

| Course Code | Title | | |
|-------------|--|---------------|---------------|
| 17U3CKC101 | Core Paper I Computing Fundamentals and C Programming | | |
| Semester: I | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

The course aims to provide exposure for problem solving through programming and train basic concept of the C programming language.

Course Outcome:

- Understand the fundamental programming constructs.
- Understand various features in C programming
- Understand how to develop and implement and application programs in the C language
- Understand various forms of data, control and object structures supported by the C language

Offered by: Information Technology

Course Content**Instructional Hours / Week: 4**

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | Fundamentals of Computers : Introduction – History of Computers-Generations of Computers- Classification of Computers-Basic Anatomy of a Computer System-Input Devices-Processor-Output Devices-Memory Management – Types of Software- Overview of Operating System-Programming Languages-Translator Programs-Problem Solving Techniques | 1 | 1 |
| Instructional Hours | | | 12 |
| II | Overview of C: - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression – operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output. | 1 | 3,4,5,6 |
| Instructional Hours | | | 12 |

| | | | |
|----------------------------|--|---|-----------|
| III | Decision Making and Branching: Introduction – if, if...else, nesting of if ...else statements- else if ladder – The switch statement, The ?: Operator – The goto Statement. Decision Making and Looping: Introduction- The while statement- the do statement – the for statement-jumps in loops. Arrays – Character Arrays and Strings | 1 | 7,8,9,10 |
| Instructional Hours | | | 12 |
| IV | User-Defined Functions: Introduction – Need and Elements of User-Defined Functions- Definition-Return Values and their types - Function Calls – Declarations – Category of Functions- Nesting of Functions - Recursion – Passing Arrays and Strings to Functions - The Scope, Visibility and Lifetime of Variables- Multi file Programs. Structures and Unions. | 1 | 11,12 |
| Instructional Hours | | | 12 |
| V | Pointers: Introduction-Understanding pointers-Accessing the address of a variableDeclaration and Initialization of pointer Variable – Accessing a variable through its pointerChain of pointers- Pointer Expressions – Pointer Increments and Scale factor- Pointers and Arrays- Pointers and Strings – Array of pointers – Pointers as Function ArgumentsFunctions returning pointers – Pointers to Functions – Pointers and Structures. File Management in C. | 1 | 13,14 |
| Instructional Hours | | | 12 |
| Total Hours | | | 60 |

Text Book:

1. E Balagurusamy,**Computing Fundamentals & C Programming** – Tata McGraw-Hill, 2008.

Reference Book(s):

1. Yashwant Kanetkar, **Let Us C**, BPB Publications, 2013.
2. Ashok N Kamthane, **Programming with ANSI and Turbo C**, Pearson Publications,2008

| Course Code | Title | | |
|-------------|--|---------------|---------------|
| 17U3CKC102 | Core Paper II Digital Fundamentals and Architecture | | |
| Semester: I | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

This course deals with fundamentals of digital computers, microprocessors and system architecture and to learn about computer fundamentals and its architecture.

Course Outcome:

- Understanding the knowledge on digital electronics.
- The functionality of logic gates, simplifying digital circuits, Boolean expressions, combinational and sequential circuits.
- Ability to solve boolean algebraic expression to digital design.
- Ability to know about computer buses, I/O peripherals and instruction execution.

Offered by: Information Technology

Course Content

Instructional Hours / Week: 4

| Unit | Description | Text Book | Chapter |
|----------------------------|--|-----------|-----------|
| I | Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates. | 1 | 5,6 |
| Instructional Hours | | | 12 |
| II | Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – shift registers-Counters. | 1 | 8 |
| Instructional Hours | | | 12 |

| | | | |
|----------------------------|--|-----------|-----|
| III | Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking | 2 | 11 |
| Instructional Hours | | 12 | |
| IV | Priority Interrupt: Daisy- Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication. | 2 | 12 |
| Instructional Hours | | 12 | |
| V | Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. | 3 | 3,7 |
| Instructional Hours | | 12 | |
| Total Hours | | 60 | |

Text Book(s):

1. Albert Paul Malvino, Donald P Leach, Goutam Saha, **Digital Principles and Applications**, TataMcGraw-Hill,2006.
2. Morris M Mano, **Computer System Architecture**, Prentice Hall of India, 2008.
3. Badri R Ram, **Advanced Microprocessor and Interfacing**,Tata McGraw-Hill, 2008.

Reference Book(s):

1. D. Morris Mano, **Digital Logic & Computer Design**, Second Edition, Prentice-Hall India, 2014
2. R S. Gaonkar, **Microprocessor Architecture. Programming and Applications with 8085/8080A**, 1990.
3. A. Mathur, **Introduction to Microprocessor**, Tata McGraw-Hill, 1993.

| Course Code | Title | | |
|-------------|--|---------------|---------------|
| 17U3ITP101 | Core Paper III Practical in C Programming | | |
| Semester: I | Credits: 4 | CIA: 40 Marks | ESE: 60 Marks |

Course Objective:

The purpose of the course will be able to enhance their analyzing and problem solving skills and use the same for writing programs in C.

Course Outcome:

- Know concepts in problem solving .
- To write diversified solutions using C language
- Implement Programs with pointers and arrays, perform pointer arithmetic, and use the file management

Offered by: Information Technology

Course Content

Instructional Hours / Week: 3

| S. No. | List of Practical |
|--------|---|
| 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.

Total Hours : 45

| Course Code | Title | | |
|--------------|----------------------------------|---------------|---------------|
| 17U3CKC203 | Core Paper IV C++ Programming | | |
| Semester: II | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective

The course aims to obtain knowledge of object-oriented concepts using C++

Course Outcome:

- Recognize similarities and common characteristics between C++ and other programming languages
- Gain the basic knowledge on object oriented concepts
- Ability to develop applications using C++ programming
- Ability to implement features of object oriented programming to solve real world problem

Offered by: Information Technology

Course Content

Instructional Hours / Week: 5

| Unit | Description | Text Book | Chapter |
|----------------------------|--|-----------|-----------|
| I | Introduction to C++: key concepts of Object-Oriented Programming –Advantages – Object Oriented Languages – I/O in C++ - C++ Declarations. Control Structures : - Decision Making and Statements : If .. else ,jump, goto, break, continue, Switch case statements - Loops in C++ : for, while, do - functions in C++ - inline functions – Function Overloading. | 1 | 1,3,4 |
| Instructional Hours | | | 15 |
| II | Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members. | 1 | 6,7 |
| Instructional Hours | | | 15 |
| III | Operator Overloading: 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. | 1 | 8,9 |
| Instructional Hours | | | 15 |
| IV | Pointers: Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and | 1 | 10,11,12 |

| | | | |
|---|--|--------------------|-----------|
| | delete operators – dynamic object – Binding, Polymorphism and Virtual Functions. | | |
| | Instructional Hours | | 15 |
| V | Files: File stream classes – file modes – Sequential Read / Write operations – Binary and ASCII Files – Random Access Operation – Templates – Exception Handling - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions | 1 | 13,14,15 |
| | Instructional Hours | | 15 |
| | | Total Hours | 75 |

Text Book:

1. Ashok N Kamthane, **Object-Oriented Programming with ANSI and Turbo C++**, Pearson Education, 2009.

Reference Book(s):

1. Herbert Schildt, **C++: The Complete Reference**, Tata McGraw Hill, 1999
2. Bruce Eckel, **Thinking in C++**, Pearson Education, 2001.

| Course Code | Title | | |
|--------------|--|---------------|---------------|
| 17U3ITP202 | Core Paper V Practical in C++ Programming | | |
| Semester: II | Credits: 4 | CIA: 40 Marks | ESE: 60 Marks |

Course Objective

The course aims to obtain knowledge of object-oriented concepts using C++

Course Outcome:

- Recognize similarities and common characteristics between C++ and other programming languages
- Gain the basic knowledge on object oriented concepts
- Ability to develop applications using C++ programming
- Ability to implement features of object oriented programming to solve real world problem

Offered by: Information Technology

Course Content

Instructional Hours / Week: 4

| S. No. | List of Practical |
|--------|--|
| 1 | Write a C++ Program to create a class to implement the data structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions. |
| 2 | Write a C++ Program to create a class ARITHMETIC which consists of a FLOAT and an INTEGER variable. Write member functions ADD (), SUB(), MUL(), DIV() to perform addition, subtraction, multiplication, division respectively. Write a member function to get and display values. |
| 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 operators ++ and == to concatenate two Strings and to compare two strings respectively. |
| 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. |
| 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 figures. 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 to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.
- 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

Total Hours : 60

| Course Code | Title | | |
|--------------|--|---------------|---------------|
| 17U3ITP203 | Core Paper VI Practical in Web Technology | | |
| Semester: II | Credits: 2 | CIA: 20 Marks | ESE: 30 Marks |

Course Objective:

The students acquire the skill to choose the technology to use based on the requirements and functionality of the web site.

Course Outcome:

- To develop an ability to design and implement static and dynamic website
- To develop HTML pages with the help of frames, scripting languages, and evolving technology like DHTML, XML.

Offered by: Information Technology

Course Content**Instructional Hours / Week: 2**

| S.No. | Lab Programs |
|-------|---|
| 1. | Create Web Page and apply background color, text color, horizontal rules and special characters. |
| 2. | Create Web Page and include images with different alignment and wrapped text |
| 3. | Create tables and format tables using basic table tags and different attributes. |
| 4. | Create a frameset that divides browser window into horizontal and vertical framesets. |
| 5. | Create Web Page and apply style rules using CSS. |
| 6. | Create Web Page including control structures using JavaScript. |
| 7. | Develop and demonstrate the usage of inline and external style sheet using CSS. |
| 8. | Write an HTML page including any required JavaScript that takes a number from one text field in the range of 0 to 999 and shows it in a another text field in words. If the number is out of range, it should show “out of range” and if it is not a number, it should show “not a number” message in the result box. |
| 9. | Write an HTML page that has one input, which can take multi-line text and a submit button. Once the user clicks the submit button, it should show the number of |

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|------------------------|--|
| | characters, words and lines in the text entered using an alert message. Words are separated with a white space and lines are separated with new line character. |
| 10. | Write an HTML page that contains a selection box with a list of 5 countries. When the user selects a country, its capital should be printed next to the list. Add CSS to customize the properties of the font of the capital (color, bold and font size). |
| 11. | Develop and demonstrate using JavaScript, a XHTML document that displays random numbers (integers). |
| 12. | Write a java script to validate the following fields in a registration page 1. Name (should contains alphabets and the length should not be less than 6 characters) 2. Password(should not be less than 6 characters) 3. E-mail(should not contain invalid addresses) |
| 13. | Design a web page using CSS which includes the following: 1) Use different font styles 2) Set background image for both the page and single elements on page. 3) Control the repetition of image with background-repeat property 4) Define style for links as a:link, a:active, a:hover, a:visited 5) Add customized cursors for links. 6) Work with layers. |
| 14. | Write an XML file which displays the book details that includes the following: 1) Title of book 2) Author name 3) Edition 4) Price Write a DTD to validate the above XML file and display the details in a table (to do this use XSL). |
| Total: 30 Hours | |

| Course Code | Title | | |
|---------------|-----------------------------------|---------------|---------------|
| 17U3CKC304 | Core Paper VII Data Structures | | |
| Semester: III | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

To enable the students to understand about the various techniques such as Linked list, Searching and Sorting and apply them to solve complex programs.

Course Outcomes:

- Understand about various operations such as searching and sorting
- Understand about the efficient storage mechanism of data
- Choose appropriate data structures for solving the complex problem
- Implement the various algorithms to solve real world problem using any programming language

Offered by: Information Technology

Course Content

Instructional Hours/Week: 5

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | Introduction: Overview - How to create Programs - How to Analyse Programs. | 1 | 1 |
| | Arrays: Axiomatization - Sparse Matrices - Representation of Arrays. | 1 | 2 |
| | Stacks & Queues: Fundamentals - Evaluation of Expressions - Multiple Stacks and Queues. | 1 | 3 |
| Instructional Hours | | | 15 |
| II | Recursion: Recursive definition and process – recursion in C – Writing Recursive program – simulating Recursion – efficiency of recursion. | 2 | 3 |
| | Queues and List: The queue and its sequential representation – Linked list - List in C – An example Simulation using linked list – other list structure. | 2 | 4 |
| Instructional Hours | | | 15 |
| III | Trees: Binary Tree – Binary Tree representation – the Huffman algorithm – representing list as Binary – Trees and their | 2 | 5 |

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|----|--|----------------------------|-----------|
| | applications – Game trees. | | |
| | Graphs: A Flow problem – The linked representation of Graph – Graph traversal and spanning forests. | 1 | 8 |
| | | Instructional Hours | 15 |
| IV | Internal Sorting: Insertion Sort - Quick Sort - 2-Way Merge Sort - Heap Sort - Shell Sort. | 1 | 7 |
| | External Sorting: Storage Devices- K- Way Merging- Sorting With Tapes: Balanced Merge Sorts - Polyphase Merge. | 1 | 8 |
| | | Instructional Hours | 15 |
| V | Symbol Table: Static Tree Tables - Dynamic Tree Tables - Hash Tables: Hashing Functions- Overflow Handling. | 1 | 9 |
| | Files: Files, Queries and Sequential Organizations- Index Techniques - File Organization: Sequential Organization- Random Organization- Linked Organization. | 1 | 10 |
| | | Instructional Hours | 15 |
| | | Total Hours | 75 |

Text Book(s):

1. Ellis Horowitz & Sartaj Sahni, **Fundamentals of Data Structures**, Galgotia Publication.
2. Aaron M. Tenenbaum, Yedidyah Langsam, Moshe J. Augenstein, **Data Structure using C**, Pearson Education, 2009

Reference Book(s):

1. Ellis Horowitz, Sartaj Sahni & Sanguthevar Rajasekaran, **Fundamentals of Computer Algorithms**, Galgotia Publications Pvt Ltd, 1999
2. Mark Allen Weiss, **Data Structures and Algorithm Analysis in C**, Florida International University, Pearson Education, Second Edition, 1997

| Course Code | Title | | |
|---------------|------------------------------------|---------------|---------------|
| 17U3CKC305 | Core Paper VII Java Programming | | |
| Semester: III | Credit: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

To gain knowledge about basic Java language syntax and semantics to write java programs and understand the principles of classes, methods, inheritance, polymorphism and packages.

Course Outcomes:

- Identify classes, objects, members of a class and relationship among them needed for a specific problem
- Understand the various concepts of object oriented programming concepts
- Demonstrate the concepts of polymorphism and inheritance
- Develop java application using object oriented programming concepts

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| Unit | Description | Text Book | Chapter |
|------|--|----------------------------|-----------|
| I | Fundamentals of Object-Oriented Programming: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. | 1 | 1 |
| | Java Evolution: History – Features – How Java differs from C and C++ – Java and Internet – Java and www – Web Browsers. | 1 | 2 |
| | Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine. | 1 | 3 |
| | | Instructional Hours | 18 |
| II | Constants, Variables, Data Types | 1 | 4 |
| | Operators and Expressions | 1 | 5 |
| | Decision Making and Branching: if, if...else, nested if, switch, ? : Operator | 1 | 6 |
| | Decision Making and Looping: while, do, for – Jumps in Loops – Labeled Loops – | 1 | 7 |
| | Classes, Objects and Methods. | 1 | 8 |
| | | Instructional Hours | 18 |

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|----------------------------|---|---|-----------|
| III | Arrays, Strings and Vectors | 1 | 9 |
| | Interfaces: Multiple Inheritance | 1 | 10 |
| | Packages: Putting Classes together | 1 | 11 |
| | Multithreaded Programming. | 1 | 12 |
| Instructional Hours | | | 18 |
| IV | Managing Errors and Exceptions | 1 | 13 |
| | Applet Programming | 1 | 14 |
| | Graphics Programming. | 1 | 15 |
| Instructional Hours | | | 18 |
| V | Managing Input / Output Files in Java : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files. | 1 | 16 |
| | Instructional Hours | | 18 |
| Total Hours | | | 90 |

Text Book:

1. E. Balagurusamy, **Programming with Java – A Primer**, Tata McGraw Hill Publication, 3rd Edition, 2007

Reference Book(s) :

1. Patrick Naughton & Hebert Schildt, **The Complete Reference Java 2**, Tata McGraw Hill Publication, 3rd Edition , 2002
2. John R. Hubbard, **Programming with Java**, Tata McGraw Hill Publication, 2nd Edition, 2009

| Course Code | Title | | |
|---------------|---|---------------|---------------|
| 17U3ITP304 | Core Paper VIII Java Programming Practical | | |
| Semester: III | Credit: 4 | CIA: 40 Marks | ESE: 60 Marks |

Course Objective:

To enable the students to develop problem solving skills and programming ability in Java Language

Course Outcomes:

- Develop the applications using Java programming concepts
- Implement the java programming concepts to solve the real word problems

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| S. No. | List of Program |
|--------------------|---|
| 1 | Write a Java Applications to extract a portion of a character string and print the extracted string |
| 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 events 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 |
| Total Hours | |
| 90 | |

| Course Code | Title | | |
|---------------|--|---------------|--------------|
| 17U4ITZ301 | Skill Based Paper I Practical in Multimedia | | |
| Semester: III | Credits: 3 | CIA: 20 Marks | ESE:55 Marks |

Course Objective

The objective of the course is to understand the animation technique through open source animation tool

Course Outcome:

- Understand the basics of GIMP
- To transform a photograph to drawing
- To work with tools
- To work with scripting

Offered by: Information Technology

Course Content

Instructional Hours/Week: 4

| S.No | List of Practical |
|--------------------|--|
| 1. | Create Sun Flower |
| 2. | Animate Plane flying in the Clouds |
| 3. | Create Plastic Surgery for the Nose |
| 4. | Create See-through text. |
| 5. | Create a Web Page |
| 6. | Convert Black and White Photo to Colour Photo |
| 7. | Design a visiting card containing at least one Graphic and text information. |
| 8. | Create an animation to represent the growing Moon. |
| 9. | Create an animation to indicate a ball Bouncing on steps. |
| 10. | Simulate movement of a cloud |
| 11. | Display the background given (filename: Tulip.jpg) through your name |
| 12. | Create an animation with the following features. Welcome * letters should appear one by one * the fill colour of the text should change to a different colour after The display of the full word using flash |
| Total Hours | |
| 60 | |

| Course Code | Title | |
|---------------|---|----------------|
| 17U4IT3ED1 | Extra Departmental Course Libre Office Suite | |
| Semester: III | Credits: 2 | ESE : 50 Marks |

Course Objective:

Introduces the basic features of Libre Office, Writer, Calc, Impress.

Course Outcome:

- Recognize when to use each of the Microsoft Office programs to create professional business documents.
- Use Microsoft Office programs to create personal and/or business documents following current professional and/or industry standards.
- Pursue future courses specializing in one or more of the programs.

Offered by: Computer Technology

Course Content

Instructional Hours/Week: 2

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|----------|
| I | Introducing Libre Office – What is Libre Office – Advantages – Minimum Requirement – How to get and Install the Software – Extensions and Add-Ons – How to get Help – Starting LibreOffice – Parts of Main Window – Starting a New Document – Opening - Saving – Renaming and Deleting – Navigator – Undoing and Redoing – Closing a Document and LibreOffice - | 1 | 1 |
| Instructional Hours | | | 6 |
| II | Getting Started with Writer – Introducing – Setting Up – Working – Formatting – Introduction to Styles –Working with Graphics – Working with Tables – Working with Templates in Writer – Using Mail Merge – Creating Tables – Working with Master Documents – Working with Fields – Using Forms in Writer – Customizing Writer | 1 | 4 |
| Instructional Hours | | | 6 |
| III | Getting Started with Calc – Introducing – Entering, Editing, Formatting – Using Charts and Graphs – Using Styles and Templates – Using Graphics in Calc – Printing, Exporting and E-mailing – Formulas and Functions – Using the Datapilot – | 1 | 5 |

| | | | |
|-----------|--|----------------------------|-----------|
| | Data Analysis – Linking Calc Data – Sharing and Reviewing – Calc Marcos – Calc as a simple DataBase | | |
| | | Instructional Hours | 6 |
| IV | Getting Started with Impress – Introducing – Using Slide Masters – Adding and Formatting text – Pictures – Managing and Formatting Graphic Objects – Including Spread Sheets, Charts and Other Objects – Adding and Formatting Slides, Notes, and Handouts – Slideshows –Printing, E-mailing, Exporting and Saving Slide Shows | 1 | 6 |
| | | Instructional Hours | 6 |
| V | Getting Started with Draw – Introducing Draw – Drawing Basic Shapes – Working with Objects and Object Points – Changing Object Attributes – Combining Multiple Objects – Editing Pictures – Working with 3D Objects – Tips and Tricks - Organization Charts – Flow Diagrams – Advanced Draw Technique | 1 | 7 |
| | | Instructional Hours | 6 |
| | | Total Hours | 30 |

Text Book:

1. LibreOffice – Getting Started Guide, 2017

Reference Book:

1. <http://www.open-of-course.org/courses/course/view.php?id=86>.

| Course Code | Title | |
|---------------|-----------------------------------|----------------|
| 17U4IT3ED2 | Extra Departmental Course GIMP | |
| Semester: III | Credits: 2 | ESE : 50 Marks |

Course Objective

The objective of the course is to understand the animation technique through open source animation tool

Course Outcome:

- Understand the basics of GIMP
- How to transform a photograph to drawing
- To work with tools
- To work with scripting

Offered by: Computer Technology

Course Content

Instructional Hours / Week: 2

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | What is GIMP – Default Shortcuts and Dynamic Key Bindings – the Power of GIMP | 1 | 1,2,3 |
| Instructional Hours | | | 6 |
| II | Obtaining and installing GIMP – GIMP for Photoshop Users – Files and Preferences | 1 | 4,5,6 |
| Instructional Hours | | | 6 |
| III | Selection Tools – Paint Tools – Edit and View – Transform Tools | 1 | 7,8,9,10 |
| Instructional Hours | | | 6 |
| IV | Text and Fonts – Brushes, Gradients, Palettes and Patterns – Color Models – Prespress and Color in GIMP | 1 | 11-14 |
| Instructional Hours | | | 6 |
| V | Advanced Animation with GIMP – Drawing Tablets and GIMP – Script – FU: Description and Function | 2 | 40-42 |
| | A PERL Introduction – A tutorial for PERL GIMP Users | 2 | 44-45 |
| Instructional Hours | | | 6 |
| Total Hours | | | 30 |

Text Book(s)

1. KarianKylandar&Olof S. Kylandar, **GIMP: The Official Handbook**, The Coriolis Group, 2014.
2. Philip Whitt, **Beginning Photo Retouching & Restoration Using GIMP**, APress, 2014

Reference Book(s)

1. Alberto Garcia, **NivelessCurvas con GIMP**, Create Space, 2013
2. <https://www.hscripts.com/tutorials/gimp/pdf-download.php>

| Course Code | Title | | |
|---------------|-----------------------------------|---------------|---------------|
| 17U3CKC406 | Core Paper IX Operating System | | |
| Semester : IV | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

To learn the fundamentals of Operating Systems, mechanisms of OS to handle processes and threads and their communication, mechanisms involved in memory management in contemporary OS, distributed operating system concepts that includes architecture, Mutual exclusion algorithms, deadlock detection algorithms and agreement protocols, components and management aspects of concurrency management and implement simple OS mechanisms

Course Outcome:

- Analyze the structure of OS and basic architectural components involved in OS design
- Analyze and design the applications to run in parallel either using process or thread models of different OS
- Analyze the various device and resource management techniques for timesharing and distributed systems
- Understand the Mutual exclusion, Deadlock detection and agreement protocols of Distributed operating system
- Interpret the mechanisms adopted for file sharing in distributed Applications
- Conceptualize the components involved in designing a contemporary OS

Department offered: Information Technology

Course Content

Instructional Hours / Week: 6

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------------|---------|
| | Introduction: History of OS – OS Concepts – System Calls – OS Structure | 1 | 2 |
| I | Processes: Introduction To Processes – Inter process Communication :- Race Conditions – Critical Sections – Mutual exclusion with busy waiting-sleep& wake up-semaphores-Mutexes-Monitors-Message passing-Scheduling:-introduction to scheduling-Scheduling in Batch Systems-Scheduling in interactive systems-Scheduling in Real Time systems-Policy versus Mechanism-Thread Scheduling. | 1 | 3 |
| Instructional Hours | | 18 Hours | |
| II | Input / Output Principles of I/O Hardware:-I/O Devices-Device controllers-Memory Mapped I/O –Interrupts-Direct memory access- | 1 | 4 |

| | | | |
|--------------------|--|---|-----------------|
| | Principles of I/O Software :-goals of the I/O software-Interrupt handlers-Device drivers-Device independent I/O Software-User space I/O software. | | |
| | Instructional Hours | | 18 Hours |
| III | Memory Management – Basic Memory Management :- Mono programming without swapping or Paging-multiprogramming with fixed partitions-Relocation and Protection. | 1 | 6 |
| | Swapping: –Memory Management with Bitmaps-Memory Management with Linked list- Virtual Memory:-Paging-Page Tables-TLBs-Translation Lookaside Buffers-Inverted Page Tables | 1 | 7 |
| | Instructional Hours | | 18 Hours |
| IV | Page Replacement Algorithm: –The Optimal Page Replacement Algorithm-The Not Recently Used Page Replacement Algorithm-The First-In, First-Out (FIFO) Page Replacement Algorithm-The Second Change Page Replacement Algorithm-The Clock Page Replacement Algorithm-The Least Recently Used (LRU) Page Replacement Algorithm-Simulating LRU in Software. Design issue for Paging systems:-The Working Set Model-Local versus Global Allocation Policies-Page Size-Virtual Memory Interface. | 2 | 1 |
| | Instructional Hours | | 18 Hours |
| V | Segmentation:-Implementation of Pure Segmentation-Segmentation with Paging: The Intel Pentium. File Systems:-File Naming- File Structure-File Types-File Access-File Attributes-File Operations. | 2 | 2 |
| | Instructional Hours | | 18 Hours |
| Total Hours | | | 90 Hours |

Text Book:

1. Andrew S. Tanenbaum, **Modern Operating System**, Third Edition, Pearson Educational Inc. 2009

Reference Book(s):

1. William Stallings, **Operating Systems Internals and Design Principles**, Seventh Edition, Pearson Education Inc. 2012
2. Abraham Silberchatz, Peter Baer Galvin, Greg Gagne, **Operating System Concepts**, Seventh Edition, Pearson 2009

| Course Code | Title | | |
|--------------|-----------------------------------|---------------|---------------|
| 17U3CKC407 | Core Paper X Computer Networks | | |
| Semester: IV | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

This course introduces the concepts of Computer Networks

Course Outcome:

- Understand the rudiments of computer networking.
- Master the terminology and concepts of the OSI reference model and the TCP-IP reference model.
- Master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- To be familiar with wireless networking concepts.

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| 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. | 1 | 1.2,1.4 |
| Instructional Hours | | | 18 |

| | | | |
|----------------------------|--|---|-----------|
| 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. | 1 | 2.2,2.4 |
| Instructional Hours | | | 18 |
| 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 | 1 | 4.2,4.6 |
| Instructional Hours | | | 18 |
| IV | Network Layer: Routing Algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements Of Transport Protocols – Internet Transport Protocols: TCP. | 1 | 5.2 |
| Instructional Hours | | | 18 |
| V | Application Layer: Dns – E-Mail. Network Security: Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures. | 1 | 7.5 |
| Instructional Hours | | | 18 |
| Total Hours | | | 90 |

Text Book:

1. Andrew S. Tanenbaum , **Computer Networks** –, 4th Edition, PHI.

Reference Book(s):

1. Achyut Godbole , **Data Communication And Networks**, TMH , 2007.
2. Uyles Black , **Computer Networks Protocols, Standards, and Interfaces** –, 2nd ed, PHI.

| Course Code | Title | | |
|--------------|--|---------------|--------------|
| 17U3ITP404 | Core Paper XI Practical in Operating System | | |
| Semester: IV | Credits: 4 | CIA: 40 Marks | ESE:60 Marks |

Course Objective:

To know about the Bash shell Script programming language

Course Outcome:

- Implement Bash shell Script programming concepts

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| S. No. | List of Program |
|--------------------|--|
| 1 | Write a shell script to stimulate the file commands: rm, cp, cat, mv, cmp, wc, split, diff. |
| 2 | Write a shell script to show the following system configuration : a. currently logged user and his log name b. current shell , home directory , Operating System type , current Path setting , current working directory c. show currently logged number of users, show all available shells d. show CPU information like processor type , speed e. show memory information |
| 3 | Write a Shell Script to implement the following: pipes, Redirection and tee commands. |
| 4 | Write a shell script for displaying current date, user name, file listing and directories by getting user choice. |
| 5 | Write a shell script to implement the filter commands. |
| 6 | Write a shell script to remove the files which has file size as zero bytes. |
| 7 | Write a shell script to find the sum of the individual digits of a given number. |
| 8 | and icons for your website Write a shell script to find the greatest among the given set of numbers using command line arguments. |
| 9 | Write a shell script for palindrome checking. |
| 10 | Write a shell script to print the multiplication table of the given argument using for loop. |
| Total Hours | |
| 90 | |

| Course Code | Title | | |
|--------------|---|---------------|---------------|
| 17U3ITA404 | Allied Paper IV Microprocessor and Assembly Language Programming | | |
| Semester: IV | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

On successful completion of the course the student should understand microprocessor architecture and assembly language programming (ALP).

Course Outcome:

- To understand 8085 architecture
- To study instruction set
- To develop ALP Skills
- To know peripheral devices and interfacing
- To Learn various processor

Offered by: Electronics and Communication Systems

Course Content**Instructional Hours / Week: 6**

| Unit | Description | Text Book | Chapter |
|---|---|-----------|-----------|
| 8085 Microprocessor Architecture | | | |
| I | Evolution of Microprocessors, Memory, Buses, 8085 Pin Diagram, 8085 Architecture, Instruction Cycle, Timing Diagram | 1 | 1,3 |
| Instructional Hours | | | 18 |
| Instruction Set of 8085 | | | |
| II | Instruction and data formats, Addressing Modes, Status Flags, Intel 8085 instructions set. | 1 | 4 |
| Instructional Hours | | | 18 |
| Assembly Language Programming | | | |
| III | Assembly language, High-Level language, Stacks, Subroutines, 8085 ALP Addition, Subtraction, Multiplication, Division, Decimal Addition, Multibyte Addition, 1's&2's complement, shifting, Largest/smallest, sum of Series, Square Root, Block of Data Transfer | 1 | 5,6 |
| | | 2 | 3 |
| Instructional Hours | | | 18 |

| Peripheral devices and Interfacing | | |
|---|--|-----------|
| IV | Address space partitioning, Memory and I/O Interfacing, 1 | 7,8 |
| | Data Transfer Schemes, Interrupts, Generation of control signals, 8255 PPI, 8257 DMA controller. Interfacing Fundamentals. 2 | 6 |
| Instructional Hours | | 18 |
| <u>Applications</u> | | |
| V | Delay Subroutine, Traffic Light Control System, Water Level Indicator, Stepper Motor . 1 | 9,11 |
| Instructional Hours | | 18 |
| Total Hours | | 90 |

Text Books:

1. Badri Ram , **Fundamentals of Microprocessor and Microcomputers** , Dhanpat Rai Publications, 2012
2. Adithya P Mathur , **Introduction to Microprocessors**, Tata Mc Graw Hill Publication , 2010

Reference Books:

1. Ramesh S. Gaonkar , **Microprocessor Architecture , Programming and Applications with the 8085** , Penram International Publishing(India) Private Limited , 2010
2. Douglas V Hall, **Microprocessor and Interfacing**, Tata Mc Graw Hill Publication ,2012

| Course Code | Title | | |
|--------------|--|---------|--------|
| 17U4ITS402 | Skill Based Paper II Enterprise Resource Planning | | |
| Semester: IV | Credits: 3 | CIA: 20 | ESE:55 |

Course Objective:

- To Learn fundamental concepts of Enterprise Resource Planning
- To understand, design and implement Business Modules using Enterprise Resource Planning concepts.

Course Outcome:

- To learn basic concepts of Enterprise Resource Planning and modules.
- To comprehend the technical aspects of ERP Systems
- To be able to map Business processes using ERP methodologies
- To identify and describe typical functionality of ERP techniques related to Business modules.

Offered by: Information Technology

Course Content

Instructional Hours / Week: 4

| Unit | Description | Text Book | Chapter |
|----------------------------|--|-----------|-----------------------------------|
| I | Enterprise an overview – Introduction to ERP – Benefits of ERP – ERP and related technologies – Business Process Reengineering – Data warehousing – Data Mining – Online Analytical Processing – Supply Chain Management – Customer Relationship Management. | 1 | 1,2,6,7, 10,11,12, 13,15,16 |
| Instructional Hours | | | 12 |
| II | Introduction to ERP Implementation – ERP Implementation Life Cycle – ERP Implementation Methodologies – The Hidden Costs. | 1 | 18,21,24 |
| Instructional Hours | | | 12 |
| III | Organizing Implementation: Vendors, Consultants – Contracts with Vendors, Consultants and Employees – Project Management and Monitoring. | 1 | 28,30,33 |

| | | | |
|-----------|--|----------------------------|-----------------|
| | | Instructional Hours | 12 |
| IV | Business Modules of ERP Package – Finance – Manufacturing – Human Resources – Plant Maintenance – Material Management – Quality Management – Sales and Distribution. | 1 | 40-46,48 |
| | | Instructional Hours | 12 |
| V | ERP Market Place and Dynamics - SAP AG – Peoplesoft – Oracle corporation – QAD – System Software Associates. | 1 | 49- 52,54,55 |
| | | Instructional Hours | 12 |
| | | Total Hours | 60 |

Text Book:

1. ERP - Demystified by Alexis Leon – Tata McGraw Hill, Second Ed. – 2008.

Reference Book(s):

1. Enterprise Resource Planning by Vinoth Kumar Gray and Venkitakrishnan, 2nd Ed.2006.
2. ERP: Making it happen: Implementers' Guide to success with ERP by Thomas F.Wallace, Michael H.Kremzar, 2001.
3. Integrated Business processes with ERP systems by Simha R.Magal, Jeffrey Word, 2011, Wiley Publications.

| Course Code | Title | | |
|-------------|-----------------------------------|---------------|---------------|
| 17U3CKC508 | Core Paper XIII RDBMS & ORACLE | | |
| Semester: V | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

To inculcate knowledge on RDBMS concepts and Programming with ORACLE.

Course Outcome:

- Knowledge in Relational Modeling
- Implementation of Data Modeling
- Knowledge in Structuring Data Base using Oracle
- **Implementation of Programming Concepts in Oracle**

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| 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. | 1 | 1,2 |
| Instructional Hours | | | 18 |
| II | Oracle9i: 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 - iSQL *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. | 1 | 3,4 |
| Instructional Hours | | | 18 |

| | | | |
|----------------------------|---|---|--------------|
| III | <p>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</p> <p>Data. Multiple Tables: Joins and Set operations: Join – Set operations</p> | 1 | 5&6 |
| Instructional Hours | | | 18 |
| IV | <p>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 – SQ L 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 – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.</p> | 1 | 10, 11&12 |
| Instructional Hours | | | 18 |
| V | <p>PL/SQL Composite Data Types: Records – Tables – arrays. Named Blocks: Procedures – Functions – Packages –Triggers –Data Dictionary Views.</p> | 1 | 13,14 |
| Instructional Hours | | | 18 |
| Total Hours | | | 90 |

Textbook:

1. Nilesh Shah , **Database Systems Using Oracle**, 2nd edition, PHI.

Reference Book(s):

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

| Course Code | Title | | |
|-------------|--|---------------|---------------|
| 17U3ITC507 | Core Paper XIV Software Engineering | | |
| Semester: V | Credits: 4 | CIA: 25 Marks | ESE: 75 Marks |

Course Objective:

To gain knowledge about basic concepts of Software Engineering

Course Outcomes:

- Understand and practice the process of project management and its application in delivering successful IT projects;
- Evaluate a project to develop the scope of work, provide accurate cost estimates and to plan the various activities
- Identify the resources required for a project and to produce a work plan and resource schedule
- Monitor the progress of a project and to assess the risk of slippage

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | Software and Software Engineering: The nature of software – Software Engineering – The software process — Software Engineering practice - Software myths | 1 | 1 |
| | Process Models: A Generic process model-Prescriptive process models-Specialized process models-The Unified Process. | 1 | 2 |
| Instructional Hours | | | 18 |
| II | Understanding Requirements: Requirements Engineering— Eliciting Requirements – Requirement Modeling: Requirements Analysis | 1 | 5 |
| | Data Modeling Concepts –Class-Based Modeling | 1 | 6 |
| | Flow oriented modeling-Creating a behavioral model. | 1 | 7 |
| Instructional Hours | | | 18 |
| III | Design Concepts: Design Concepts -The design model. | 1 | 8 |
| | Architectural Design: Software Architecture – Architectural Styles – Architectural Design. | 1 | 9 |
| | Component-Level Design: What is a Component – Designing Class-Based Components | 1 | 10 |
| | User Interface Design: User Interface Analysis and Design- Interface Design steps. | 1 | 11 |

| | | Instructional Hours | 18 |
|-----------|---|----------------------------|-----------|
| IV | Testing: Validation testing – System testing – Software testing fundamentals – White box testing – Control structure testing – Black box Testing | 1 | 17,18 |
| | Testing Tools -Test Planning-Test Metrics And Test Reports- Qualitative And Quantitative Analysis. | 2 | 13 |
| | Risk Management: Software Risks – Risk Identification – Risk Projection – Risk Refinement – Risk Mitigation, Monitoring and Management. | 1 | 28 |
| | | Instructional Hours | 18 |
| V | Reengineering: Reengineering – Software Reengineering – Reverse Engineering. Case study: SRS for Banking System. | 1 | 29 |
| | | Instructional Hours | 18 |
| | | Total Hours | 90 |

Text Book(s):

1. Roger S Pressman, **Software Engineering a Practitioner's Approach**, Seventh Edition, McGraw Hill, International Edition, 2013
2. M G Limaye, **Software Testing Principles, Techniques And Tools**, Tata McGraw Hill Companies, 1st Edition, 2009

Reference Books(s):

1. Richard Fairley, **Software Engineering Concepts**, Tata McGraw-Hill Publishing Company Limited, 2010
2. Waman S. Jawadkar, **Software Engineering – Principles and Practice**, Tata McGraw Hill Publishing Company Limited, 2011

| Course Code | Title | | |
|-------------|--|---------|---------|
| 17U3ITP508 | Core Paper XV Practical in Visual Programming | | |
| Semester: V | Credits: 4 | CIA: 40 | ESE: 60 |

Course Objective:

The purpose of this course is to introduce to students to the field of Visual Basic and the concepts of Database.

Course Outcomes:

- Know concepts in Database Management.
- To do programs in Visual Basic.
- Able to create programs using GUI.
- Form Designing.

Offered by: Information Technology

Course Content

Instructional Hours / Week: 6

| S. No | List of Practical's |
|-------|--|
| 1 | Write a simple VB program to accept a number as input and convert them into a. Binary b. Octal c. Hexa-decimal |
| 2 | Write a simple VB program to add the items to list box with user input and move the selected item to combo box one by one. |
| 3 | Write a simple VB program to develop a calculator with basic operation |
| 4 | Design a form using common dialog control to display the font, save and open dialog box without using the action control property. |
| 5 | Write a simple program to prepare a Questionnaire. |
| 6 | Write a VB Program to develop a menu driven program Add a MDI window in the form and arrange them in the cascading/horizontal style using menus (Create a menu to add form, arrange) (Menu Item 1). Also change the form color using the menu in another menu item (Menu Item 2). |
| 7 | <p>Data Definition Basics</p> <p>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) (i) Alter the table ticket_header to add a check constraint on ticket_no to accept values between 1 and 500 (ii) Alter table route_header to add a column with data type as long.</p> |

| Data Manipulation Basics | |
|--------------------------|--|
| 8 | (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 | Queries 3. a. Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header. B. Select rows from route_header such that the route_id are greater than all route_id in route_detail Where place id is —100 . C. Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id |
| 10 | Report Generate a report from the table ticket_detail for the particular ticket_no |
| 11 | PL/SQL 5. a. Write a PL/SQL block to update the bus_station to be —ERODE where place_id is '01' or '_05' [place_header] b. 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 c. Write a Database trigger before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday d. Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details |
| 12 | PROJECT 6. Develop a Simple Project for Student Database Management System using VB as front end and ORACLE as back end. |
| Total Hours: 90 | |

| Course Code | Title | |
|--------------------|--|-----------------------|
| 17U3ITV509 | Core Paper XVI - Implant Training and Viva-Voce | |
| Semester: V | Credits: 2 | Max.Marks : 50 |

| Course Code | Title | | |
|-------------|---|---------------|----------------|
| 17U4ITS503 | Skill Based Paper III Visual Programming | | |
| Semester: V | Credits: 3 | CIA: 20 Marks | ESE : 55 Marks |

Course Objective:

To gain knowledge about Programming with Visual Basic using Oracle

Course Outcome:

- Understand the fundamentals of Visual Basic
- Learn about Controls and Events in GUI Environment
- Know about different object models for connecting Visual Basic with Oracle
- Learn how to develop an Application by using Visual Basic and Oracle

Offered by: Information Technology

Course Content

Instructional Hours / Week: 4

| Unit | Description | Text Book | Chapter |
|----------------------------|--|-----------|--------------|
| I | Introducing Visual Basic: What is VB, Event and Event Procedures, Object oriented Related concepts, VB Program development process, Required Computer Skills, Logical Program organization, Visual Basic program components, VB Environment, Opening an existing VB Project, saving an visual basic project, running an visual basic project Visual Basic Fundamentals, Branching and Looping | 1 | 1 2,3 |
| Instructional Hours | | | 15 |
| II | Visual Control Fundamentals, Menus and Dialog Boxes, Arrays | 1 | 4,5,8 |
| Instructional Hours | | | 15 |
| III | Procedures: Modules and Procedures, Sub Procedures, Event Procedures, Function Procedures | 1 | 7 |
| Instructional Hours | | | 15 |
| IV | Accessing Oracle from Visual Basic: JET Engine, DAO,RDO, ODBC Direct, ADO, Comparison Data object models | 2 | 12 |

| | | | |
|----------|--|---|-----------|
| | DAO: DAO Object Hierarchy, Accessing a DBASE, Creating Recordset, Executing SQL Commands, Putting it all together. | 2 | 14 |
| | Instructional Hours | | 15 |
| V | ODBC Direct: ODBC Direct Hierarchy, Accessing ODBC Direct, Creating Recordsets, Using Query Defs | 2 | 15 |
| | ADO:ADO object model, connecting to oracle, working with recordset, | 2 | 16 |
| | Instructional Hours | | 15 |
| | Total Hours | | 60 |

Text Books:

1. Byron S. Gottfried, **Programming with Visual Basic**, Outline Series, TMH
2. N.Snowden, **Oracle Programming with Visual Basic**, John Wiley and Sons

Reference Books:

1. Gary Cornell, **Visual Basic 6 from Ground up**, Tata McGraw Hill, 1999
2. Content Development Group, **Visual Basic 6.0 Programming**, TMH, 8th reprint, 2007.
3. Mohammed Azam, **Programming with Visual Basic 6.0**, Vikas Publishing House, Fourth Reprint, 2006.

Reference Book:

MSDN Visual studio Library <https://docs.microsoft.com/en-us/dotnet/visual-basic>

| Course Code | Title | | |
|--------------|--------------------------------|--------------|--------------|
| 17U3ITC610 | Core Paper XVII Data Mining | | |
| Semester: VI | Credits: 4 | CIA: 25Marks | ESE:75 Marks |

Course Objective:

To enable the students to understand basic concepts of Data Mining and Data Warehousing techniques, the types of the data to be mined, preprocessing methods on raw data and to discover interesting patterns analyze supervised and unsupervised models.

Course Outcomes:

- Understand the process of raw data and to make it suitable for various data mining algorithms
- Understand the various algorithms of data mining
- Discover and measure interesting patterns from different kinds of databases
- Apply the techniques of clustering, classification, association finding, feature selection and visualization to real world data

Offered by: Information Technology

Course Content

Instructional Hours/Week: 6

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | Introduction: Basic data mining tasks-data mining versus knowledge discovery in databases- data mining metrics-social implications of data mining-data mining from a database perspective- data mining techniques. | 1 | 1 |
| Instructional Hours | | | 18 |
| II | Classification: Introduction-statistical based algorithms-distance based algorithms-decision tree based algorithms-neural network based algorithms - rule based algorithms - combining techniques. | 1 | 4 |
| | Clustering: Introduction - similarity and distance measures-outliers- hierarchical algorithms-partitioned algorithms-clustering large databases. | 1 | 5 |
| Instructional Hours | | | 18 |
| III | Association rules: Introduction - large item sets - basic algorithms - parallel & distributed algorithms - comparing approaches - incremental rules - advanced association rule techniques-measuring the quality of rules. | 1 | 6 |

| | | | |
|----------------------------|---|---|-----------|
| | Web mining: Introduction-web content mining -web usage mining. | 1 | 7 |
| Instructional Hours | | | 18 |
| IV | Spatial Mining: Introduction –Spatial data- spatial data mining primitives- Generalization-specialization-spatial rules-spatial classification algorithm-spatial clustering algorithms. | 1 | 8 |
| | Temporal Mining: Introduction-modeling temporal events-time series – pattern deduction-sequence-temporal association rules | 1 | 9 |
| Instructional Hours | | | 18 |
| V | Data warehousing: Introduction - characteristics of a data warehouse – data marts – other aspects of data mart. | 2 | 1 |
| | Online Analytical Processing: Introduction - OLTP & OLAP systems – Data Modeling: Star schema for multidimensional view –multi fact star schema or snow flake schema – OLAP tools – state of the market – OLAP tools and the internet. | 2 | 2 |
| Instructional Hours | | | 18 |
| Total Hours | | | 90 |

Text Book(s):

1. Margaret H. Dunham, **Data Mining Introductory And Advanced Topics**, Pearson Education, First Indian Reprint, 2003 (Unit I, II, III & Unit IV)
2. C.S.R. Prabhu, **Data Warehousing Concepts, Techniques, Products And Applications**, PHI Publications, Second Edition, 2002 (Unit V)

Reference Book(s) :

1. Berry M. J. A. and Linoff G. S, **Mastering Data Mining**, New York: John Wiley & Sons, 2004
2. Sushmitha Mitra , **Data Mining**, New York: John Wiley Sons Publications, 1st Edition, 2004

Reference web portal:

1. https://www.eiseverywhere.com/file_uploads/293c903560bc03d67acefe4b239446a6_Webster_Tuesday_1045_SNWS11.pdf

| Course Code | Title | | |
|--------------|---|---------------|---------------|
| 17U3ITP611 | Core Paper XVIII Practical in Data Mining using R Tool | | |
| Semester: VI | Credit: 4 | CIA: 40 Marks | ESE: 60 Marks |

Course Objective:

To understand the basics of data mining and study various data mining techniques

Course Outcome:

- Design a data mart or data warehouse for any organization
- Develop skills to write queries using DMQL
- Extract knowledge using data mining techniques
- Adapt to new data mining tools. Explore recent trends in data mining such as web mining, spatial-temporal mining

Offered by: Information Technology

Course Content

Instructional Hours/Week: 5

| S. No. | List of Practical |
|-------------------------|---|
| 1. | Implement association rule algorithm. |
| 2. | Implement k-means clustering technique. |
| 3. | Implement Classification algorithm. |
| 4. | Implement Decision Tree. |
| 5. | Data Visualization. |
| 6. | Linear Regression. |
| 7. | Social Network Analysis |
| Total Hours : 75 | |

| Course Code | Title | | |
|--------------|---|---------------|---------------|
| 17U3ITV612 | Core Paper XIX Project Viva and Voce | | |
| Semester: VI | Credits: 4 | CIA: 40 Marks | ESE: 60 Marks |

Course Objective:

The aim of the project work is to acquire practical knowledge on the implementation of the programming concepts studied.

Course Outcome:

Each student should carry out individually one project work and it may be a work using the software packages that they have learned or the implementation of concepts from the papers studied or implementation of any innovative idea focusing on application oriented concepts.

The project work should be compulsorily done in the college only under the supervision of the department staff concerned.

Offered by: Information Technology

Course Content

Instructional Hours/Week: 5

| Guidelines for Project Work |
|--|
| <p style="text-align: center;">Viva Voce</p> <p>Viva-Voce will be conducted at the end of the year by both Internal (Respective Guides) and External Examiners, after duly verifying the Annexure Report available in the College, for a total of 100 marks at the last day of the practical session.</p> <p>Out of 100 marks, 60 marks for project report and 40 marks for Viva Voce.</p> <p style="text-align: center;">PROJECT WORK TITLE OF THE DISSERTATION</p> <p style="text-align: center;">Bonafide Work Done by STUDENT NAME REG. NO.</p> <p style="text-align: center;">Dissertation submitted in partial fulfillment of the requirements for the award of <Name of the Degree> of Bharathiar University, Coimbatore-46.</p> |

| | | |
|---|-------------------|-------------------|
| GUIDE | College emblem | HOD |
| Submitted for the Viva-Voce Examination held on _____ | | |
| Internal Examiner | | External Examiner |
| Dean | Counter Signature | Principal |
| MONTH – YEAR | | |
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| A. DATA FLOW DIAGRAM | | |
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| Total Hours | | 75 |

| Course Code | Title | | |
|--------------|---|---------------|---------------|
| 17U3ITZ604 | Skill Based Paper IV Practical in Python Programming | | |
| Semester: VI | Credits: 4 | CIA: 30 Marks | ESE: 45 Marks |

Course Objective:

- The Python course shows you how to use the free open -source to write basic programs and high level applications using concepts.
- This course will be of great interest to all learners who would like to gain a thorough knowledge and understanding of the basic components of computer programming using the Python language

Course Outcome:

- To develop proficiency in creating based applications using the Python programming Language.
- To be able to understand the various data structures available in Python programming language and apply them in solving problems.
- To be able to do testing and debugging of code written in Python.

Offered by: Information Technology**Course Content****Instructional Hours / Week: 4**

| S. No. | List of Practical |
|-------------------------|---|
| 1 | Write python program to print Hello World |
| 2 | Write python program to Good Morning using string variable |
| 3 | Write python program to store data in list and then try to print them |
| 4 | Write python program to print list of numbers using range and for loop |
| 5 | Write python program to store strings in list and then print them |
| 6 | Write python program to let user enter some data in string and then verify data and print welcome to user |
| 7 | Write python program in which an function is defined and calling that function prints |
| 8 | Write python program in which an function(with single string parameter) is defined and calling that function prints the string parameters given to function. |
| 9 | Write python program in which an class is define, then create object of that class and call simple print function define in class. |
| Total Hours : 60 | |

| Course Code | Title | |
|---------------|----------|----------------|
| 17UITSS01 | Joomla | |
| Semester: III | Credit:1 | ESE :100 Marks |

Course Objective

To understand how to build a web page

Course Outcome:

- Basics of Joomla, architecture, menus
- Menu creation
- Modules
- Settings
- Advanced Level

Offered by: Computer Technology

Course Content

Instructional Hours / Week: 2

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|-----------|
| I | Joomla basics tutorial – Overview – installation – architecture – control panel – toolbar – menus bar – content menu – components menu – extensions menu – help menu | 1 | 1 |
| Instructional Hours | | | 5 |
| II | Joomla Menus – Create – adding – modify – creating submenus | 1 | 2 |
| Instructional Hours | | | 5 |
| III | Joomla Modules – creating – breadcrumb – feed display – footer – latest news – search – random – donation | 1 | 3 |
| Instructional Hours | | | 5 |
| IV | Joomla Global Settings – System settings – media - language – private – mass – cache – users – debug | 1 | 4 |
| Instructional Hours | | | 5 |
| V | Joomla Advanced – template manager – customized – adding – creating – adding content – formatting – article – adding banners – adding contact – plugin manager – website backup – website SEO | 2 | 5 |
| Instructional Hours | | | 4 |
| Total Hours | | | 30 |

Text Book(s)

1. Stephen Burge, **Joomla 3 Explained**, Addison-Wesley, 2014.
2. <https://www.tutorialspoint.com/joomla/index.htm>

Reference Book(s)

1. <https://www.buildajoomlawebsite.com/joomla-tutorials/the-basics>
2. <https://www.joomlatutorials.com/joomla-tutorials-help>

| Course Code | Title | |
|---------------|-----------|----------------|
| 17UITSS02 | WordPress | |
| Semester: III | Credit: 1 | ESE :100 Marks |

Course Objective:

It includes the basic definition, working and installation of WordPress.

Course Outcome:

- It includes the knowledge to know the difference between themes, posts, page areas, and plug-ins.
- Useful Plug-ins- It includes booking system, online shopping, and managing directories.
- Managing the Site- It includes search engines, widgets, plug-ins and themes needed for your site.

Offered by: Computer Technology

Course Content

Instructional Hours / Week:2

| Unit | Description | Text Book | Chapter |
|----------------------------|---|-----------|---------|
| I | WordPress Basics – Overview – Installation – Dashboard – WordPress Settings – General – Writing – Reading – Discussion – Media – Permalink – Plugin | 1 | 1 |
| Instructional Hours | | | |
| II | WordPress Categories – Add – Edit – Delete – Arrange – Wordpress Posts – Add – Edit – Delete – Preview – Publish | 1 | 2,3 |
| Instructional Hours | | | |
| III | WordPress Media – Media Library – Add – Insert – Edit – WordPress Pages – Add – Publish – Edit – Delete –WordPress Tags – Add – Edit – Delete | 1 | 4,5 |
| Instructional Hours | | | |
| IV | WordPress Links – Add – Edit – Delete – WordPress Comments – Add – Edit – Moderate – WordPress Plugins – View – Install – Customize - | 1 | 6,7 |
| Instructional Hours | | | |
| V | WordPress Users – User Roles – Add Users – User Photo – Edit – Delete – personal profile – WordPress Appearance – Theme Management – Customize theme – Widget Management - Background | 1 | 7,8 |
| Instructional Hours | | | |
| Total Hours | | | |

Text Book

1. Dr. Andy Williams, **WordPress for Beginners 2017: A Visual Step-by-Step Guide to Mastering Wordpress**, 2017

Reference Book

1. <https://www.tutorialspoint.com/wordpress/index.html>