

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: I

Course Title: Problem Solving using C

Course Code: 22CSCCPC13

No. of Hours: 60

LTP: 400

Credits: 3

Objectives

- To develop simple algorithms and flow charts to solve a problem.
- To learn the fundamental programming concepts and methodologies which are essential in building good C programs
- To analyze the importance of procedure and object oriented programming.

Course Outcomes

CO1: Explain the basic concepts of programming language, including the use of algorithms.

CO2: Understand “C” language constructs decision control and looping statements

CO3: Develop programs on arrays and strings.

CO4: Apply the concepts of functions, structures and unions.

CO5: Declare and use the concepts of pointers and file in C.

UNIT-I

(12 Hrs.)

General Fundamentals: Introduction to computers: Block diagram of a computer, characteristics and limitations of computers, applications of computers, types of computers, computer generations, I/O devices.

Introduction to Algorithms and Programming Languages: Algorithm, Flow Charts, Programming Languages – Binary Language, Assembly Language and High-level Language. Structured Programming Language, Translators -Compiler and Interpreter - Programming Exercises

UNIT-II

(12 Hrs.)

Introduction to C: Introduction - Structure of C Program - Writing the first C Program - File used in C Program - Compiling and Executing C Programs – Using Comments – Keywords – Identifiers – Basic Data Types in C - Variables - Constants - I/O Statements in C- Operators in C- Programming Examples.

Decision Control and Looping Statements : Introduction to Decision Control Statements- Conditional Branching Statements – Iterative Statements – Nested Loops – Break and Continue Statement – Goto Statement – Programming Exercises.

UNIT-III **(12 Hrs.)**

Arrays: Introduction - Declaration of Arrays - Accessing elements of the Array – Storing Values in Array- Operations on Arrays – one dimensional, two dimensional and multi dimensional arrays, character handling and strings , string functions - Programming Exercises.

UNIT-IV **(12 Hrs.)**

Functions: Introduction - Function declaration/ prototype - Function definition – function call – return statement – Passing parameters – Scope of variables : Local, Global - Recursive functions - Programming Exercises.

Structure, Union: Introduction - declaration and definition of Structure - Arrays of Structures – Union – Arrays of Unions Variables - Programming Exercises.

UNIT-V **(12 Hrs.)**

Pointers: Introduction to Pointers – declaring Pointer Variables – Pointer Expressions- Null Pointers - Pointer and Arrays - Drawbacks of Pointers - Programming Exercises.

Files: Introduction to Files – Using Files in C – Reading Data from Files – Writing Data to Files – Detecting the End-of-file- Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Book

1. Programming with C by Reema Thareja

Reference Books

1. E Balagurusamy - Programming in ANSIC - Tata McGraw-Hill publications.
2. Brain W Kernighan and Dennis M Ritchie - The “C” Programming language” - Pearson publications.

3. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publications.
4. YashavantKanetkar - Let Us "C" - BPB Publications.

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SYLLABUS

Subject: Computer Science

Semester: I

Course Title: Problem Solving using C
– Practical

Course Code: 22CSP1PC12

No of Hours: 30

LTP: 002

Credits: 2

Objectives

- To practice the C syntax and write programs.
- To identify and program the different concepts and techniques.

Course Outcomes

CO1: Apply the programming concepts and write simple programs in C.

CO2: Develop simple code to solve a problem.

CO3: Implement the programming with real time concepts.

List of practicals:

1. Write a program to check whether the given number is Armstrong or not.
2. Write a program to find the sum of individual digits of a positive integer.
3. Write a program to generate the first n terms of the Fibonacci sequence.
4. Write a program to find both the largest and smallest number in a list of integer values
5. Write a program to demonstrate refaction of parameters in swapping of two integer values using Call by Value&Call by Address
6. Write a program that uses functions to add two matrices.
7. Write a program to calculate factorial of given integer value using recursive functions
8. Write a program for multiplication of two M X N matrices.
9. Write a program to perform various string operations.
10. Write a program to search an element in a given list of values.
11. Write a program to sort a given list of integers in ascending order.
12. Write a program to demonstrate structure.
13. Write a program to demonstrate pointer.
14. Write a program on file operations.

Reference Books

1. Programing with C by Reema Thareja
2. Yashavant Kanetkar - Let Us "C" - BPB Publications.

**MARIS STELLA COLLEGE (AUTONOMOUS),VIJAYAWADA-8
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SYLLABUS

Subject: Computer Science

Semester: II

Course Title: Data Structures using C

Course Code: 22CSCCDS23

No. of Hours: 60

LTP: 400

Credits: 3

Objectives

- To familiarize the fundamentals of data structures.
- To impart knowledge of complexity of basic operations like insert, delete, search on these data structures.
- To build the ability to choose a data structure to suitably model any data used in computer applications.

Course Outcomes

CO1: Identify data structures to represent data items in the real world.

CO2: Analyse the working principles and applications of data structures.

CO3: Develop programs by applying various operations on data structures.

CO4: Apply various sorting, searching and hashing techniques.

UNIT-I

(12 Hrs.)

Introduction to Data Structures: Introduction to the Theory of Data Structures, Data Representation, Advantages of Data Structures, Operations of Data Structures, Abstract Data Types, Classification of Data Types: Primitive Data Types, Non - Primitive Data Types.

Principles of Programming and Analysis of Algorithms: Algorithms, Characteristics of an algorithm, Factors of an algorithm, Complexity, Algorithm Analysis, Approaches of algorithm - programming exercises.

UNIT-II

(12 Hrs.)

Arrays: Introduction to Linear and Non- Linear Data Structures, One-Dimensional Arrays, Array Operations, Two- Dimensional arrays-programming exercises.

Linked Lists: Introduction to Lists and Linked Lists, Dynamic Memory Allocation, Basic Linked List Operations, Doubly Linked List, Circular Linked List - programming exercises.

UNIT-III

(12 Hrs.)

Stacks: Introduction to Stacks, Representation of Stacks through Arrays, Representation of Stacks through Linked Lists, Applications of Stacks - programming exercises.

Queues: Introduction, Representation of Queues, Circular Queues, Double Ended Queues- Deques, Priority Queues, Application of Queues - programming exercises.

UNIT-IV

(12 Hrs.)

Binary Trees: Introduction to Non- Linear Data Structures, Introduction Binary Trees, Types of Trees, Basic Definition of Binary Trees, Properties of Binary Trees, Representation of Binary Trees, Operations on a Binary Search Tree, Binary Tree Traversal, Applications of Binary Tree, Heap - programming exercises.

UNIT- V

(12 Hrs.)

Sorting and Searching: Sorting – An Introduction, Bubble Sort, Insertion Sort, Merge Sort, Searching – An Introduction, Linear or Sequential Search, Binary Search - programming exercises.

Graphs: Introduction to Graphs, Terms Associated with Graphs, Sequential Representation of Graphs, Linked Representation of Graphs, Traversal of Graphs : DFS & BFS, Spanning Trees, Application of Graphs - programming exercises.

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Books

1. “Data Structures using C”, ISRD group Second Edition, TMH
2. “ Data Structures through C”, Yashavant Kanetkar, BPB Publications
3. “Data Structures Using C” Balagurusamy E. TMH

Reference Book

1. E Balagurusamy - Programming in ANSIC - Tata McGraw-Hill publications.

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SYLLABUS

Subject: Computer Science

Semester: II

**Course Title: Data Structures using C
– Practical**

Course Code: 22CSP2DS22

No of Hours: 30

LTP: 002

Credits: 2

Objectives

- To enable the students to gain knowledge in practical applications of data structures using C.
- To develop skills to design and analyze simple linear and non-linear data structures.

Course Outcomes

CO1: Identify and apply the suitable data structure for the given real world problem.

CO2: Implement various kinds of searching and sorting techniques.

CO3: Implement data structures such as stacks, queues and Search trees to solve various computing problems.

List of practicals:

1. Write a program to read “N” numbers of elements into an array and also perform the following operation on an array
 - a. Add an element at the beginning of an array
 - b. Insert an element at given index of array
 - c. Delete an existing element
2. Write Programs to implement the Stack operations using an array
3. Write Programs to implement the Stack operations using Linked List.
4. Write Programs to implement the Queue operations using an array.
5. Write Programs to implement the Queue operations using Linked List.
6. Write a program for Binary Search Tree Traversals.
7. Write Programs to implement the single Linked List.
8. Write a program to implement dequeue using a doubly linked list.
9. Write a program to search an item in a given list using the following Searching Algorithms

- a. Linear Search
 - b. Binary Search.
10. Write a program for implementation of the following Sorting Algorithms
- a. Bubble Sort
 - b. Insertion Sort
 - c. Merge Sort
11. Write a program to implement Depth First Search graph traversals algorithm
12. Write a program to implement Breadth First Search graph traversals algorithm

Reference Books

1. Data structures and Algorithm Analysis in C, 2nd edition, M. A. Weiss, Pearson.
2. Lipschutz: Schaum' s outline series Data structures Tata McGraw – Hill

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science

Semester: III

**Course Title: Database Management
Systems**

Course Code: 20CSCCDB33

No. of Hours: 60

LTP: 400

Credits: 3

Objectives

- To understand the basic concepts and the applications of database systems.
- To master the basics of SQL and construct queries using SQL.
- To analyse the relational database design principles.

Course Outcomes

CO1: Explain the basic concepts and various data models used in database design.

CO2: Analyse and apply the concept of entity- relationship model.

CO3: Apply relational database theory to create a database.

CO4: Convert the ER-model to relational tables and formulate SQL queries.

CO5: Discuss PL/SQL concepts

UNIT – I

(12 Hrs.)

Overview of Database Management System: Introduction to data, information, database, database management systems, file -based system, Drawbacks of file - Based System, database approach, Classification of Database Management Systems, advantages of database approach, Various Data Models, Components of Database Management System, Three schema architecture of data base, costs and risks of database approach.

UNIT – II

(12 Hrs.)

Entity- Relationship Model: Introduction, the building blocks of an entity relationship diagram, classification of entity sets, attribute classification, relationship degree, relationship classification, reducing ER diagram to tables, enhanced entity- relationship model (EER model), generalization and specialization, IS A relationship and attribute inheritance, multiple inheritance, constraints on specialization and generalization, advantages of ER modelling.

The Client server database environment: Client server architecture, 3 tier architectures.

Data and database administration: Role of data and DBA, managing data security, repositories.

UNIT – III**(12 Hrs.)**

Relational Model: Introduction, CODD Rules, relational data model, concept of key, relational integrity, relational algebra, relational algebra operations, advantages of relational algebra, limitations of relational algebra. Functional dependencies and normal forms upto 3rd normal form.

UNIT – IV**(12 Hrs.)**

Structured Query Language: Introduction, Commands in SQL, Data Types in SQL, Data Definition Language, Selection Operation, Projection Operation, Aggregate functions, Data Manipulation Language, Table Modification Commands, Join Operation, Set Operations, View, Sub Query - Programming Exercises

UNIT – V**(12 Hrs.)**

PL/SQL: Introduction, Shortcomings of SQL, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Operators Precedence, Control Structure, Steps to Create a PL/SQL, Program, Iterative Control Procedure, Function, Database Triggers, Types of Triggers - Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Books

- Principles of Database Systems by J. D. Ullman
- Fundamentals of Database Systems by R. Elmasri and S. Navathe

Reference Books

- Database System Concepts by Abraham Silberschatz, Henry Korth, and S. Sudarshan, McGrawhill
- Database Management Systems by Raghu Ramakrishnan, McGrawhill
- SQL: The Ultimate Beginners Guide by Steve Tale.

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SYLLABUS

Subject: Computer Science

Semester: III

**Course Title: Database Management
Systems - Practical**

Course Code: 20CSP3DB32

No of hours: 30

LTP: 002

Credits: 2

Objectives

- To master the basics of SQL and construct queries using SQL.
- To analyze the relational database design principles.

Course Outcomes

CO1: Understand the basics of SQL and create database tables and to establish relationships between tables.

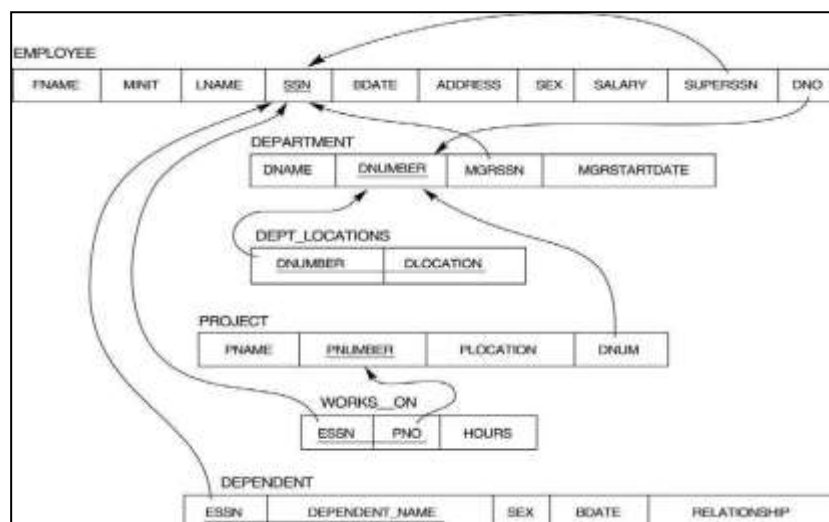
CO2: Design and create relational database systems.

CO3: Formulate queries using SQL DML/DDL/DCL commands.

List of practicals

1. Draw ER diagram for hospital administration
2. Creation of college database and establish relationships between tables
3. Relational database schema of a company is given in the following figure.

Relational Database Schema - COMPANY



Questions to be performed on above schema

1. Create above tables with relevant *Primary Key, Foreign Key and other constraints*
2. Populate the tables with data
3. Display all the details of all employees working in the company.
4. Display *ssn, lname, fname, address* of employees who work in department no 7.
5. Retrieve the *Birthdate and Address* of the employee whose name is 'Franklin T. Wong'
6. Retrieve the name and salary of every employee
7. Retrieve all distinct salary values
8. Retrieve all employee names whose address is in 'Bellaire'
9. Retrieve all employees who were born during the 1950s
10. Retrieve all employees in department 5 whose salary is between 50,000 and 60,000(inclusive)
11. Retrieve the names of all employees who do not have supervisors
12. Retrieve SSN and department name for all employees
13. Retrieve the name and address of all employees who work for the 'Research' department
14. For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birth date.
15. For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
16. Retrieve all combinations of Employee Name and Department Name
17. Make a list of all project numbers for projects that involve an employee whose last name is 'Narayan' either as a worker or as a manager of the department that controls the project.
18. Increase the salary of all employees working on the 'Product X' project by 15%. Retrieve employee name and increased salary of these employees.
19. Retrieve a list of employees and the project name each works in, ordered by the employee's department, and within each department ordered alphabetically by employee first name.
20. Select the names of employees whose salary does not match with salary of any employee in department 10.

21. Retrieve the employee numbers of all employees who work on project located in Bellaire, Houston, or Stafford.
22. Find the sum of the salaries of all employees, the maximum salary, the minimum salary, and the average salary. Display with proper headings.
23. Find the sum of the salaries and number of employees of all employees of the ' Marketing' department, as well as the maximum salary, the minimum salary, and the average salary in this department.
24. Select the names of employees whose salary is greater than the average salary of all employees in department 10.
25. Delete all dependents of employee whose *ssn* is '123456789' .
26. Perform a query using alter command to drop/add field and a constraint in Employee table.

**MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science

Semester: IV

Course Title: Object Oriented

Course Code: 20CSCCPJ43

Programming through Java

No. of Hours: 60

LTP: 400

Credits: 3

Objectives

- To introduce the fundamental concepts of Object - Oriented programming.
- To learn basic Java language syntax and semantics to write Java programs.
- To design and implement object oriented programming concepts in Java.

Course Outcomes

CO1: Recall the concepts of object oriented programming and Java syntax.

CO2: Apply concepts such as arrays, strings, classes and inheritance.

CO3: Develop programs on polymorphism, abstract classes, exceptions and packages.

CO4: Make use of the concepts of file streams and multi threading.

CO5: Develop skills in internet programming using applets and JDBC.

UNIT – I

(12 Hrs.)

Introduction to OOPs: Problems in Procedure Oriented Approach, Features of Object- Oriented Programming System (OOPS)

Introduction to Java: Features of Java, The Java virtual Machine, Parts of Java

Naming Conventions and Data Types: Naming Conventions in Java, Data Types in Java, Literals

Operators in Java: Operators, Priority of Operators

Control Statements in Java: if ... else Statement, do... while Statement, while Loop, for Loop, switch Statement, break Statement, continue Statement, return Statement

Input and Output: Accepting Input from the Keyboard, Reading Input with Java. util.Scanner Class, Displaying Output with System.out.printf(), Displaying Formatted Output with String.format()
- Programming Exercises

UNIT – II **(12 Hrs.)**

Arrays: Types of Arrays, arrayname.length, Command Line Arguments

Strings: Creating Strings, String Class Methods: Comparision, reverse, length, Concatination

Classes and Objects: Object Creation, Initializing the Instance Variables, Access Specifiers in Java, Constructors

Methods in Java: Static Methods, The keyword 'this', Passing Primitive Data Types to Methods, Passing Objects to Methods, Passing Arrays to Methods, Recursion, Finalizer Methods

Inheritance: Inheritance, The keyword 'super', The Protected Specifier, Types of Inheritance: Single Inheritance, Multi - level Inheritance, Hierarchical Inheritance, Hybrid Inheritance - Programming Exercises

UNIT – III **(12 Hrs.)**

Polymorphism: Polymorphism with Variables, Polymorphism using Methods, final Class

Type Casting: Types of Data Types: Widening and narrowing typecasting

Abstract Classes: Abstract Method and Abstract Class

Interfaces: Interface, Multiple Inheritance using Interfaces

Packages: Package, Different Types of Packages

Exception Handling: Errors in Java Program, Exceptions, throw and throws Clause, Types of Exceptions-Programming Exercises

UNIT – IV **(12 Hrs.)**

Streams: Stream, Creating a File using FileOutputStream, Reading Data from a File using FileInputStream, Creating a File using FileWriter, Reading a File using FileReader, Counting Number of Characters in a File, File Copy, File Class

Threads: Thread Life Cycle, Single Tasking, Multi Tasking, Uses of Threads, Creating a Thread and Running it, Terminating the Thread, Thread Priorities, thread Group-Programming Exercises

UNIT – V **(12 Hrs.)**

Applets: Applet Life Cycle , Creating an Applet, Uses of Applets, <APPLET> tag, A Simple Applet, Animation in Applets, A Simple Game with an Applet

Java Database Connectivity: Introduction to JDBC , JDBC Drivers, Working with Oracle Database, Working with MySQL Database, Connecting to a Database: Registering the Driver, Preparing SQL Statements, Using jdbc-odbc Bridge Driver to Connect to Oracle Database, Retrieving Data from MySQL Database-Programming Exercises

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Book

1. Deitel & Deitel. Java TM: How to Program, PHI (2007)

Reference Books

1. Core Java: An Integrated Approach, Authored by Dr. R. NageswaraRao&Kogent Learning Solutions Inc.
2. E.Balaguruswamy, Programming with JAVA, A primer, 3e, TATA Mc Graw- Hill Company.
3. John R. Hubbard, Programming with Java, Second Edition , Schaum's outline Series, TMH.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science	Semester: IV
Course Title: Object oriented programming through Java - Practical	Course Code: 20CSP4PJ42
No of hours: 30	LTP: 002
	Credits: 2

Objectives

- To learn basic Java language syntax and semantics to write Java programs.
- To design and implement object oriented programming concepts in Java.

Course Outcomes

- CO1:** Write Java application programs using OOP principles
CO2: Develop Java programs to solve real world problems
CO3: Develop skills in internet programming using applets

List of practicals

1. Write a program to read ***Student Name, Reg. No, Marks[5]*** and calculate ***Total , Percentage, Result*** . Display all the details of students
2. Write a program to perform the following String Operations
 - a. Read a string
 - b. Find out whether there is a given substring or not
 - c. Compare existing string by another string and display status
 - d. Replace existing string character with another character
 - e. Count number of words in a string
3. Java program to implements Addition and Multiplication of two N X N matrices.
4. Java program to demonstrate the use of Constructor.
5. Calculate area of the following shapes using method overloading.
 - a. Triangle
 - b. Rectangle
 - c. Circle
 - d. Square
6. Implement inheritance between ***Person (Aadhar, Surname, Name, DOB, and Age)*** and ***Student (Admission Number, College, Course, Year)*** classes where ReadData(), DisplayData() are overriding methods.

7. Java program for implementing Interfaces
8. Java program on Multiple Inheritance.
9. Java program for to display ***Serial Number from 1 to N*** by creating two Threads
10. Java program to demonstrate the following exception handlings
 - a. Divided by Zero
 - b. Array Index Out of Bound
 - c. File Not Found
 - d. Arithmetic Exception
 - e. User Defined Exception
11. Create an Applet to display different shapes such as Circle, Oval, Rectangle, Square and Triangle.
12. Write a program for counting number of characters in a file

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science

Semester: IV

Course Title: Operating Systems

Course Code: 20CSCCOS43

No. of Hours: 60

LTP: 400

Credits: 3

Objectives

- To understand the basic components of a computer operating system, and the interactions among the various components.
- To emphasize various functions of an operating system like memory management, process management, device management, etc.
- To introduce Shell scripting and Android Development Framework.

Course Outcomes

CO1: Relate the basic functions and types of operating system.

CO2: Describe different services of the operating system.

CO3: Analyse process management and scheduling algorithms.

CO4: Correlate various memory concepts.

CO5: Compile LINUX commands on UNIX/LINUX Operating System.

UNIT- I

(12 Hrs.)

Introduction to Operating Systems:

What is an Operating System? History and Evolution of OS, Objectives and functions, Computer system architecture, Types of Operating Systems- Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real-time Systems.

UNIT- II

(12 Hrs.)

Operating System organization:

Processor and User Modes, Kernels, System Calls and System Programs Process, Process models, Process states, Process creation, process termination, Threads, Threading Issues

Process Scheduling Algorithms-Non-Preemptive and Preemptive Scheduling Algorithms.

UNIT III

(12 Hrs.)

Process Management: Deadlock, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock, Deadlock Handling Approaches: Deadlock Prevention, Deadlock Avoidance and Deadlock Detection and Recovery.

Concurrent and Dependent Processes, Semaphores, Inter-process Communication; Process Synchronization

UNIT - IV **(12 Hrs.)**

Memory Management: Physical and Virtual Address Space; Memory Allocation Strategies- Fixed and -Variable Partitions, Paging, Segmentation, Virtual Memory.

File Management : Directory Structure, File Operations, File Allocation Methods.

UNIT - V **(12 Hrs.)**

Introduction to Shell Scripting:

What is Shell and various types of Shell, various editors present in Linux, Different modes of operations in vi editor, What is Shell Script, Writing and Executing the Shell script, Shell Variables (user defined and System variables), Pipes and Filters, Decision making in shell scripts(If else, Switch), Loops in Shell, Functions, Utility Programs (cut, paste, join, tr, uniq utilities), Pattern matching Utility(grep) - Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Student presentations and seminars
- Online quizzes

Prescribed Book

1. Operating Systems by J. Archer Harris (Author), Jyoti Singh (Author) (TMH)

Reference Books

1. Operating System Principles by Abraham Silberschatz, Peter Baer Galvin and Greg Gagne (7th Edition) Wiley India Edition.
2. Operating Systems: Internals and Design Principles by Stallings (Pearson)
3. Online Resources for UNIT V.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science	Semester: IV	
Course Title: Operating Systems using Linux -Practical	Course Code: 20CSP5OS42	
No of hours: 30	LTP: 002	Credits: 2

Objectives

- To provide necessary skills for developing and debugging programs in UNIX environment.
- To Introduce basic Unix commands, system call interface for process management, inter-process communication and I/O in Unix

Course Outcomes

CO1: Apply various Linux commands on a standard UNIX/LINUX Operating system.

CO2: Apply shell programming on UNIX/LINUX OS.

CO3: Develop skills in shell programming.

List of practicals

Following exercises can be performed using Linux or UNIX

1. Usage of following commands:
ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir , touch, cd. cal, cat(append), cat(concatenate), mv, cp, man, date. chmod, grep, tput (clear, highlight), bc.
2. Write a shell script to check if the number entered at the command line is prime or not.
3. Write a shell script to modify the “cal” command to display calendars of the specified months.
4. Write a shell script to accept a login name. If not a valid login name display message – “Entered login name is invalid”.
5. Write a shell script to display date in the mm/dd/yy format.
6. Write a shell script to display on the screen sorted output of “ who” command along with the total number of users.
7. Write a shell script to display the multiplication table any number,
8. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.
9. Write a shell script to find the sum of digits of a given number.
10. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
11. Write a shell script to find the LCD (least common divisor) of two numbers.
12. Write a shell script to perform the tasks of a basic calculator.
13. Write a shell script to find the power of a given number.
14. Write a shell script to find the factorial of a given number.
15. Write a shell script to check whether the number is Armstrong or not.
16. Write a shell script to check whether the file has all the permissions or not.

17. Program to show the pyramid of special character “*”.
18. Simulate Indexed file allocation strategies
19. Write a program to Priority CPU Scheduling algorithm
20. Simulate Paging Techniques of memory management.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
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SYLLABUS

Subject: Computer Science

Semester: V

**Course Title: Web Interface
Designing**

Course Code: 20CSSEC11WI 3

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To describe the fundamental hardware components that make up a computer hardware and the role of each of these components.
- To analyze system development, word processing, spreadsheet and presentation software to solve basic information system problems.
- To apply standard statistical inference procedures to draw conclusions from data.

Course Outcomes

CO1: Understand and appreciate the web architecture and services

CO2: Gain knowledge about various components of a website.

CO3: Demonstrate skills regarding creation of a static website and an interface to dynamic website.

CO4: Learn how to install and configure word press.

CO5: Apply knowledge of installing various plugins to use in their websites.

UNIT-I

(9 Hrs.)

Introduction to web designing

HTML: Introduction to web designing, difference between web applications and desktop applications, introduction to HTML, HTML structure, elements, attributes, headings, paragraphs, styles, colours, HTML formatting, Quotations, Comments, images, tables, lists, links, HTML CSS, HTML frames, file paths, layout, symbols, HTML responsive – Programming Exercises.

UNIT-II

(9 Hrs.)

HTML

HTML forms: HTML form elements, input types, input attributes, HTML 5, HTML graphics, HTML media – video, audio, plug INS, you tube.

HTML API'S: Geo location, Drag/drop, local storage, HTML SSE.

CSS: CSS home, introduction, syntax, colours, back ground, borders, margins, padding, height/ width, text, fonts, icons, tables, lists, position, overflow, float, CSS combinators, pseudo class, opacity, tool tips, image gallery, drop down, CSS forms, CSS responsive – Programming Exercises.

UNIT-III

(9 Hrs.)

Client-side programming

Introduction to JavaScript - What is DHTML, JavaScript, basics, variables, string manipulations, mathematical functions, statements, operators, arrays, functions. Objects in JavaScript - Data and objects in JavaScript, regular expressions, exception handling. DHTML with JavaScript - Data validation, opening a new window, messages and confirmations, the status bar, different frames, rollover buttons, moving images – Programming Exercises.

UNIT-IV

(9 Hrs.)

Word press

Introduction to word press, servers like wamp, bitnami etc, installing and configuring word press, understanding admin panel, working with posts and pages, using editor, text formatting with shortcuts, working with media - Adding, editing, deleting media elements, working with widgets, menus – Programming Exercises.

UNIT-V

(9 Hrs.)

Word press themes

Working with themes-parent and child themes, using featured images, configuring settings, user and user roles and profiles, adding external links, extending word press with plug-ins. Customizing the site, changing the appearance of site using css, protecting word press website from hackers – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Chris Bates, Web Programming Building Internet Applications, Second Edition, Wiley (2007).
2. Paul S.WangSanda S. Katila, an Introduction to Web Design plus Programming, Thomson (2007).
3. Head First HTML and CSS, Elisabeth Robson, Eric Freeman, O'Reilly Media Inc.
4. An Introduction to HTML and JavaScript: for Scientists and Engineers, David R. Brooks. Springer, 2007.

Reference Books

1. Word press for Beginners, Dr.Andy Williams.
2. Professional word press, Brad Williams, David damstra, Hanstern.
3. Schaum's Easy Outline HTML, David Mercer, Mcgraw Hill Professional.

Web sources:

- a. <http://www.codecademy.com/tracks/web>
- b. <http://www.w3schools.com>
- c. <https://www.w3schools.in/wordpress-tutorial/>
- d. <http://www.homeandlearn.co.uk>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Web Designing-Practical Course Code: 20CSP611WD2

No. of Hours: 45

LTP: 003

Credits: 2

Objectives

- To create a static website with the help of Word press.
- To create an interface for a dynamic website.

Course Outcomes

CO1: Create a basic website with the help of HTML and CSS.

CO2: Acquire the skill of installing word press and various plugins of Word press.

CO3: Apply various themes for their websites using Word press.

List of Practicals:

(30 Hrs.)

HTML and CSS:

1. Create an HTML document with the following formatting options:

(a) Bold, (b) Italics, (c) Underline, (d) Headings (Using H1 to H6 heading styles), (e) Font (Type, Size and Color), (f) Background (Colored background/Image in background), (g) Paragraph, (h) Line Break, (i) Horizontal Rule, (j) Pre tag

2. Create an HTML document which consists of:

(a) Ordered List (b) Unordered List (c) Nested List (d) Image

3. Create a Table with four rows and five columns. Place an image in one column.

4. Using "table" tag, align the images as follows:



5. Create a menu form using html.
6. Style the menu buttons using css.
7. Create a form using HTML which has the following types of controls:
(a) Text Box (b) Option/radio buttons (c) Check boxes (d) Reset and Submit buttons
8. Embed a calendar object in your web page.
9. Create an applet that accepts two numbers and perform all the arithmetic operations on them.
10. Create nested table to store your curriculum.
11. Create a form that accepts the information from the subscriber of a mailing system.
12. Design the page as follows:



13. Create a help file as follows:



14. Create a webpage containing your bio data (assume the form and fields).

15. Write a html program including style sheets.
16. Write a html program to layers of information in web page.
17. Create a static webpage.

Word press:

18. Installation and configuration of word press.
19. Create a site and add a theme to it.
20. Create a child theme
21. Create five pages on COVID - 19 and link them to the home page.
22. Create a simple post with featured image.
23. Add an external video link with size 640 X 360.
24. Create a user and assign a role to him.
25. Create a login page to word press using custom links
26. Create a website for your college.

Skill/Hands-on: Field Work/Mini Project

(15 Hrs.)

1. Choosing a firm or business to develop a website, identifying various business entities to be included in the website, identifying menu bar and content to be placed in their websites.

Prescribed Text Book

1. WordPress for Beginners 2021: A Visual Step-by-Step Guide to Mastering WordPress.

Reference Text Books

1. WordPress All-in-One For Dummies.
2. Professional word press, Brad Williams, David damstra, Hanstern.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
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SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Web Applications

Course Code: 20CSSEC12WA3

Development with PHP & MYSQL

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To gain basic knowledge on server-side programming
- To understand the difference between Static and Dynamic Website
- To develop Content Management System Using PHP and MySQL

Course Outcomes

CO1: Understand how to use regular expressions, handle exceptions, and validate data using PHP.

CO2: Apply In-Built functions and Create User defined functions in PHP programming.

CO3: Design PHP scripts to handle HTML forms.

CO4: Learn how to work with various components in PHP.

CO5: Gain knowledge on how to use PHP with MySQL database and can write database driven web pages.

UNIT-I

(9 Hrs.)

The Building blocks of PHP: Variables, Data Types, Operators and Expressions, Constants. Flow Control Functions in PHP: Switching Flow, Loops, Code Blocks and Browser Output.

Working with Functions: What is function?, Calling functions, Defining Functions, Returning the values from User- Defined Functions, Variable Scope, Function arguments – Programming Exercises.

UNIT-II

(9 Hrs.)

Introduction to Arrays: What are Arrays? Creating Arrays, Some Array - Related Functions.

Working with Objects: Creating Objects, Object Instance Working with Strings, Dates and Time: Formatting strings with PHP, Investigating Strings with PHP, Manipulating Strings with PHP, Using Date and Time Functions in PHP – Programming Exercises.

UNIT-III

(9 Hrs.)

Working with Forms: Creating Forms, Accessing Form Input with User defined Arrays, Combining HTML and PHP code on a single Page, Using Hidden Fields to save state, Redirecting the user, Sending Mail on Form

Submission, and Working with File Uploads.

Working with Cookies and User Sessions: Introducing Cookies, Setting a Cookie with PHP, Session Function Overview, Starting a Session, Working with session variables, passing session IDs in the Query String, Destroying Sessions and Unsetting Variables, Using Sessions in an Environment with Registered Users – Programming Exercises.

UNIT-IV

(9 Hrs.)

Working with Files and Directories: Including Files with include(), Validating Files, Creating and Deleting Files, Opening a File for Writing, Reading or Appending, Reading from Files, Writing or Appending to a File, Working with Directories, Open Pipes to and from Process Using popen(), Running Commands with exec(), Running Commands with system() or passthru().

Working with Images: Understanding the Image-Creation Process, Necessary Modifications to PHP, Drawing a New Image, Getting Fancy with Pie Charts, Modifying Existing Images, Image Creation from User Input – Programming Exercises.

UNIT-V

(9 Hrs.)

Interacting with MySQL using PHP: MySQL Versus MySQL Functions, Connecting to MySQL with PHP, Working with MySQL Data. Creating an Online Address Book: Planning and Creating Database Tables, Creating Menu, Creating Record Addition Mechanism, Viewing Records, Creating the Record Deletion Mechanism, Adding Sub-entities to a Record – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).
2. Steven Holzner, PHP: The Complete Reference, McGraw-Hill.
3. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014.

Reference Book

1. Xue Bai Michael Ekedahl, The web warrior guide to Web Programming, Thomson (2006).

Web resources

- a) <http://www.codecademy.com/tracks/php>
- b) <http://www.w3schools.com/PHP>
- c) <http://www.tutorialpoint.com>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science	Semester: V	
Course Title: PHP & MYSQL-Practical	Course Code: 20CSP712PM2	
No. of Hours: 45	LTP: 003	Credits: 2

Objectives

- To design PHP scripts to handle HTML forms
- To develop Content Management System Using PHP and MySQL.

Course Outcomes

- CO1:** Write, debug and implement the Programs by applying concepts and error handling techniques of PHP.
- CO2:** Create a website with reports generated from a database.
- CO3:** Write programs to create an interactive website for e-commerce sites like online shopping, etc.

List of Practicals: (30 Hrs.)

1. Write a PHP program to Display "Hello".
2. Write a PHP Program to display the today's date.
3. Write a PHP program to display Fibonacci series.
4. Write a PHP Program to read the employee details.
5. Write a PHP program to prepare the student marks list.
6. Write a PHP program to generate the multiplication of two matrices.
7. Create student registration form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
8. Create Website Registration Form using text box, check box, radio button, select, submit button. And display user inserted value in new PHP page.
9. Write PHP script to demonstrate passing variables with cookies.
10. Write a program to keep track of how many times a visitor has loaded the page.
11. Write a PHP application to add new Rows in a Table.
12. Write a PHP application to modify the Rows in a Table.
13. Write a PHP application to delete the Rows from a Table.
14. Write a PHP application to fetch the Rows in a Table.

15. Develop an PHP application to implement the following Operations
 - i. Registration of Users.
 - ii. Insert the details of the Users.
 - iii. Modify the Details.
 - iv. Transaction Maintenance.
 - a) No of times Logged in
 - b) Time Spent on each login.
 - c) Restrict the user for three trials only.
 - d) Delete the user if he spent more than 100 Hrs of transaction.
16. Write a PHP script to connect MySQL server from your website.
17. Write a program to read customer information like cust -no, cust-name, item- purchased, and mob-no, from customer table and display all these information in table format on output screen.
18. Write a program to edit name of customer to “Kiran” with cust-no =1, and to delete record with cust-no=3.
19. Write a program to read employee information like emp - no, emp-name, designation and salary from EMP table and display all this information using table format in your website.
20. Create a dynamic web site using PHP and MySQL.

Skill/Hands-on: Field Work/Mini Project

(15 Hrs.)

1. Choosing a firm or business to develop a website, identifying forms to be placed in the websites, back end databases to be maintained and reports to be generated and placed in the websites.

Prescribed Text Book

1. Julie C. Meloni, SAMS Teach yourself PHP MySQL and Apache, Pearson Education (2007).

References Text Book

1. Steven Holzner , PHP: The Complete Reference, McGraw-Hill.
2. Robin Nixon, Learning PHP, MySQL, JavaScript, CSS & HTML5, Third Edition O'reilly, 2014.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Internet of Things

Course Code: 20CSSEC21IT3

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To understand the application areas of IOT
- To realize the revolution of Internet in Mobile Devices, Cloud & Sensor Networks
- To understand building blocks of Internet of Things and characteristics

Course Outcomes

CO1: Understand various concepts, terminologies and applications of IoT systems.

CO2: Learn how to use various sensors and wireless technologies for design of IoT.

CO3: Gain knowledge on how to connect various things to Internet.

CO4: Understand Arduino Simulation Environment.

CO5: Apply skills to develop simple IOT Devices.

UNIT-I

(9 Hrs.)

Fundamentals of IoT

Introduction, Definition, Trends & Characteristics of IoT, IoT Architectures, Physical & Logical Design of IoT, Enabling Technologies in IoT, History of IoT, About Things in IoT, The Identifiers in IoT, About the Internet in IoT, IoT frameworks, IoT and M2M

Applications of IoT: Home Automation, Smart Cities, Energy, Retail Management, Logistics, Agriculture, Self - driven cars, Industrial IoT, Legal challenges, IoT design Ethics, IoT in Environmental Protection – Programming Exercises

UNIT-II

(9 Hrs.)

Sensors Network

Definition, Types of Sensors, Types of Actuators, Examples and Working : Home Security, Environmental Monitoring, IoT Development Boards: Arduino IDE and Board Types, RaspberriPi Development Kit, RFID Principles and components, Wireless Sensor Networks: History and Context, Applications The node, Connecting nodes, Networking Nodes – Programming Exercises.

UNIT-III

(9 Hrs.)

Various Technologies

Wireless Technologies for IoT: WPAN Technologies for IoT: IEEE 802.15.4, Zigbee, HART, NFC.

IP Based Protocols for IoT IPv6, 6LowPAN, LoRA, RPL, REST, AMPQ, CoAP, MQTT. Edge connectivity and protocols – Programming Exercises

UNIT-IV

(9 Hrs.)

Arduino Simulation Environment

Arduino Uno Architecture, Setting up the IDE, Writing Arduino Software, Arduino Libraries, Basics of Embedded C programming for Arduino, Interfacing LED, push button and buzzer with Arduino, Interfacing Arduino with LCD.

Sensor & Actuators with Arduino: Overview of Sensors working, Analog and Digital Sensors, Interfacing of Temperature, Humidity, Motion, Light and Gas Sensors with Arduino, Interfacing of Actuators with Arduino, Interfacing of Relay Switch and Servo Motor with Arduino – Programming Exercises

UNIT-V

(9 Hrs.)

Developing IOT's

Implementation of IoT with Arduino, Connecting and using various IoT Cloud Based Platforms such as AWS IoT, Google Cloud IoT Core etc. Cloud Computing, Fog Computing – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Internet of Things - A Hands-on Approach, Arshdeep Bahga and Vijay Madisetti, Universities Press, 2015, ISBN: 9788173719547.
2. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Hands-on Approach)", 1st Edition, VPT, 2014.
3. Daniel Minoli, "Building the Internet of Things with IPv6 and MIPv6: The Evolving World of M2M Communications", ISBN: 978 -1-118 -47347-4, Willy Publications.

Reference Books

1. Pethuru Raj and Anupama C. Raman, "The Internet of Things: Enabling Technologies, Platforms, and Use Cases", CRC Press .
2. Open source software / learning websites.
 - a. <https://github.com/connectIOT/iottoolkit>
 - b. <https://www.arduino.cc/>
 - c. https://onlinecourses.nptel.ac.in/noc17_cs22/course
 - d. http://www.cse.wustl.edu/~jain/cse570-15/ftp/iot_prot/index.html
 - e. Contiki (Open source IoT operating system)
 - f. Ardudroid (open source IoT project)
 - g. <https://blynk.io> (Mobile app)
 - h. IoT Toolkit -smart object API gateway service reference implementation

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8
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SYLLABUS

Subject: Computer Science	Semester: V	
Course Title: Internet of Things -Practical	Course Code: 20CSP621IT2	
No. of Hours: 45	LTP: 003	Credits: 2

Objectives

- To implement skills to design a small IoT device
- To design and develop IoT based sensor systems

Course Outcomes

CO1: Connect various sensors, actuators, etc to Arduino board.

CO2: Design a small mobile app to control the sensors.

CO3: Deploy a simple IoT device.

List of Practicals:

(30 Hrs.)

1. Understanding Arduino UNO Board and Components
2. Installing and work with Arduino IDE
3. Blinking LED sketch with Arduino
4. Simulation of 4-Way Traffic Light with Arduino
5. Using Pulse Width Modulation
6. LED Fade Sketch and Button Sketch
7. Analog Input Sketch (Bar Graph with LEDs and Potentiometre)
8. Digital Read Serial Sketch (Working with DHT/IR/Gas or any other Sensor)
9. Working with Adafruit Libraries in Arduino
10. Spinning a DC Motor and Motor Speed Control Sketch
11. Working with Shields
12. Design APP using Blink App or Things peak API and connect it LED bulb.
13. Design APP Using Blink App and Connect to Temperature, magnetic Sensors.

Skill/Hands-on: Field Work/Mini Project**(15 Hrs.)**

1. Choosing a Problem for IoT solution (agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device, method of implementation and how to connect the device to mobile.

Prescribed Text Book

1. Vijay Madiseti and ArshdeepBahga, "Internet of Things (A Hands-onApproach)", 1st Edition, VPT, 2014 .

Reference Text Book

1. Internet of Things - A Hands-on Approach, ArshdeepBahga and Vijay Madiseti, Universities Press, 2015, ISBN: 9788173719547 .

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Application

Course Code: 20CSSEC22AD3

Development with Python

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To learn and understand Python programming basics and paradigm.
- To implement lists, tuples, and dictionaries in Python programs.
- To design and implement GUI application and how to handle exceptions and files.

Course Outcomes

CO1: Examine Python syntax and semantics and be fluent in the use of Python flow control and functions.

CO2: Demonstrate proficiency in handling Exceptions and File Systems.

CO3: Learn how to use Regular Expressions and threads.

CO4: Implement GUI and web programming as used in Python.

CO5: Apply concepts of Python programming in various fields related to IOT, Web Services and Databases in Python.

UNIT-I

(9 Hrs.)

Python basics, Objects- Python Objects, Standard Types, Other Built-in Types, Internal Types, Standard Type Built-in Functions.

Numbers - Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators.

Sequences – Strings-Assigning sting to a variable, multiline strings, string methods, Lists-accessing list elements, add and change list elements, and Tuples, Mapping and Set Types – Programming Exercises.

UNIT-II

(9 Hrs.)

Files: File Objects, File Built-in Function [open()], File Built -in Methods- read(), write(), close(), truncate() writable() etc, File Built-in Attributes, Standard Files, Command-line Arguments, File System, File Execution.

Exceptions: Exceptions in Python, Detecting and Handling Exceptions, Exceptions as Strings, Raising Exceptions, Assertions, Standard Exceptions, Creating Exceptions, Exception chaining, user defined exceptions.

Modules: Creating a module, using a module, naming & renaming a module, built-in modules, Importing Modules, The dir() function – Programming Exercises.

UNIT-III**(9 Hrs.)**

Regular Expressions: Introduction, Special Symbols and Characters, Regex functions.

Python Multithreaded Programming: Introduction, Threads and Processes, Python Threads, and the Global Interpreter Lock, Thread Module, Threading Module, Related Modules – Programming Exercises.

UNIT-IV**(9 Hrs.)**

GUI Programming: Introduction, Tkinter- A sample program using Tkinter.

Web Programming: Introduction, Web Surfing with Python, Creating Simple Web Clients, Advanced Web Clients – Programming Exercises.

UNIT-V**(9 Hrs.)**

Database Programming: Introduction, Python Database Application Programmer's Interface (DBAPI), Object Relational Managers (ORMs), Related Modules – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.
2. Think Python, Allen Downey, Green Tea Press.
3. Introduction to Python, Kenneth A. Lambert, Cengage.
4. Python Programming: A Modern Approach, Vamsi Kurama, Pearson.

Reference Books

1. Learning Python, Mark Lutz, O' Reilly.
2. Web sources suggested by the teacher concerned and the college librarian including reading material.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Programming in Python-Practical

Course Code: 20CSP722PP2

No. of Hours: 45

LTP: 003

Credits: 2

Objectives

- To acquire programming skills in core python.
- To implement lists, tuples, and dictionaries in Python programs.

Course Outcomes

CO1: Implement programs related to various data structures like lists, dictionaries, etc.

CO2: Implement programs related to files.

CO3: Implement applications related to databases, Web services and IOT.

List of Practicals:

(30 Hrs.)

1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon user's choice.
2. Write a python program to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria :
Grade A: Percentage ≥ 80
Grade B: Percentage ≥ 70 and < 80
Grade C: Percentage ≥ 60 and < 70
Grade D: Percentage ≥ 40 and < 60
Grade E: Percentage < 40
3. Write a python program to display the first n terms of Fibonacci series.
4. Write a python program to calculate the sum and product of two compatible matrices.
5. Write a function that takes a character and returns True if it is a vowel and False otherwise.
6. Write a menu-driven program to create mathematical 3D objects
 - I. curve
 - II. sphere

III. cone

IV. arrow

V. ring

VI. Cylinder

7. Write a python program to read n integers and display them as a histogram.
8. Write a python program to display sine, cosine, polynomial and exponential curves.
9. Write a python program to plot a graph of people with pulse rate p vs. height h. The values of P and H are to be entered by the user.
10. Write a python program to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula $m=60/(t+2)$, where t is the time in hours. Sketch a graph for t vs. m, where $t \geq 0$.
11. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows:
$$P(t) = (15000(1+t)) / (15 + e^t)$$
12. Where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.
13. Input initial velocity and acceleration, and plot the following graphs depicting equations of motion:
 - I. velocity wrt time ($v=u+at$)
 - II. distance wrt time ($s=u*t+0.5*a*t*t$)
 - III. distance wrt velocity ($s=(v*v-u*u)/2*a$)
14. Write a program that takes two lists and returns True if they have at least one common member.
15. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.
16. Write a program to implement exception handling.
17. Try to configure the widget with various options like: `bg="green"`, `family="times"`, `size=20`.
18. Write a Python program to read last 5 lines of a file.
19. Design a simple database application that stores the records and retrieve the same.
20. Design a database application to search the specified record from the database.
21. Design a database application that allows the user to add, delete and modify the records.

Skill/Hands-on: Field Work/Mini Project**(15 Hrs.)**

1. Choosing a Problem for IoT solution (agriculture, aquaculture, smart home appliances, testing moisture levels, oxygen levels, etc), reasons why IoT solution is feasible for the said problem, material required, Design and architecture for the proposed IoT device.
2. Implement Python program to connect the IOT device.

Prescribed Text Book

1. Let Us Python – Yashavanth Kanetkar and Aditya Kanetkar , BPB Publications ISBN: 9789388511568, 9789388511568.

Reference Text Book

1. Core Python Programming, Wesley J. Chun, Second Edition, Pearson.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Data Science

Course Code: 20CSSEC31DS3

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To build the fundamentals of Data Science.
- To develop basic understanding of the key technologies in Data Science - data mining, machine learning, visualization techniques, predictive modeling, and statistics.
- To gain practical experience in programming tools for Data Science.

Course Outcomes

CO1: Develop relevant programming abilities

CO2: Demonstrate proficiency with statistical analysis of data

CO3: Develop the ability to build and assess data-based models

CO4: Demonstrate skill in data management

CO5: Apply data science concepts and methods to solve problems in real-world contexts

UNIT-I

(9 Hrs.)

Introduction: Definition, Why is it important, Life cycle, Exploration, Data Science Modeling

Python: Getting Python, The Zen of Python, Whitespace Formatting, Modules, Arithmetic, Functions, Strings, Exceptions, Lists, Tuples, Dictionaries, Sets, Control Flow, Truthiness, Sorting, List Comprehensions, Generators and Iterators, Randomness, Object – Orienting Programming, Functional Tools, enumerate, zip and Argument Unpacking, args and kwargs, Welcome to Data Science!

Visualizing Data: matplotlib, Bar charts, Line charts, Scatterplots.

Linear Algebra: Vectors, Matrices - Programming Exercises.

UNIT-II

(9 Hrs.)

Statistics: Describing a Single Set of Data, Correlation, Simpson's Paradox, some Other Correlation Caveats, Correlation and Causation.

Probability: Dependence and Independence, Conditional Probability, Bayes' s Theorem, Random Variables, Continuous Distributions, The Normal Distribution, The Central Limit Theorem.

Hypothesis and Inference: Statistical Hypothesis Testing, Example: Flipping a Coin, Confidence Intervals, P-hacking, Example: Running an A/B

Test, Bayesian Inference.

Gradient Descent: The Idea behind Gradient Descent, Estimating the Gradient, Using the Gradient, Choosing the Right Step Size, Putting It All Together, Stochastic Gradient Descent – Programming Exercises.

UNIT-III

(9 Hrs.)

Getting Data: stdin and stdout, Reading Files – The Basics of Text Files, Delimited Files, Scraping the Web - HTML and the parsing Thereof, Example: O'Reilly Books About Data, Using APIs – JSON (and XML), Using an Unauthenticated API, Finding APIs.

Working with Data : Exploring Your Data, Exploring One-Dimensional Data, Two Dimensions Many Dimensions, Cleaning and Munging, Manipulating Data, Rescaling, Dimensionality Reduction.

Machine Learning: Modeling, What Is Machine Learning? Over fitting and under fitting, Correctness, The Bias-Variance Trade-off, Feature Extraction and Selection – Programming Exercises.

UNIT-IV

(9 Hrs.)

K-Nearest Neighbors: The Model, Example: Favorite Languages, The Curse of Dimensionality.

Naive Bayes: A Really Dumb Spam Filter, A More Sophisticated Spam Filter, Implementation, Testing Our Model.

Simple Linear Regression: The Model, Using Gradient Descent, Maximum Likelihood Estimation.

Multiple Regression: The Model, Further Assumptions of the Least Squares Model, Fitting the Model, Interpreting the Model, Goodness of Fit – Programming Exercises.

UNIT-V

(9 Hrs.)

Logistic Regression: The Problem, The Logistic Function, Applying the Model, Goodness of Fit Support Vector Machines.

Decision Trees: What Is a Decision Tree? Entropy, The Entropy of a Partition, Creating a Decision Tree, Putting It All Together, Random Forests.

Neural Networks: Perceptron, Feed-Forward Neural Networks And Back propagation, Example: Defeating a CAPTCHA.

Clustering: The Idea, The Model, Example: Meetups , Choosing k, Example: Clustering Colors, Bottom-up Hierarchical Clustering – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Data Science from Scratch by Joel Grus O'Reilly Media
2. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

Reference Book

1. Jake VanderPlas, "Python Data Science Handbook: Essential Tools for Working with Data", O'Reilly, 2017.

Web resources:

1. <https://www.edx.org/course/analyzing-data-with-python>
[http://math.ecnu.edu.cn/~lfzhou/seminar/\[Joel Grus\] Data Science from Scratch_First_Princ.pdf](http://math.ecnu.edu.cn/~lfzhou/seminar/[Joel%20Grus]_Data_Science_from_Scratch_First_Princ.pdf)

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Data Science-Practical

Course Code: 20CSP631DS2

No. of Hours: 45

LTP: 003

Credits: 2

Objectives

- To practice the python syntax and write programs.
- To identify and implement the python concepts and techniques.

Course Outcomes

CO1: Apply data science solutions to real world problems.

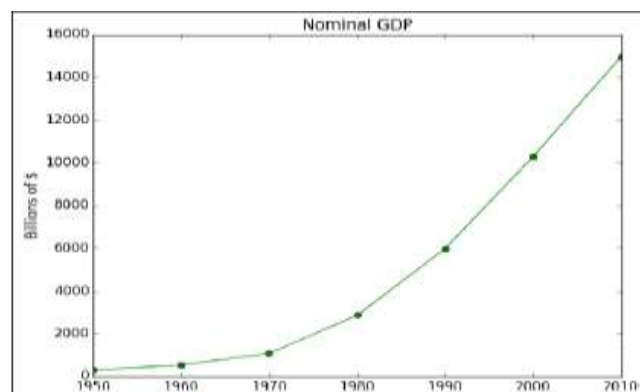
CO2: Implement the programs to get the required data, process it and present the outputs using Python language.

CO3: Execute statistical analyses with Open source Python software.

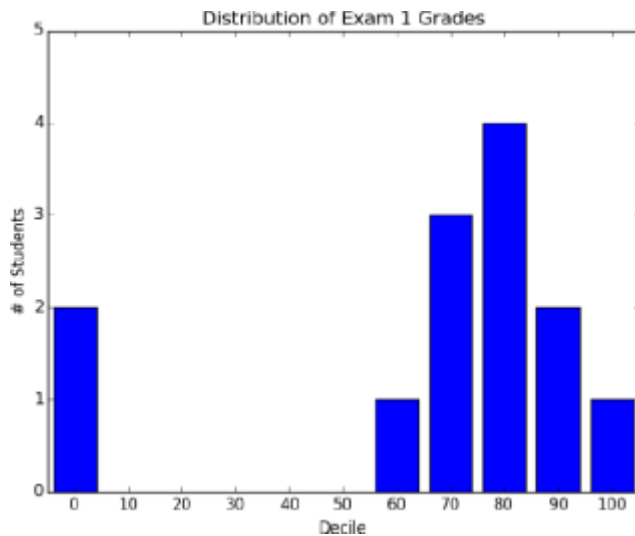
List of Practicals:

(30 Hrs.)

1. Write a Python program to create a line chart for values of year and GDP as given below.



2. Write a Python program to create a bar chart to display number of students secured different grading as given below.



3. Write a Python program to create a time series chart by taking one year month wise stock data in a CSV file.
4. Write a Python program to plot distribution curve.
5. Import a CSV file and perform various Statistical and Comparison operations on rows/columns. Write a python program to plot a graph of people with pulse rate p vs. height h . The values of P and H are to be entered by the user.
6. Import rainfall data of some location with the help of packages available in R Studio and plot a chart of your choice.

Skill/Hands-on: Field Work/Mini Project

(15 Hrs.)

1. search online and visit any of the agencies like Statistical cell, weather forecasting centers, pollution control boards, manufacturing industries, agriculture departments, etc. to observe the manual process going on to collect the data, maintain the data, present the data and to predict the data for future instances.

Prescribed Text Book

1. Data Science from Scratch by Joel Grus O'Reilly Media

Reference Text Book

1. Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science

Semester: V

Course Title: Python for Data Science

Course Code: 20CSSEC32PD3

No. of Hours: 45

LTP: 300

Credits: 3

Objectives

- To learn the core programming basics required for Data Science using Python language.
- To gain knowledge on Data Science modules NumPy, SciPy and Matplotlib.

Course Outcomes

CO1: Identify the need for data science and solve basic problems using Python built-in data types and their methods.

CO2: Design an application with user- defined modules and packages using OOP concept

CO3: Employ efficient storage and data operations using NumPy arrays.

CO4: Apply powerful data manipulations using Pandas.

CO5: Do data pre-processing and visualization using Pandas

UNIT-I

(9 Hrs.)

Introduction to Data Science - Why Python? - Essential Python libraries - Python Introduction- Features, Identifiers, Reserved words, Indentation, Comments, Built-in Data types and their Methods: Strings, List, Tuples, Dictionary, Set - Type Conversion- Operators. Decision Making- Looping- Loop Control statement- Math and Random number functions. User defined functions - function arguments & its types – Programming Exercises.

UNIT-II

(9 Hrs.)

User defined Modules and Packages in Python - Files: File manipulations, File and Directory related methods - Python Exception Handling. OOPs Concepts - Class and Objects, Constructors - Data hiding- Data Abstraction- Inheritance – Programming Exercises.

UNIT-III

(9 Hrs.)

Num Py Basics: Arrays and Vectorized Computation - The Num Py ndarray- Creating ndarrays- Data Types for ndarrays- Arithmetic with Num Py Arrays- Basic Indexing and Slicing - Boolean Indexing-Transposing Arrays and Swapping Axes.

Universal Functions: Fast Element-Wise Array Functions- Mathematical and Statistical Methods-Sorting- Unique and Other Set Logic – Programming Exercises.

UNIT-IV**(9 Hrs.)**

Introduction to pandas Data Structures: Series, Data Frame and Essential Functionality: Dropping Entries- Indexing, Selection, and Filtering- Function Application and Mapping- Sorting and Ranking.

Summarizing and Computing Descriptive Statistics - Unique Values, Value Counts, and Membership. Reading and Writing Data in Text Format – Programming Exercises.

UNIT-V**(9 Hrs.)**

Data Cleaning and Preparation: Handling Missing Data - Data Transformation: Removing Duplicates, Transforming Data Using a Function or Mapping, Replacing Values, Detecting and Filtering Outliers - String Manipulation: Vectorized String Functions in pandas.

Plotting with pandas: Line Plots, Bar Plots, Histograms and Density Plots, Scatter or Point Plots – Programming Exercises.

Co-Curricular Activities

- Assignments on problem solving
- Group discussions
- Student presentations and seminars
- Online quizzes
- Project work

Prescribed Books

1. Y. Daniel Liang, “Introduction to Programming using Python”, Pearson, 2012.
2. Wes McKinney, “Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython”, O’Reilly, 2nd Edition, 2018.
3. Jake VanderPlas, “Python Data Science Handbook: Essential Tools for Working with Data”, O’Reilly, 2017.

Reference Books

1. Wesley J. Chun, “Core Python Programming”, Prentice Hall, 2006.
2. Mark Lutz, “Learning Python”, O’Reilly, 4th Edition, 2009.

Web resources:

- a. <https://www.edx.org/course/python-basics-for-data-science>
- b. <https://www.edx.org/course/analyzing-data-with-python>
- c. <https://www.coursera.org/learn/python-plotting?specialization=data-science-python>
- d. <https://www.programmer-books.com/introducing-data-science-pdf/>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science	Semester: V	
Course Title: Python for Data Science – Practical	Course Code: 20CSP732PD2	
No. of Hours: 45	LTP: 003	Credits: 2

Objectives

- To practice the python syntax and write programs.
- To identify and implement the python concepts and techniques.

Course Outcomes

CO1: Implement simple programs in Python.

CO2: Implement programs related to various structures like arrays, lists, Data frames, etc.

CO3: Implement applications related to data science.

List of Practicals:

(30 Hrs.)

1. Perform Creation, indexing, slicing, concatenation and repetition operations on Python built-in data types: Strings, List, Tuples, Dictionary, Set.
2. Apply Python built-in data types: Strings, List, Tuples, Dictionary, Set and their methods to solve any given problem.
3. Handle numerical operations using math and random number functions.
4. Create user-defined functions with different types of function arguments.
5. Create packages and import modules from packages.
6. Perform File manipulations- open, close, read, write, append and copy from one file to another.
7. Write a program for Handle Exceptions using Python Built-in Exceptions.
8. Write a program to implement OOP concepts like Data hiding and Data Abstraction.
9. Create NumPy arrays from Python Data Structures, Intrinsic NumPy objects and Random Functions.
10. Manipulation of NumPy arrays- Indexing, Slicing, Reshaping, Joining and Splitting.

11. Computation on NumPy arrays using Universal Functions and Mathematical methods.
12. Load an image file and do crop and flip operation using Num Py Indexing.
13. Create Pandas Series and Data Frame from various inputs.
14. Import any CSV file to Pandas Data Frame and perform the following:
 - (a) Visualize the first and last 10 records
 - (b) Get the shape, index and column details
 - (c) Select/Delete the records (rows)/columns based on conditions.
 - (d) Perform ranking and sorting operations.
 - (e) Do required statistical operations on the given columns.
 - (f) Find the count and uniqueness of the given categorical values.
 - (g) Rename single/multiple columns
15. Import any CSV file to Pandas Data Frame and perform the following:
 - (a) Handle missing data by detecting and dropping/ filling missing values.
 - (b) Transform data using apply () and map() method.
 - (c) Detect and filter outliers.
 - (d) Perform Vectorized String operations on Pandas Series.
 - (e) Visualize data using Line Plots, Bar Plots, Histograms, Density Plots and Scatter Plots.

Skill/Hands-on: Field Work/Mini Project (15 Hrs.)

Visit any of the agencies like Agriculture dept, statistical cell, irrigation department, Ground water department, CPO office, Rural Water Supply and Sanitation department etc or search online to get real time data like Aids database, weather forecasting database, social networking data, etc and identify any one database, implement and present the necessary charts in Python language.

Prescribed Text Book

- Data Science from Scratch by Joel Grus O'Reilly Media .

Reference Text Book

- Wes McKinney, "Python for Data Analysis: Data Wrangling with Pandas, NumPy, and IPython", O'Reilly, 2nd Edition, 2018.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Course Title: Information Technology

No. of Hours: 45

LTP: 300

Semester: I

Course Code: 20CSCCIT13

Credits: 3

Objectives

- To describe the fundamental hardware components that make up a computer hardware and the role of each of these components.
- To analyze system development, word processing, spreadsheet and presentation software to solve basic information system problems.
- To apply standard statistical inference procedures to draw conclusions from data.

Course Outcomes

CO1: Explain the fundamental computer organization and vocabulary.

CO2: Develop professional documents.

CO3: Utilize MS-Excel to generate reports.

CO4: Create presentations using MS-PowerPoint.

CO5: Develop database using MS-Access.

UNIT-I

(9 Hrs.)

Introduction: Computer Definition - Characteristics and limitations of computer Hardware, Generations of Computer, Classification of Computers, Applications of Computer, Basic Components of PC, Computer Architecture - primary and secondary memories-input and output devices-operating system-function of operating system-types of operating system-languages and its types- programming exercises

UNIT-II

(9 Hrs.)

MS word: Word processing-Features-Advantages and Applications-parts of word window- Toolbar- Creating, saving, closing, opening and editing of a document-Moving and Coping a text- Formatting of Text and paragraph - bullets and Numbering-Find and Replace-Insertion of objects-Headers and footers-page formatting-auto correct- spelling and grammar-mail merge-macros- programming exercises

UNIT-III

(9 Hrs.)

MS Excel: Features – spreadsheet-Workbook- Cell-Parts of a window-Saving, closing, opening of a workbook-Editing-advantages-formulas-types of function-templates- macros- sorting- charts - filtering- consolidation-grouping-pivot table-programming exercises

UNIT-IV

(9 Hrs.)

MS PowerPoint: Introduction – Starting-parts-Creating of tables-create presentation – templates -Auto content Wizard-Slideshow-Editing of presentation- Inserting objects and charts-programming exercises

UNIT-V

(9 Hrs.)

MS Access: Orientation to Microsoft Access - Create a Simple Access Database - Working with Table Data - Modify Table Data - Sort and Filter Records - Querying a Database - Create Basic Queries - Sort and Filter Data in a Query - Perform Calculations in a Query - Create Basic Access Forms - Work with Data on Access Forms - Create a Report - Add Controls to a Report - Format Reports- programming exercises

Prescribed Books

1. FUNDAMENTALS OF COMPUTERS by BALAGURUSAMY, McGraw Hill
2. Computer Fundamentals Anita Goel Pearson India

Reference Books

1. P.Mohan computer fundamentals- Himalaya Publications.
2. R.K.Sharma and Shashi K Gupta, computer fundamentals- Kalyani Publications
3. Introduction to Computers Peter Norton
4. Fundamentals of Computers Rajaraman V Adabala N
5. Office 2010 All- in- One For Dummies Peter Weverka
6. MS-Office S.S. Shrivastava
7. MS-OFFICE 2010 Training Guide Prof. Satish Jain, M. Geetha, Kratika BPB Publications

Online Resources

<https://support.office.com/en-us/office-training-center>

<https://www.skillshare.com/browse/microsoft-office>

https://www.tutorialspoint.com/computer_fundamentals/index.htm

<https://www.javatpoint.com/computer-fundamentalstutorial>

<https://edu.qcglobal.org/en/subjects/office/>

<https://www.microsoft.com/en-us/learning/training.aspx>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: I

Course Title: MS Office – Practical

Course Code: 20CSP1MO11

No. of Hours: 30

LTP: 002

Credits: 1

Objectives

- To provide hands-on use of Microsoft Office 2010 applications which will result in MS Office applications knowledge and skills
- To enable the students in crafting professional word documents, excel spreadsheets and PowerPoint presentations.

Course Outcomes

- CO1:** Apply appropriate menu options to create professional documents and presentations
- CO2:** Build spreadsheets to perform calculations, display data and conduct analysis
- CO3:** Design and construct databases to store, extract, and analyze real world data.

List of practicals

1. Create a MS word document that applies Headers and footers & Hyperlink options.
2. Create a MS Word document applying all the illustrations.
3. Apply the steps to create Mail Merge.
4. Prepare a class Time table in MS word.
5. Prepare a PowerPoint Presentation on "Latest trends in Technology" and apply Animations, Transitions and Slide show.
6. Prepare a PowerPoint Presentation on "Careers and Opportunities" and apply Animations, Transitions and Slide show.
7. Prepare a students' marks list, calculate the percentage, grades and find the results.
8. Prepare an Annual sales report of an Organization and display the data in the form of Charts.
9. Prepare reports on customer information and apply sorting, filtering and consolidating options in Excel.

10. Create Macros in Excel.
11. Create Pivot Tables in Excel.
12. Create Employee database with the given data tables

table1: EMP

emp_id	emp_name	dept_id	emp_salary
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table2: DEPT

dept_id	dept_name	Dept_manager
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13. Create forms for the given tables, insert values and generate reports.
14. Apply following queries on the given employee database.
 - a. List out the employees whose salary is above Rs.50,000.
 - b. List out the employees who are working for the Finance department.
 - c. List out the employees who report to the manager Mr.X.

Reference Books

1. Office 2010 All- in- One For Dummies Peter Weverka
2. MS-Office S.S. Shrivastava
3. MS-OFFICE 2010 Training Guide Prof. Satish Jain, M. Geetha, Kratika
BPB Publications

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science Semester: II
Course Title: E-Commerce & Web Designing Course Code: 20CSCCWD23
No. of Hours: 45 LTP: 300 Credits: 3

Objectives

- To understand the foundation and importance of e-commerce.
- To analyze the impact of e-commerce on business model and strategy.
- To learn the language of the web: HTML and CSS.

Course Outcomes

CO1: Explain the foundations and importance of e-commerce.

CO2: Describe the process of the e-payment system.

CO3: Differentiate the various types of online business transactions.

CO4: Apply web designing concepts to create web pages.

CO5: Explain security issues and countermeasures in e-commerce.

UNIT-I

(9 Hrs.)

Introduction: Meaning, Nature, Concepts, Advantages, Disadvantages and reasons for Transacting Online, Types of E-Commerce, e-commerce Business Models (Introduction, Key Elements of a Business Model And Categorizing Major E-Commerce Business Models).

Technology used in E-commerce: The dynamics of World Wide Web and Internet (Meaning, Evolution and Features); Designing, Building and launching e-commerce website (A systematic approach involving decisions regarding selection of hardware, software, outsourcing Vs. in-house development of a website)

UNIT-II

(9 Hrs.)

E-payment System:

Models and methods of e-payments (Debit Card, Credit Card, Smart Cards, e-money), Digital Signatures (Procedure, Working and Legal Position), Payment Gateways, Online Banking (Meaning, Concepts, Importance, Electronic Fund Transfer, Automated Clearing House, Automated Ledger Posting), Risks Involved in e-payments.

UNIT-III

(9 Hrs.)

On-line Business Transactions:

Meaning, Purpose, Advantages and Disadvantages of Transacting Online, E-Commerce Applications in Various Industries Like {Banking, Insurance, Payment of Utility Bills, Online Marketing, E-Tailing (Popularity, Benefits, problems and Features) Online Services

(Financial, Travel and Career), Auctions, Online Portal, Online Learning, Publishing and Entertainment Online Shopping (Amazon, Snap Deal, Alibaba, Flipkart, etc.)

UNIT-IV

(9 Hrs.)

Website designing:

Designing a home page, HTML document, Anchor tag Hyperlinks, Head and body section, Header Section, Title, Prologue, Links, Colorful Pages, Comment, Body Section, Heading Horizontal Ruler, Paragraph, Tabs, Images And Pictures, Lists and Their Types, Nested Lists, Table Handling.

Frames: Frameset Definition, Frame Definition, Nested Framesets, Forms and Form Elements.

DHTML and Style Sheets: Defining Styles, elements of Styles, linking a style sheet to a HTML Document, Inline Styles, External Style Sheets, Internal Style Sheets-Programming Exercises.

UNIT-V

(9 Hrs.)

Security and Encryption:

Need and Concepts, E-Commerce Security Environment: (Dimension, Definition and Scope Of E-Security), Security Threats in the E - Commerce Environment (Security Intrusions And Breaches, Attacking Methods Like Hacking, Sniffing, Cyber-Vandalism Etc.), Technology Solutions (Encryption, Security Channels Of Communication, Protecting Networks And Protecting Servers And Clients)

Prescribed Books

1. E-commerce and E-business, Himalaya publishers
2. E-Commerce by Kenneth C Laudon, PEARSON INDIA
3. Web Design: Introductory with Mind Tap Jennifer T Campbell, Cengage India

Reference Books

1. HTML & WEB DESIGN:TIPS& TECHNIQUES JAMSA, KRIS, McGraw Hill
2. Fundamentals Of Web Development by Randy Connolly, Ricardo Hoar, Pearson
3. HTML & CSS: COMPLETE REFERENCE POWELL,THOMAS, McGraw Hill

Online Resources

1. <http://www.kartrocket.com>
2. <http://www.e-commerceceo.com>
3. <http://www.fastspring.com>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA -8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: II

Course Title: Web Designing - Practical

Course Code: 20CSP2WD21

No. of Hours: 30

LTP: 002

Credits: 1

Objectives

- To provide basics of web designing.
- To familiarize the HTML tags and develop an ability to design and implement static and dynamic website

Course Outcomes

CO1: Analyze a web page and identify its elements and attributes.

CO2: Create web pages using HTML and Cascading Style Sheets.

CO3: Apply web designing concepts to create web pages

List of practicals

1. Create a simple web page using formatting tags.
2. Prepare the cover page of your college prospectus with image and text.
3. Create ordered lists, unordered list, definition list and nested list.
4. Prepare your class timetable with required attributes.
5. Creation of hyperlinks for text and images.
6. Create a ticket reservation form.
7. Create a college application form.
8. Creation of framesets.
9. Create a web page that applies different elements of styles.
10. Create a webpage that applies an inline stylesheet.
11. Create a webpage that applies an internal stylesheet.
12. Create a webpage that applies an external style sheet.

Reference Books

1. HTML & WEB DESIGN: TIPS & TECHNIQUES JAMSA, KRIS, McGraw Hill
2. HTML & CSS: COMPLETE REFERENCE POWELL, THOMAS, McGrawHill.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA – 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science	Semester: II	
Course Title: Information Technology for Managers	Course code: 20CSCCIM24	
No. of Hours: 75	LTP: 410	Credits: 4

Objectives

- To understand the importance of Information Technology in any organization.
- To impart IT basics and Internet basics.
- To prepare the students for life-long learning of computer concepts and skills.

Course Outcomes

- CO1:** Understand basic applications and concepts of information technology.
CO2: Identify hardware components, categories of programs, system software and applications.
CO3: Create Excel reports and Power Point Presentation.
CO4: Solve common business problems using appropriate Information Technology applications and systems.

UNIT-I **(15 Hrs.)**

IT in the Modern Organization: Basic concepts of Information Systems – Organizational structure and IT support. IT support at different organizational levels Managing Information Technology in organizations.
Introduction to Computer Systems: Introduction to Computers – Five generations of Modern Computers – Classification of Digital Computer Systems.

UNIT-II **(15 Hrs.)**

Computer Hardware: Computer Hardware: Central Processing Unit (CPU) Control unit and Arithmetic and logic unit (ALU).
Memory: Memory Organization – Random Access Memory (RAM), Dynamic RAM (DRAM, Static RAM (SRAM). Read Only Memory (ROM), Registers.
Secondary Storage Devices : Magnetic Tape, magnetic Disks, Hard Disks, Flexible Disks, Optical Disk.
Input Devices: Key Board, Mouse, Trackball, Game Controllers, Scanners, Voice Recognition, Web Cams, Digital Cameras, OCR, OMR, MICR.
Output Devices: Monitor: CRT Monitors, Flat- Panel Monitors– Printers: Daisy- wheel, DoT- Matrix, Ink- jet Printer – Plotter, Multimedia Projector.

UNIT-III

(15 Hrs.)

Computer Software: System Software and Application Software. Operating Systems: Windows Operating Systems, Mobile Device Operating Systems, and Notebook Operating Systems.

Application Software: Types of Personal Application Software. Spreadsheets

– Data Management – Word Processing – Desktop Publishing, Graphics, CAD,

CAM, CIM, Multi Media. Speech- recognition Software, Groupware, Software suits.

Programming Languages: Assembly language, Procedural languages, Non - procedural languages, Natural Programming Languages, Visual Programming Languages, Hyper Text Markup Language, Modeling Language, Object -

Oriented Programming Languages.

UNIT-IV

(15 Hrs.)

Telecommunications and Networks: Introduction, Analog and Digital Signals. Modulation – Need for Modulations, Types of Modulations, Modems

Communication Media & Channels: Cable Media, Broadcast Media Channels. Twisted Pair, Coaxial Cable, Fiber - Optic Cable, Microwave, Satellite, Radio, Cellular Radio, Infrared Global Positioning Systems

Networks: Local Area Networks, LAN Topologies, Wide Area Networks (WAN) – Value Added Networks (VAN) – Virtual Private Networks (VPN)

The Internet, Intranets and Extranets: The Evolution of the Internet, Services provided by the Internet, World Wide Web: Intranets & Extranets.

UNIT- V

(15 Hrs.)

MS- Excel: Overview of Excel features – Creating a new worksheet, Selecting cells, Entering and editing Text, Numbers, Inserting Rows/Columns – Changing column widths, Changing font sizes and colors, Insertion and row heights, Formulae, Referencing of Charts, Auto fill, Sort.

MS- PowerPoint: Features of Power Point – Creating a Presentation - Inserting and Deleting Slides in a Presentation – Adding Clip Art/Pictures - Inserting Other Objects, Audio, Video - Resizing and scaling of an Object – Slide Transition – Custom Animation.

Prescribed Books:

1. Ms. J. J. L. R. Bharathi Devi, M.Com., MBA., MCA., M.Phil (Computers), M.Phil. (Management) A Text Book on Information Technology, Maruthi

Book Depot, Guntur.

2. N. V. N. Chary & Lalitha S., Fundamentals of Information Technology, Kalyani Publishers, Hyderabad.

Reference Books:

1. Turban, Rainer, Potter "Introduction to Information Technology", Wiley India [2nd Edition]
2. Alexi's Leon and Mathews Leon, Fundamentals of Information Technology, Leon Press [2nd Edition]

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science **Semester:** III
Course Title: Programming with C & C++ **Course Code:** 20CSCCPC33
No. of Hours: 45 **LTP:** 300 **Credits:** 3

Objectives:

- To develop programming skills
- To choose the right data representation formats based on the requirements of the problem
- To plan structure and content, writing, updating and modifying computer programs for user solutions

Course Outcomes

CO1: Explain the basic concepts of programming language, including the use of algorithms.

CO2: Develop programs on arrays and strings.

CO3: Apply the concepts of functions, structures and unions.

CO4: Differentiate between structured and object-oriented programming.

CO5: Apply various forms of inheritance.

UNIT - I

(9 Hrs.)

Introduction and Control Structures

Algorithms, Notations, Design, Flowcharts, History of 'C' - Structure of C program - C character set, Tokens, Constants, Variables, Keywords, Identifiers - C data types - C operators - Standard I/O in C - Applying if and Switch Statements

UNIT - II

(9 Hrs.)

Loops, Arrays and Strings

Use of While, Do While and For Loops - Use of Break and Continue Statements, Array Notation and Representation - Manipulating Array Elements - Using Multi dimensional Arrays, Declaration and Initialization of String Variables - String Handling Functions -Defining

UNIT - III

(9 Hrs.)

Functions, Structure and Unions

Functions - Function Call - Call By Value, Call By Reference - Recursion

Structures: Declaration of a structure and defining a structure variable, Member Accessing.

Unions: Declaration of a Union, defining a union variable, Member Accessing, Difference between Structures and Unions.

UNIT - IV

(9 Hrs.)

Classes and Objects

Introduction to OOP and its basic features - C++ program structure - Classes and objects - Friend Functions-Constructor – Types of constructors – Destructors.

UNIT - V

(9 Hrs.)

Inheritance

Inheritance - Types of Inheritance -Types of derivation- Public – Private - Protected Hierarchical Inheritance - Multilevel Inheritance – Multiple Inheritance - Hybrid Inheritance

References

1. E. Balagurusamy "Object oriented programming with C++
2. R.Ravichandran "Programming with C++"
3. Mastering C by K R Venugopal and Sudeep R Prasad, Mc Graw Hill
4. Expert C Programming: Deep Secrets Kindle Edition Peter van der Linden (5) Let Us C YashavantKanetkar
5. The C++ Programming Language Bjarne Stroustrup
6. C++ Primer Stanley B. Lippman, Josée Lajoie, Barbara E. Moo

Online Resources

[https:// www.tutorialspoint.com/cprogramming/index.htm](https://www.tutorialspoint.com/cprogramming/index.htm) |

[https:// www.learn-c.org/](https://www.learn-c.org/)

[https:// www.programiz.com/c-programming](https://www.programiz.com/c-programming)

[https:// www.w3schools.in/c-tutorial/](https://www.w3schools.in/c-tutorial/)

[https:// www.cprogramming.com/tutorial/c-tutorial.html](https://www.cprogramming.com/tutorial/c-tutorial.html)

[https:// www.tutorialspoint.com/cplusplus/index.htm](https://www.tutorialspoint.com/cplusplus/index.htm) |

[https:// www.programiz.com/cpp-programming](https://www.programiz.com/cpp-programming)

[http:// www.cplusplus.com/doc/tutorial/](http://www.cplusplus.com/doc/tutorial/)

[https:// www.learn-cpp.org/](https://www.learn-cpp.org/)

<https://www.javatpoint.com/cpp-tutorial>

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8

(Affiliated to Krishna University, Machilipatnam)

SYLLABUS

Subject: Computer Science

Semester: III

**Course Title: Programming with C & C++
- Practical**

Course Code: 20CSP3PC31

No. of Hours: 30

LTP: 002

Credits: 1

Objectives

- To develop programming skills
- To plan structure and content, writing, updating and modifying computer programs for user solutions

Course Outcomes

CO1: Develop programming skills using the fundamentals and basics of C & C++ Languages.

CO2: Solve computing problems.

CO3: Apply various forms of inheritance.

List of practicals

1. Write C programs for
 - a. Fibonacci Series
 - b. Prime number
 - c. Palindrome number
 - d. Armstrong number.
2. 'C' program for multiplication of two matrices
3. 'C' program to implement string functions
4. 'C' program to swap numbers
5. 'C' program to calculate factorial using recursion
6. 'C++' program to perform addition of two complex numbers using constructor
7. Write a program to find the largest of two given numbers in two different classes using friend function
8. Program to add two matrices using dynamic constructor
9. Implement a class string containing the following functions:
 - a. Overload + operator to carry out the concatenation of strings.
 - b. Overload == operator to carry out the comparison of strings.
10. Program to implement inheritance.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA - 8
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SYLLABUS

Subject: Computer Science
Course Title: Database Management
No. of Hours: 45

LTP: 300

Semester: IV
Course Code: 20CSCCDM43
Credits: 3

Objectives

- To understand the role of a database management system in an organization.
- To Identify entities, relationships and design databases.
- To be able to perform SQL and PL/SQL commands on the database.

Course Outcomes

CO1: Explain the basic concepts of database management system.

CO2: Analyze file- based system and database approach.

CO3: Explain entity-relationship model and relational database design.

CO4: Formulate and apply SQL queries to relational databases.

CO5: Discuss PL/SQL concepts.

UNIT - I

(9 Hrs.)

Overview of Database Management System

Introduction, Data and Information, Database, Database Management System, Objectives of DBMS, Evolution of Database Management System, Classification of Database Management System.

UNIT - II

(9 Hrs.)

File- Based System

File Based System. Drawbacks of File-Based System, DBMS Approach, Advantage of DBMS, Data Models, Components of Database System, Database Architecture, DBMS Vendors and their products.

UNIT - III

(9 Hrs.)

Entity- Relationship Model

Introduction, The Building Blocks of an Entity-Relationship, Classification of Entity Set, Attribute Classification, Relationship Degree, Relationship Classification, Generalization and Specialization, Aggregation and Composition, CODD's Rules, Relational Data Model, Concept of Relational Integrity. Functional dependencies Introduction to Normalization.

UNIT - IV

(9 Hrs.)

Structured Query Language

Introduction, History of SQL Standards, Commands in SQL, Data types in SQL, Data Definition Language (DDL), Selection Operation Projection Operation, Aggregate Functions, Data Manipulation Language, Table Modification, Table Truncation, Imposition of Constraints, Set Operations.

UNIT - V

(9 Hrs.)

PL/SQL

Introduction, Structure of PL/SQL, PL/SQL Language Elements, Data Types, Control Structure, Steps to Create a PL/SQL Program, Iterative Control Cursors, Steps to Create a Cursor, Procedure, Functions, Packages, Exceptions Handling, Database Triggers, Types of triggers.

Reference Books

1. Paneerselvam: Database Management system, PHI.
2. David Kuklinski, Osborne, Data management system McGraw Hill Publication.
3. Shgirley Neal And Kenneth LC Trunik Database management system in Business PHI.
4. Godeon C. EVEREST, Database Management- McGraw Hill Book company.
5. MRTIN, Database Management-Prentice Hall of India, New Delhi.
6. Bipin C. Desai, 'An Introduction to Database System', Galgotia Publications
7. Korth, Database Management System.
8. Navathe, Database Management System.
9. S. Sumathi, S. Esakkirajan, Fundamentals of Relational Database Management System

Online resources

1. [http:// www.onlinegdb.com/](http://www.onlinegdb.com/)
2. [http:// www.tutorialspoint.com/](http://www.tutorialspoint.com/)
3. <http://learnsql.com>
4. [https:// www.codecademy.com/ learn/ learn - sql/](https://www.codecademy.com/learn/learn-sql/)
5. [https:// www.w3schools.com/sql/default.asp](https://www.w3schools.com/sql/default.asp)

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA- 8
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SYLLABUS

Subject: Computer Science

Semester: IV

**Course Title: Database Management
- Practical**

Course Code: 20CSP4DM41

No of Hours: 30

LTP: 002

Credits: 1

Objectives

- To Identify entities, relationships and design databases.
- To be able to perform SQL and PL/SQL commands on the database.

Course Outcomes

CO1: Use the basics of SQL and create database tables and establish relationships between tables.

CO2: Formulate queries using SQL DML/DDL/DCL commands.

CO3: Apply SQL queries to relational databases.

List of practicals

1. Create tables department and employee with required constraints.
2. Initially only the few columns (essential) are to be added. Add the remaining columns separately by using appropriate SQL command.
3. Basic column should not be null
4. Add constraint that basic should not be less than 5000.
5. Calculate hra, da, gross and net by using PL/SQL
6. program. 6. The percentage of hra and da are to be stored separately.
7. When the da becomes more than 100 %, a message has to be
8. generated and with user permission da has to be merged with basic.
9. Empno should be unique and has to be generated automatically.

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SYLLABUS

Subject: Computer Science	Semester: V/VI
Course Title: Big Data Analytics with R	Course Code: 20CSSEC11BD3
No. of Hours: 45 Hrs.	LTP: 300 Credits: 3

Objectives

- To learn the classification of digital data.
- To learn the classification of analytics.
- To analyze the importance and Exploring data in R programming.

Course Outcomes

- CO1:** Explain data and classification of digital data.
CO2: Explain Big Data Analytics.
CO3: Load data in to R.
CO4: Organize data in the form of R objects and manipulate them as needed.
CO5: Perform analytics using R programming.

UNIT-I

(9 Hrs.)

Introduction to Big data: Data, classification Of Digital Data--structured, unstructured, semi-structured data, characteristics of data, evaluation of big data, definition and challenges of big data , what is big data and why to use big data ?, business intelligence Vs big data. - Programming Exercises

UNIT-II

(9 Hrs.)

Big data Analytics:What is and isn't big data analytics? Why hype around big data analytics? Classification of analytics, top challenges facing big data, importance of big data analytics, technologies needed to meet challenges of big data - Programming Exercises.

UNIT-III

(9 Hrs.)

Introduction to R and getting started with R: What is R? Why R? , advantages of R over other programming languages, Data types in R- logical, numeric, integer, character, double, complex, raw, coercion, ls() command, expressions, variables and functions, control structures, Array, Matrix, Vectors, R packages - Programming Exercise.

UNIT-IV

(9 Hrs.)

Exploring data in R:Data frames-data frame access, ordering data frames, R functions for data frames dim(), nrow(), ncol(), str(), summary(), names(), head(), tail(), edit() .Load data frames—reading from .CSV files, sub setting data frames, reading from tab separated value files, reading from tables - Programming Exercises.

UNIT-V

(9 Hrs.)

Data Visualization using R:

Reading and getting data into R (External Data):XML files, Web Data, JSON files, Databases, Excel files.

Working with R Charts and Graphs: Histograms, Bar Charts, Line Graphs, Scatterplots, Pie Charts - Programming Exercises.

Prescribed Books

1. Seema Acharya ,SubhashiniChellappan --- Big Data And Analytics second edition, Wiley.
2. Seema Acharya--Data Analytics using R, McGraw Hill education (India) Private Limited.
3. Big Data Analytics, Introduction to Hadoop, Spark, and Machine-Learning, Raj kamal, Preeti Saxena, McGraw Hill, 2018.
4. Big Data, Big Analytics: Emerging Business intelligence and Analytic trends for Today's Business, Michael Minelli, Michelle Chambers, and AmbigaDhiraj, John Wiley & Sons, 2013.

Reference Book

1. An Introduction to R, Notes on R: A Programming Environment forData Analysis and Graphics. W. N. Venables, D.M. Smith and the R Development Core Team.

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SYLLABUS

Subject: Computer Science Semester: V/VI
Course Title: R Programming – Practical Course Code: 20CSP511RP1
No of Hours: 30 Hrs. LTP: 002 Credits: 1

Objectives

- To practice the R syntaxes and write programs.
- To identify and program the R concepts and techniques.

Course Outcomes

CO1: Load data in to R.

CO2: Organize data in the form of R objects and manipulate them as needed.

CO3: Perform analytics using R programming.

List of Practicals: (30 Hrs.)

1. Create a vector in R and perform operations on it.
2. Create integer, complex, logical, character data type objects in R and print their values and their class using print and class functions.
3. Write code in R to demonstrate sum(), min(), max() and seq() functions.
4. Write code in R to manipulate text in R using grep(), toupper(), tolower() and substr() functions.
5. Create data frame in R and perform operations on it.
6. Import data into R from text and excel files using read.table () and read.csv () functions.
7. Write code in R to find out whether number is prime or not.
8. Print numbers from 1 to 100 using while loop and for loop in R.
9. Write a program to import data from csv file and print the data on the console.
10. Write a program to demonstrate histogram in R.

Skill/Hands-on: Field work/Mini Project

1. Analyze the pass percentage of an institution and use the customized graphs to represent the data.

Reference Book

1. R in Action - Robert L. Kabacoff, Latest Edition – Second, Formats Available – paperback, Publisher - Dreamtech Press.

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SYLLABUS

Subject: Computer Science	Semester: V/VI
Course Title: Data Science with Python	Course Code: 20CSSEC12DP3
No. of Hours: 45 Hrs.	LTP: 300
	Credits: 3

Objectives

- To learn the process of data science.
- To learn the basics of python.
- To analyze the importance of data science and exploring data in Python programming.

Course Outcomes

CO1: Explain the basic concepts of data science

CO2: Understand why python is a useful scripting language for developers.

CO3: Use standard programming constructs like selection and repetition.

CO4: Use aggregated data (list, tuple, and dictionary).

CO5: Implement functions and modules.

UNIT-I

(9 Hrs.)

Introduction to data science: Data science and its importance, advantages of data science, the process of data science, Responsibilities of a data scientist, qualifications of data scientists, would you be a good data scientist, why to use python for data science.- Programming Exercises

UNIT-II

(9 Hrs.)

Introduction to python: What is python , features of python, history of python, writing and executing the python program, basic syntax, variables, keywords, data types ,operators ,indentation, Conditional statements-if, if-else, nested if-else, looping statements-for, while, break, continue, pass- Programming Exercises.

UNIT-III

(9 Hrs.)

Control structures and strings: Strings - definition, accessing, slicing and basic operations; Lists - introduction, accessing list, operations, functions and methods; Tuples - introduction, accessing tuple; Dictionaries - introduction, accessing values in dictionaries - Programming Exercise.

UNIT-IV

(9 Hrs.)

Functions and modules: Functions - defining a function, calling a function, types of functions, function arguments, local and global variables, lambda and recursive functions, Modules- math and random - Programming Exercises.

UNIT-V

(9 Hrs.)

Classes & Objects:

Classes and Objects, Class method and self-argument, class variables and object variables, public and private data members, private methods, built-in class attributes, static methods. - Programming Exercises.

Prescribed Text Book

Steven cooper--- Data Science from Scratch, Kindle edition

Reference Book

1. Reemathareja—Python Programming using problem solving approach, Oxford Publication.

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SYLLABUS

Subject: Computer Science

Semester: V/VI

**Course Title: Python Programming –
Practical**

Course Code: 20CSP612PP1

No of Hours: 45 Hrs.

LTP: 002

Credits: 1

Objectives

- To practice the Python syntaxes and write programs.
- To identify and program the Python concepts and techniques.

Course Outcomes

CO1: Use standard programming constructs like selection and repetition.

CO2: Use aggregated data (list, tuple, and dictionary).

CO3: Implement functions and modules in python.

List of Practicals:

(30 Hrs.)

1. Python Program to Find the Square Root
2. Python Program to Swap Two Variables
3. Python Program to Generate a Random Number
4. Python Program to Check if a Number is Odd or Even
5. Python Program to Find the Largest Among Three Numbers
6. Python Program to Check Prime Number
7. Python Program to Display the multiplication Table
8. Python Program to Print the Fibonacci sequence
9. Python Program to Find the Sum of Natural Numbers
10. Python Program to Find Factorial of Number Using Recursion
11. Python Program to work with string methods.
12. Python Program to create a dictionary and print its content.
13. Python Program to create class and objects.

Skill/Hands-on: Field work/Mini Project

1. Study Of Server Side Validation and Page Redirection In PHP Design A Login Form and Validate that Form using PHP Programming

Reference Book

1. Reemathareja—Python Programming using problem solving approach, Oxford Publication.

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SYLLABUS

Subject: Computer Science		Semester: V/VI
Course Title: Mobile Application Development		Course Code: 20CSSEC21MA3
No. of Hours: 45 Hrs.	LTP: 300	Credits: 3

Objectives

- To learn the importance of android platform.
- To describe the layouts and controls of android.
- To analyze the importance and Exploring data in R programming.

Course Outcomes

CO1: Identify basic terms, tools and software related to android systems

CO2: Describe components of IDE, understand features of android development tools.

CO3: Describe the layouts and controls.

CO4: Explain the features of services and able to publish android Application.

CO5: Developing interesting Android applications using MIT App.

UNIT-I (9 Hrs.)

Introduction to Android ,open headset alliance, Android Ecosystem, Need of Android, Features of Android, Tools and software required for developing an Application - Programming Exercises

UNIT-II (9 Hrs.)

Operating system, java JDK, Android SDK, Android development tools , Android virtual devices, steps to install and configure Android studio and sdk, Android activities - Programming Exercises.

UNIT-III (9 Hrs.)

control flow, directory structure, components of a screen, fundamental UI design, linear layout, absolute layout , table layout , text view, edit text, button, image button, radio button, radio group, check box, and progress bar, list view, grid view, image view, scroll view , time and date picker, toast - Programming Exercise.

UNIT-IV (9 Hrs.)

android platform services, Android system Architecture , Android Security model - Programming Exercises.

UNIT-V**(9 Hrs.)**

Introduction of MIT App Inventor, Application Coding, Programming Basics & Dialog, Audio & Video, File - Programming Exercises.

Prescribed Text Books

1. Erik Hellman, "Android Programming – Pushing the Limits", 1st Edition, Wiley India Pvt Ltd, 2014.
2. App Inventor: create your own Android apps by Wolber, David (David Wayne).

Reference Books

1. Dawn Griffiths and David Griffiths, "Head First Android Development", 1st Edition, O'Reilly SPD Publishers, 2015.
2. J F DiMarzio, "Beginning Android Programming with Android Studio", 4th Edition, Wiley India Pvt Ltd, 2016. ISBN-13: 978-8126565580
3. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
4. Android Online Developers Guide
5. <http://developer.android.com/reference/> Udacity: Developing Android
6. Apps- Fundamentals
7. <https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd>
8. <http://www.appinventor.mit.edu>

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SYLLABUS

Subject: Computer Science

Semester: V/VI

**Course Title: Android Programming
– Practical**

Course Code: 20CSP521AP1

No of Hours: 45 Hrs.

LTP: 002

Credits: 1

Objectives

- To describe the layouts and controls of android.
- To create robust mobile applications.

Course Outcomes

CO1: Explain the android platform.

CO2: Explain the features of services and able to publish android Application.

CO3: Design and implementation of various mobile applications.

List of Practicals:

(30 Hrs.)

1. Demonstrate mobile technologies and devices
2. Demonstrate Android platform and applications overview
3. Working with texts, shapes, buttons and lists
4. Develop a calculator application
5. Implement an application that creates a alarm clock

Skill/Hands-on: Field work/Mini Project

(15 Hrs.)

1. Develop a mobile application that uses GPS location information.

Reference Books

1. Anubhav Pradhan, Anil V Deshpande, " Composing Mobile Apps" using Android, Wiley 2014, ISBN: 978-81-265-4660-2
2. Android Online Developers Guide 5.
<http://developer.android.com/reference/> Audacity: Developing Android
3. <https://www.udacity.com/course/developing-android-appsfundamentals--ud853-nd>
4. <http://www.appinventor.mit.edu/>

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SYLLABUS

Subject: Computer Science	Semester: V/VI
Course Title: Cyber Security & Malware	Course Code: 20CSSEC22CM3
No. of Hours: 45 Hrs.	LTP: 300 Credits: 3

Objectives

- To learn the importance of computer networks and network tools.
- To describe NIST Cyber Security Framework
- To apply Malware analysis tools for various issues.

Course Outcomes

CO1: Explain the computer networks, networking tools and cyber security.

CO2: Describe about NIST Cyber Security Framework.

CO3: Explain the OWASP Vulnerabilities.

CO4: Implement various Malware analysis tools.

CO5: Explain about Information Technology act 2000.

UNIT-I

(9 Hrs.)

Introduction to Networks & cyber security: Computer Network Basics • Computer network types • OSI Reference model • TCP/IP Protocol suite • Difference between OSI and TCP/IP • What is cyber, cyber-crime and cyber-security • All Layer wise attacks • Networking devices: router, bridge, switch, server, firewall • How to configure: router • How to create LAN - Programming Exercises

UNIT-II

(9 Hrs.)

NIST Cyber security framework: Introduction to the components of the framework • Cyber security Framework Tiers • What is NIST Cyber security framework • Features of NIST Cyber security framework • Functions of NIST Cyber security framework • Turn the NIST Cyber security Framework into Reality/ implementing the framework - Programming Exercises.

UNIT-III

(9 Hrs.)

OWASP: • What is OWASP? • OWASP Top 10 Vulnerabilities – Injection - Broken Authentication - Sensitive Data Exposure - XML External Entities (XXE) - Broken Access Control - Security

Misconfiguration - Cross-Site Scripting (XSS) - Insecure Deserialization - Using Components with Known Vulnerabilities - Insufficient Logging and Monitoring • Web application firewall - Programming Exercise.

UNIT-IV

(9 Hrs.)

MALWARE Analysis: • What is malware • Types of malware - Key loggers - Trojans - Remote access trojan - Rootkits • Antivirus • Firewalls • Malware analysis - VM ware - How to use sandbox - Process explorer - Process monitor - Programming Exercises.

UNIT-V

(9 Hrs.)

CYBER SECURITY: Legal Perspectives • Cybercrime and the legal landscape around the world • Indian IT ACT 2008 -- Cybercrime and Punishments • Challenges to Indian law and cybercrime scenario in India - Programming Exercises.

Prescribed Text Books

1. Computer Networks | Fifth Edition | By Pearson (6th Edition)|Tanenbaum, Freeman & Wetherill
2. Computer Networking | A Top-Down Approach | Sixth Edition | By Pearson | Kurose James F. Ross Keith W.
3. Cyber Security by Sunit Belapure, Nina Godbole|Wiley Publications
4. TCP/IP Protocol Suite |Mcgraw-hill| Forouzan|Fourth Edition

References

1. <https://csrc.nist.gov/Projects/cybersecurity-framework/nist-cybersecurity-framework-a-quick-start-guide>
2. <https://owasp.org/www-project-top-ten/>
3. <https://owasp.org/www-project-juice-shop/>

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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Cyber Security – Practical

Course Code: 20CSP622CS1

No of Hours: 45 Hrs. LTP: 002

Credits: 1

Objectives

- To gain the knowledge in cyber security.
- To configure the LAN using Networking.

Course Outcomes

CO1: Implement the concepts of switch, router and packet.

CO2: Implement the features of services and able to publish Networking Applications.

CO3: Implement various Malware analysis tools.

List of Practicals:

(30 Hrs.)

1. Configure a LAN by using a switch
2. Configure a LAN by using Router
3. Perform the packet sniffing mechanism by download the “wire shark” tool and extract the packets
4. Perform an SQL Injection attack and its preventive measure to avoid Injection attack

Skill/Hands-on: Field work/Mini Project

1. Configure a LAN for a computer lab using network devices.

Website References:

1. <https://csrc.nist.gov/Projects/cybersecurity-framework/nist->
2. [cybersecurity-framework-aquick-start-guide](#)
3. <https://owasp.org/www-project-top-ten/>
4. <https://owasp.org/www-project-juice-shop>

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SYLLABUS

Subject: Computer Science	Semester: V/VI
Course Title: E-Commerce Applications	Course Code: 20CSSEC31EA3
No. of Hours: 45 Hrs.	LTP: 300
	Credits: 3

Objectives

- To understand the foundation and importance of e-commerce.
- To analyse and evaluate electronic business applications and design electronic business models
- To learn how to Create and Customize Wordpress Website

Course Outcomes

- CO1:** Apply knowledge in all fields of business studies by drafting a website presence plan.
- CO2:** Understand the factors needed in order to be successful in e-commerce.
- CO3:** Gain skills to gather about the different components of building a web presence
- CO4:** Solve problems and issues that might pop up during the establishment of the web presence
- CO5:** Apply Word Press as a content management system (CMS) and design a website.

UNIT- I

(9 Hrs.)

Introduction to E-commerce – Meaning and concept – E-commerce, E-commerce v/s Traditional Commerce, E-Business & E-Commerce – History of E-Commerce, EDI – Importance, features & benefits of E-Commerce, Impacts, Challenges & Limitations of E-Commerce - Programming Exercises.

UNIT- II

(9 Hrs.)

Business models of E-Commerce – Business to Business, 2.1.2 Business to customers 2.1.3 Customers to Customers, Business to Government, Business to Employee, Influencing factors of successful E-Commerce, Architectural framework of Electronic Commerce, Web based E-Commerce Architecture, Internet Commerce - Programming Exercises.

UNIT- III**(9 Hrs.)**

Electronic data Interchange – EDI Technology, EDI- Communications , EDI Agreements, E– Commerce payment system, Digital Economy - Programming Exercises.

UNIT- IV**(9 Hrs.)**

A Page on the web – HTML Basics, Client Side scripting -JAVA SCRIPT basics, Server side Scripting- PHP basics - Programming Exercises.

UNIT- V**(9 Hrs.)**

Logging in to Your Word press Site – word press dash board, creating your first post, adding photos and images, creating hyper link, adding categories and tags - Programming Exercises.

Prescribed Text Books

1. Turban, Rainer, and Potter, Introduction to E-Commerce, second edition, 2003.
2. H. M. Deitel, P. J. Deitel and T. R. Nieto, E-Business and E-Commerce: How to Programe, Prentice hall, 2001.
3. WordPress All-in-One For Dummies -written by Lisa Sabin Wilson with contributions by Michael Torbert, Andrea Rennick, Cory Miller, and Kevin Palmer.

Reference Books

1. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt Ltd.
2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce-A Manager's guide", Addison-Wesley
3. <https://w3cschools.com>
4. David Whiteley, E-Commerce: Strategy, Technologies and Applications, Tata McGraw Hill.

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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: E-Commerce – Practical

Course Code: 20CSP531EC1

No. of Hours: 45 Hrs.

LTP: 002

Credits: 1

Objectives

- To understand the foundation and importance of e-commerce.
- To analyze and evaluate electronic business applications and design electronic business models

Course Outcomes

CO1: Gain skills to gather about the different components of building a web presence.

CO2: Apply Word Press as a content management system (CMS) and design a website.

Case study of e –commerce

(30 Hrs.)

1. Home page design of web site
2. Validation using PHP
3. Implement Catalogue design
4. Implement Access control mechanism(eg: username and password)
5. Case study on business model of online E-Commerce store

Skill/Hands-on: Field work/Mini Project

1. Choosing a firm or business to develop a website, identifying various business entities to be included in the website

Reference Book

1. Elias. M. Awad, "Electronic Commerce", Prentice-Hall of India Pvt.Ltd.

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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Real Time Governance System **Course Code: 20CSSEC32RG3**

No. of Hours: 45 Hrs.

LTP: 300

Credits: 3

Objectives

- To learn E-Governance implementation in several Indian states and countries.
- To analyze the real time applications of RTGS.

Course Outcomes

CO1: Appreciate the terms regarding Governance, E-Governance and RTGS.

CO2: Learn about E-Governance Infrastructure.

CO3: Understand the E-Governance implementation in several countries.

CO4: Understand the E-Governance implementation in several Indian states.

CO5: Analyze the applications of RTG.

UNIT- I

(9 Hrs.)

Introduction to E-Governance, Government, Governance and Good Governance – What is E-Governance or Electronic Governance? , E-Government and E-Governance -A conceptual Analysis - Objectives, Components, application domains, four phase model, implementing E-Governance, issues while implementing E-Governance Opportunities and challenges, Types of E-Governance, What is Real-Time Governance (RTG), Real Time Governance Society (RTGS) - Programming Exercises.

UNIT- II

(9 Hrs.)

E-Governance Infrastructure – Data Systems infrastructure, Executive Information Systems, Management Information Systems, Knowledge Management Systems, Transaction Processing Systems, Legal Infrastructural preparedness, IT Act 2000, Challenges to Indian law and cybercrime scenario in India, Amendments of the Indian IT Act, Institutional Infrastructural , preparedness, Internet, intranet, extranet, Human Infrastructural preparedness, Top-level management, Middle-level management, Low-level management, Technological Infrastructural preparedness, Information and communications technology, Data , Warehousing, Cloud Computing - Programming Exercises.

UNIT-III

(9 Hrs.)

Country profiles of E-Governance: INDIA, US, UK, CHINA, DUBAI - Programming Exercises.

UNIT-IV

(9 Hrs.)

E-Governance in India – Andhra Pradesh, Karnataka, Kerala, Uttar Pradesh, Maharashtra, West Bengal, Gujarat - Programming Exercises.

UNIT-V

(9 Hrs.)

Latest Applications in Real Time Governance – Agriculture, Rural Development, Education, Tourism, Commerce and Trade - Programming Exercises.

Prescribe Text Books

1. E-Governance: concepts and case studies| CSR Prabhu| Prentice-Hall|.
2. E-Governance| Niranjani, Sanhari Mishra | Himalaya Publishing House.

Website References

1. <http://www.egov4dev.org/success/case/>
2. <https://vikaspedia.in/e-governance/resources-for-vles>
3. <https://altametrics.com/en/information-systems/information-system-types.html>
4. <https://core.ap.gov.in/CMDashBoard/Index.aspx>

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SYLLABUS

Subject: Computer Science

Semester: V/ VI

Course Title: RTGS – Practical

Course Code: 20CSP632RG1

No. of Hours: 45 Hrs.

LTP: 002

Credits: 1

Objectives

- Learn about E-Governance Infrastructure.
- Analyze the applications of RTG

Course Outcomes

CO1: Understand the E-Governance implementation in several countries.

CO2: Understand the E-Governance implementation in several Indian states

CO3: Analyze the applications of RTG

List of Practicals:

(30 Hrs.)

1. Write a Report on the role of Nationwide Networking in E-Governance.
2. Write a Report on SETU: A Citizen Facilitation Centre in India, regarding it's successful or failure journey.
3. Write a Report on National Cyber Security Policy, how it is useful to Indian citizens.
4. Write a Report on mee-seva/Village Secretariat/Ward secretariat, a new paradigm in citizen services.
5. Write a Report on how Andhra Pradesh is implementing RTGS in Agriculture.
6. Write a Report on how Andhra Pradesh is implementing RTGS in social welfare schemes.
7. Write a Report on how Andhra Pradesh is implementing RTGS in waste lands, agricultural lands and house properties.
8. Write a Report on Electronic Birth Registration in any one state of our country.

Skill/Hands-on: Field work/Mini Project

1. Case study on Electronic academic certificates of a college.

Reference Book

1. E-Governance: concepts and case studies| CSR Prabhu |Prentice-Hall|

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SYLLABUS

Subject: Computer Science

Semester: V/VI

**Course Title: Multimedia Tools &
Applications**

Course Code: 20CSSEC41MM3

No. of Hours: 45 Hrs.

LTP: 300

Credits: 3

Objectives

- To explore the fundamentals of Multimedia to design and develop animations.
- To create animations that incorporate text, images, sound, and video
- To learn how to use basic video compression techniques.

Course Outcomes

CO1: Gain knowledge on the concepts related to Multimedia.

CO2: Understand the concepts like image data representation and colour modes.

CO3: Understand the different types of video signals and digital audio.

CO4: Know about multimedia data compression types and audio compression standards.

CO5: Learn about basic video compression techniques.

UNIT-I

(9 Hrs.)

Introduction to multimedia– What is Multimedia? Components of Multimedia System, Multimedia and Hypermedia, Multimedia Authoring metaphors, Multimedia Production, Multimedia Presentation, Some Technical Design Issues, Automatic Authoring – Programming Exercises.

UNIT-II

(9 Hrs.)

Image Data Representations and color models – Color science Human vision Image data types– Black & white images – 1-bit images (Binary image),8-bit (Gray -level images).Color images –24-bit color images,8-bit color images.Color models – Programming Exercises.

UNIT-III

(9 Hrs.)

Fundamental concepts in video– Types of Video Signals– Analog Video, Digital Video.Basics of Digital Audio– What is Sound, Digitization of Sound, Quantization and Transmission of Audio, Pulse code modulation, Differential coding of audio, Predictive coding – Programming Exercises.

UNIT-IV**(9 Hrs.)**

Multimedia Data Compression– Introduction, Basics of Information Theory, Lossless Compression Algorithms, Fix-Length Coding, Run-length coding, Dictionary-based coding, Variable Length Coding, Huffman Coding Algorithm.

Audio Compression standards– Introduction, Psychoacoustics model, MPEG Audio – Programming Exercises.

UNIT-V**(9 Hrs.)**

Basic Video Compression Techniques– Introduction to Video compression, Video compression standard H.261, Video compression standard MPEG-1 – Programming Exercises.

Prescribed Book

1. Fundamentals of Multimedia by Ze-Nian Li & Mark S. Drew. Publisher: Prentice Hall.

Reference Books

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.
2. Digital Multimedia by Nigel Chapman & Jenny Chapman. 2009.

Online Resources

1. <https://ksuit342.wordpress.com/lectuers/>.
2. <https://www.tutorialspoint.com/multimedia>.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
(Affiliated to Krishna University, Machilipatnam)
SYLLABUS

Subject: Computer Science

Semester: V

**Course Title: Multimedia Tools &
Applications - Practical**

Course Code: 20CSP541MM1

No. of Hours: 45

LTP: 003

Credits: 1

Objectives

- To explore the fundamentals of Multimedia to design and develop animations.
- To create animations that incorporate text, images, sound, and video

Course Outcomes

CO1: Implement the concepts like image data representation and colour modes.

CO2: Apply different types of video signals and digital audio.

CO3: Know about multimedia data compression types and audio compression standards.

List of Practicals:

1. Editing images using GIMP
2. Improve the Quality of your Image in GIMP
3. Create an impressive background in GIMP
4. Applying Shadow & Highlight effects in images
5. Black& white and color photo conversion.

MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA-8
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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Digital Imaging

Course Code: 20CSSEC42DI3

No. of Hours: 45 Hrs.

LTP: 300

Credits: 3

Objectives

- To learn the fundamentals of Computer Graphics.
- To achieve a level of comfort with the tools and techniques needed to create digital images.
- To experiment with new ways to connect digital technologies to one's own creative practice.

Course Outcomes

CO1: Gain knowledge about Types of Graphics, Objects and video editing tools.

CO2: Show their skills in editing and altering photographs.

CO3: Gain knowledge in using the layers.

CO4: Apply knowledge in using selection and drawing tools.

CO5: Gain knowledge in using touch up tools and filters.

UNIT-I

(9 Hrs.)

Types of Graphics – Raster vs Vector Graphics

Types of Objects – Audio formats, Video formats, Image formats, Text document formats.

Types of video editing, Different color modes, Image Scanner –
Types of Image Scanners.

UNIT-II

(9 Hrs.)

What is GIMP– GIMP tool box window, Layers Dialog, Tool Options Dialog, Image window, Image window menu

UNIT-III

(9 Hrs.)

Improving Digital Photos– Opening files- Rescaling saving files
Cropping, Brightening & Darkening, Rotating, Sharpening.

Introduction to layers– What is layer- Using layer to add text, Using move tool, Changing colors, Simple effects on layers, Performing operations on layers, Using layers to copy and paste.

UNIT-IV**(9 Hrs.)**

Drawing– Drawing lines and curves, Changing colors and brushes, Erasing, Drawing rectangles, Circles and other shapes, Outlining and filling regions, Filling with patterns and gradients.

Selection- Working with selections, Select by color and fuzzy, Select Bezier paths, Modifying selections with selection modes.

UNIT-V**(9 Hrs.)**

Erasing and Touching Up– Dodge and burn tool, Clone tool, Sharpening using convolve tool, Correcting Color Balance.

Filters– Filters, Blur, Enhance, Noise Filters.

Prescribed Book

1. Beginning GIMP from Novice to professional by Akkana Peck, Second Edition, Apress.

Reference Book

1. An introduction to digital multimedia by Savage, T. M. and Vogel, K. E. 2008.

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SYLLABUS

Subject: Computer Science

Semester: V/VI

Course Title: Digital Imaging - Practical

Course Code: 20CSP642DI1

No. of Hours: 45 Hrs.

LTP: 003

Credits: 1

Objectives

- To Develop a balanced view of modern image processing studies between theoretical aspects and practical implementations.
- To Implement computer vision techniques with emphasis on practical aspect.

Course Outcomes

CO1: Implement their skills in editing and altering photographs

CO2: Apply selection and drawing tools to digitalize the images

CO3: Apply filters and touchup tools to modify the images

List of Practicals:

(30 Hrs.)

1. Designing a Visiting card
2. Design Cover page of a book
3. Paper add for calling tenders
4. Design a Pamphlet
5. Brochure designing
6. Titles designing
7. Custom shapes creation
8. Image size modification
9. Background changes
10. Texture and patterns designing

Skill/Hands-on: Field Work/Mini Project

(15 Hrs.)

1. Create pamphlets for any organization about their business.