Shree Gurudatta Gramvikas Pratisthan's

COLLEGE OF BBA, BCA, BCS & B.Com.

Jategaon Bk., Tal-Shirur, Dist - Pune

B. Sc. (Computer Science)

DEPARTMENT OF COMPUTER SCIENCE

Programme Outcomes:

After successfully completing **B.Sc. (Computer Science)** Programme students will be able to:

PO1: Use creativity, critical thinking, and analysis and research skills to solve theoretical and real-world problems in computer science

PO2: Work effectively both individually and as member of team.

PO3: Discuss software development fundamentals, including programming, data structures , algorithms and complexity.

PO4: Illustrate the concepts of systems fundamentals, including architectures and organization, operating systems, networking and communication.

PO5: Gain the knowledge about software engineering fundamentals, including software a nalysis and design, evaluation and testing, and software engineering processes.

PO6: Communicate effectively for different purposes and in different situations.

PO7: Gain self-discipline in everyday aspects of life and work.

PO8: Describe mathematics fundamentals, including discrete structures, statistics and calculus.

PO9: Illustrate the concepts of Microprocessors and microcontrollers.

PO10: Make use of fundamentals of Application, including information management and **intelligent** applications.

Course Outcomes:

F. Y. B. Sc. (Computer Science)

Sem-I

Course (CS-111): Problem solving using Computer and C-Programming

After successfully completing this course, students will be able to:

CO1: List the flow chart and algorithm for given problem;

CO2: Discuss the programming language tools and history of C programming;

CO3: Define C Tokens like keywords, identifiers and operators;

CO4: Explain input, output, conditional and iterative statements in C programming;

CO5: Interpret C programs using array and functions;

CO6: Explain string and pointer concepts of C programming;

CO7:

Illustrate user defined data types including structures and unions to solve the problems;

CO8: Develop modular programs using control structures and arrays in 'C'.

Course (CS-112): Databases Management Systems

After successfully completing this course, students will be able to:

CO1: Understand the structure and roles of DBMS;

CO2:

Express Relational, Hierarchical and Network Data Model and structure of Database Ma nagement System;

CO3: Discuss the conceptual modelling tools like E- R diagram and Relational DataModel;

CO4:

Describe Relational Algebraic operations and construct the queries to write Relational Al gebra expression;

CO5: Illustrate the basics of Structured Query Language and construct queries usingSQL;

CO6: Solve real world problems using appropriate set, functions and relational models;

CO7: Solve real world problems using appropriate set, function, and relational models;

CO8: Design E-R Model for given requirements and convert the same into database tables;

Course (CS-113): Practical course on Problem Solving using Computer and 'C' programming and Database Management Systems

After successfully completing this course, students will be able to:

CO1: List the basic UNIX general purpose commands, data types and Operators inC-Language;

CO2: Use the decision making statements like if, if-else, nested if and switch casein C program;

CO3: Demonstrate while, do-while, for, nested loops of C-Program;

CO4: Apply standard library functions in menu driven program in C- Language;

CO5: Solve C Program using array, pointer, string and functions;

CO6: Create tables with primary key constraints, Foreign key constraints, referential integrity constraints with additional constraints like check, unique and not null.

CO7: Write and execute simple, nested queries;

CO9: Create database tables in PostgreSQL;

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Sem-II

Course (CS-121): Advanced C programming

After successfully completing this course, students will be able to:

CO1: Explain pointers, relationship between arrays and pointers;

CO2: Write syntax using predefined functions;

CO3: Understand concept of Union, declaration of accessing union members;

CO4: Understand standard library input/output functions.

CO5: Explain role of pre-processor;

CO6: Develop modular programs using control structures, pointers, arrays, strings and structures;

CO7: Develop modular programs using control structures, pointers, arrays, strings and structures;

CO8: Design and develop solutions to real world problems using C.

Course (CS-122): Relational Database Management System

After successfully completing this course, students will be able to:

CO1: Recall the integrity constraints on a database using RDBMS;

CO2:

Explain the concepts of stored procedures, stored functions, and cursorstriggers in PL/PGSQL programming language;

CO3: Explain the concepts of transactions processing, concurrency control and recovery;

CO4: Interpret the concurrency control techniques;

CO5: Describe the concepts of crash recovery;

CO6: Discuss the data security methods for database protection;

CO7:Summarize the knowledge about client server architecure;

CO8: Explain transaction Management in relational database System;

Course (CS-123): Practical Course on Advanced 'C' Programming and Relational Database Management Systems

After successfully completing this course, students will be able to:

CO1: Solve the simple and nested queries using PL/PGSQL;

CO2: Demonstrate stored functions, cursors, triggers and views;

CO3: Illustrate queries using loops and conditional statements;

CO4: Use error and exception handling methods;

CO5: Demonstrate programs by using basic in C;

CO6: Apply to overload functions and Operators in C;

CO7: Write, debug and execute programs using advanced features in 'C'

CO8: Apply of file handling in C programs;

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Sem-III

Course CS-231: Data Structures and Algorithms – I

After successfully completing this course, students will be able to:

CO1:

Discuss fundamental concepts of Data Structure, abstract data type, andalgorithm analysis;

CO2: Summarize different searching and sorting techniques using array;

CO3: Describe linear data structure Stack and its application;

CO4: Explain linear data structure Queue and its types (Linear Queue, CircularQueue, and Priority Queue);

CO5: Summarize different types of Linked List (singly linked list, doubly linked list, linear and circular linked list);

CO6: Discuss non-linear data structure Tree using operations like searching, insertion, deletion, and traversing mechanism;

CO7: Explain non-linear data structure Graph using operations like traversingmechanism;

CO8: Implementing algorithms to solve problems using appropriate data structures

Course CS-232: Software Engineering

After successfully completing this course, students will be able to:

CO1: Explain the characteristics of system, elements of system, and types ofsystem;

CO2: Discuss software, its application domain and, software engineering principles;CO3: Describe the activities of system development life cycle;

CO4: Illustrate different software process models used in practice;CO5: Summarize the requirement engineering tasks;

CO6: Discuss the methods used to build structure analysis model;

CO7: Compare and chose a process model for a software project development;

CO8: Identify requirements analyze and prepare models;

Course CS-233: Practical course on Data Structures and Algorithms I and Software Engineering

After successfully completing this course, students will be able to:

CO1: Implement different types of algorithm;

CO2: Implement different types of linked lists;

CO3: Discuss non-linear data structure

CO4: Describe the software engineering processes such as gathering data and functional requirements in the software project;

CO5: Apply feasibility study techniques for the software project;

CO6: Discuss the existing system, and explain the proposed system;

CO7: Determine the entities, attributes and draw E-R diagram.

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Sem-IV

Course CS-241: Data Structures and Algorithms – II

After successfully completing this course, students will be able to:

CO1: Discuss concepts and terminologies of tree;

CO2: Summarize different binary trees;

CO3: Implementation and operations on binary search tree;

CO4: Explain graph representation and graph traversals.

CO5: Understand concept of hashing;

CO6: Implementation of different data structures efficiently;

CO7: Usage of appropriate data structures for problem solving;

Course (CS-242): Computer networks –I

After successfully completing this course, students will be able to: CO1:

Define goals and importance of computer networks;

CO2: Demonstrate network infrastructure according to various topologies and network type (LAN, WAN and MAN);

CO3: Describe OSI reference model and TCP/IP model;

CO4: Explain various hardware and software used in network design;

CO5: Discuss various terminologies and protocols used in physical layer;

CO6: Discuss various design issues and various protocols used in data link layer;

CO7: Understanding of the OSI and TCP/IP Reference Models and in particular have a good knowledge of Layers;

CO8: Understand the working of various protocols;

Course (CS-243): Practical course on Data Structures and Algorithms II and Computer Networks I

After successfully completing this course, students will be able to:

CO1: Illustrate a form to implement functions and predefine functions;

CO2: Demonstrate the array concepts and its predefine functions;

CO3: Apply the predefine functions of files and directories;

CO4: Implementation of graph applications

CO5: Implementation of static hash table

CO6: Implementing different networking technologies

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Sem-V

Course (CS-351): Operating Systems-I

After successfully completing this course, students will be able to:

CO1: Describe the different types of Programming Environment;

CO2: Understand the system Overview and Functions of operating systems;

CO3: Processes and Thread Scheduling by operating system;

CO4: Illustrate the concepts of The processes, Process states, Process control block, Process Scheduling;

CO5: Explain types of Threads, benefits, Multithreading Models, Thread Libraries;

CO6: Memory management by operating system using with the help of various schemes;

CO7: Understand the concept of operation system and its principle;

Course (CS-352): Computer networks –II

After successfully completing this course, students will be able to:

CO1: Student will understand the different protocols of Application layer;

CO2: Develop understanding of technical aspect of Multimedia Systems;

CO3: Develop various Multimedia Systems applicable in real time;

CO4: Identify information security goals;

CO5: Understand, compare and apply cryptographic techniques for data security;

CO6: Understand the different protocols of Application layer;

Course (CS-357): Practical course based on Operating Systems-I

After successfully completing this course, students will be able to:

CO1: Understand process synchronization;

CO2: Understand processes and Thread Scheduling by operating system;

CO3: Explain memory management by operating system using with the help of various schemes.

Course (CS-353): Web Technologies- I

After successfully completing this course, students will be able to:

CO1:Interpret fundamental concept of web techniques;

CO2: Discuss concept of user define function & predefine functions of strings;CO3: Explain types of array & predefine function of array;

CO4: Illustrate object oriented concepts in PHP script;

CO5: Describe file & directory handling operation & predefine function of file & directory;

CO6: Explain the database enable web pages;

CO7: Understand how to develop dynamic and interactive Web Page

Course (CS-354): Foundations of Data Science

After successfully completing this course, students will be able to:

CO1: Perform Exploratory Data Analysis;

CO2: Obtain, clean/process, and transform data;

CO3: Detect and diagnose common data issues, such as missing values, special values, outliers, inconsistencies, and localization;

CO4: Demonstrate proficiency with statistical analysis of data;

CO5: Present results using data visualization techniques;

CO6: Prepare data for use with a variety of statistical methods and models and recognize how the quality of the data and the means of data collection may affect conclusions;

Course (CS-358): Practical Course based on Web Technologies and Foundations of Data Science

After successfully completing this course, students will be able to:

CO1: Illustrate a form to implement functions and predefine functions;

CO2: Solve problems using object oriented concept;

CO3:Demonstrate database enabled web pages using PostgreSQL;

CO4: Apply JavaScript in Web Pages;

CO5: Demonstrate dynamic web pages by using Ajax;

CO6: Illustrate various concepts of web development in project;

CO7: Demonstrate various networking commands in Unix;

CO8: Understand how to develop dynamic and interactive Web Page;

Course (CS-355): Object oriented Programming using Java-I

After successfully completing this course, students will be able to:

CO1: Define simple java programs using data types, final variable and arrays;

CO2: Explain classes using constructor and array of objects;

CO3: Perform java programs using classes and objects;

CO4:Illustrate the concept of inheritance and interfaces;

CO5: Implements exception handling techniques in java programs;

CO6:Demonstrate GUI using Swing and AWT (Abstract Window Toolkit)methods;

CO7: Interpret basic applet using java;

CO8: To develop GUI based application.

Course (CS-356): Theoretical Computer Science

After successfully completing this course, students will be able to:

CO1: Explain how to generate formal language & regular expressions;

CO2: Express concepts of finite automata;

CO3: Describe knowledge of regular languages;

CO4:Discuss context free languages & different types of grammar;

CO5: Explain concepts of pushdown automata;

CO6: Summarize concepts of Turing machine;

CO7: Understand the use of automata during language design;

CO8: Relate various automata and Languages

Course (CS-359): Practical Course based on CS 355

After successfully completing this course, students will be able to:

CO1: Define simple classes using IDE – Eclipse;

CO2: Explain examples of classes using array of objects and packages;

CO3: Implement inheritance and interfaces in java;

CO4: Define and execute simple servlet program;

CO5: Illustrate the JSP (Java Server Pages) programs;

CO6: Demonstrate multithreading using Java;

Course (CS-3510): Python Programming

After successfully completing this course, students will be able to:

CO1: Interpret the concept of Python languages;

CO2: Illustrate the concept of string, list, tuple, set and dictionary in python;

CO3: Discus the concept of files and directories in python;

CO4: Explain the concept of object oriented concept in python;

CO5:Describe concept of functional programming and varieties of functionalprogramming language;

CO6:Explain semantics of function language using precise formal specification;

CO7: Describe different reduct;

CO8: Develop logic for problem solving;

Course (CS-3511): Blockchain Technologies

After successfully completing this course, students will be able to:

CO1: Learn the fundamentals of Blockchain Technology;

CO2: Learn Blockchain programming;

CO3: Basic knowledge of Smart Contracts and how they function;

CO4: Understand the Blockchain Network;

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Sem-VI

Course (CS- 361): Operating Systems-II

After successfully completing this course, students will be able to:

CO1: Recall the functions of Operating System;

CO2: Explain the system calls related to files and directory;

CO3: Describe the process environment and it's relationship;

CO4: Interpret the different memory management schemes;

CO5: Discuss the system calls related to signals;

CO6: Explain the thread management in windows operating system;

CO7: Management of deadlocks and File System by operating system;

Course (CS- 362): Software Testing

After successfully completing this course, students will be able to:

CO1: Understand various software testing methods and strategies

CO2: Understand a variety of software metrics, and identify defects and managing those defects for improvement in quality for given software

CO3: Design test cases and test plans, review reports of testing for qualitative software

CO4: Understand latest testing methods used in the software industries

Course (CS- 367): Practical Course based on Operating Systems-II

After successfully completing this course, students will be able to:

CO1: Understand management of deadlocks by operating system;

CO2: Understand file System management

CO3: Explain disk space management and scheduling for processes

Course (CS-363): Web Technologies-II

After successfully completing this course, students will be able to:

CO1: Explain content used in web technology;

CO2: Discuss PHP framework & email handling using PHP;

CO3: Explain XML programs, its advantages & different XML parser;

CO4: Interpret the concept of JavaScript for web designing;

CO5: Describe functioning of Ajax model;

CO6: Build dynamic website;

CO7: Design and handling the errors in dynamic website.

Course (CS- 364): Data Analytics

After successfully completing this course, students will be able to:

CO1: Use appropriate models of analysis, assess the quality of input, and derive insight from results

CO2: Analyze data, choose relevant models and algorithms for respective applications

CO3: Understand different data mining techniques like classification, prediction, clustering and association rule mining

CO4: Apply modeling and data analysis techniques to the solution of real world business problems

Course (CS- 368): Practical Course based on Web Technologies-II and Data Analytics

After successfully completing this course, students will be able to:

CO1: Explain XML and XML parsers.

CO2: Understand different technologies used at client Side scripting Language

CO3: Write Java Script program the behavior of web pages

CO4: Using AJAX application more dynamic framework has some utility features that make easy to write API

CO5: Build dynamic websites;

CO6: Using MVC based framework easy to design and handling the errors in dynamic website.

Course (CS-365): Object oriented Programming using Java-II

After successfully completing this course, students will be able to:

CO1:Explain programs using java collection API as well as java Standard Library;

CO2: Discuss GUI Applications with JDBC (Java Database Connectivity);

CO3: Define concept of Servlet;

CO4: Interpret simple Java Server Pages (JSP) Application;

CO5: Describe multithreading using java;

CO6: Demonstrate simple application for client and server communication;

CO7: Illustrate java concept for solving simple business problem;

CO8: Understand and Create dynamic web pages, using Servlets and JSP;

Course (CS-366): Compiler Construction

After successfully completing this course, students will be able to:

CO1: Understand the process of scanning and parsing of source code;

CO2: Learn the conversion code written in source language to machine language;

CO3: Understand tools like LEX and YACC;

CO4: Explain the compilation of expression

Course (CS- 369): Practical Course based on Object Oriented Programming using Java-II

After successfully completing this course, students will be able to:

CO1: Learn database Programming using Java

CO2: Understand and Create dynamic web pagesusing
Servlets and JSP

CO3: Work with basics of framework to develop secure web applications

CO4: Demonstrate multithreading using Thread synchronization, Inter-thread.
Communication, Thread Priorities

CO5: Understand server-side programming

Course (CS- 3610): Software Testing Tools

After successfully completing this course, students will be able to:

CO1: Understand various software testing methods and strategies

CO2: Understand a variety of software metrics and identify defects and managing those defects for improvement in quality for given software

CO3: Design test cases and test plans, review reports of testing for qualitative software

CO4: Understand latest testing tools used in the software industries

Course: CS-3611 Project

After successfully completing this course, students will be able to:

CO1: Describe the phases of Software development project life cycle;

CO2: Apply the various project management tools and techniques;

CO3:Implement software systems that meet specified design & performancerequirements;

CO4: Use Team Management to effectively design & implement the project;

CO5: Demonstrate effective project execution & Control techniques that results in successful project.