadoop- Application development – Getting data into Hadoop

UNIT - IV

MapReduce- Scaling out – Hadoop Streaming –pipes – Distributed file system- concepts – interfaces – archieves.

UNIT - V

Hadoop I/0 – Data integrity – Compression- Serialization – File based data structure

TEXT BOOKS:

1. *Tom White,* Hadoop: The Definitive Guide, O'Reilly Media publications,2009.
2. *Paul C.Zikopolus, Chris Eaten, Dirk Deroos, Thomos Deutsch, George Lapis*, Understanding Big Data : Analytics For Enterprise Class Hadoop And Streaming Data, TATA Mcgrow Hill Publications, 2012.

REFERENCE BOOK:

1. *Philipp K. Janert*, Data Analysis with Open Source Tools, O'Reilly Media publications,2011.

16UCSSS2	ENTERPRISE RESOURCE PLANNING	SEMESTER - I TO V

Total Credits: 1

OBJECTIVES:

1. The capability to streamline different organizational processes and work flows
2. The ability to effortlessly communicate information across various departments
3. Improved efficiency, performance, and productivity levels
4. Implement Improved customer service and satisfaction

CONTENTS

UNIT - I

ERP - An Overview, Benefits of ERP - ERP & related Technologies - BPR, Data Warehousing, Data mining, OLAP, SCM, CRM.

UNIT - II

Implementation Challenges - Strategies - Life Cycle - Pre-Implementation Tasks - Requirements Definition - Methodologies - Package Selection - Project Team - Process Definition - Vendors & Consultation - Data Mitigation -Project management & Monitoring - Post Implementation activities

UNIT - III

Operation & Maintenance - Performance Measurement - Maximizing ERP Software - Business Modules - Finance - Manufacturing - HR Plant maintenance - Materials management - Quality management - Marketing - Sales- Distribution & Service

UNIT - IV

Market place - Dynamics - SAP AG - Oracle - People Soft - JD Edwards - QAD Inc - SSA Global - Lawson Software - Epicor – Intuitive

UNIT - V

Enterprise Application Integration - ERP & E-business - ERP II - Total quality management - Future Directions - Trends in ERP.

TEXT BOOKS:

1. *Alexis Leon*, " ERP Demystified" II Edition , Tata McGraw Hill, New Delhi, 2000

2. *Alexis Leon*," Enterprise Resource Planning: II Edition, Tata McGraw Hill.

REFERENCE BOOK:

1. *Vinod Kumar Crag* and *N.K.Venkitakrishnan*, "Enterprise Resource Planning - Concepts And Practice ", Prentice Hall of India, New Delhi, 1999

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