Shri Gajanan Maharaj Shikshan Prasarak Mandal's
Sharadchandra Pawar Arts and Commerce College
Gat No.76, Dudulgaon (Alandi), Pune-412105
NAAC Accredited
(Recognised by AICTE ,Govt. of Maharashtra & Affiliated to Savitribai Phule Pune University)

Department of Computer Application
Program Outcomes (POs)

Graduates will be able to:

PO1	**Scientific Knowledge:** Apply the knowledge of mathematics, science fundamentals, and specialization to the solution of complex problems.
PO2	**Problem analysis:** Identify, formulate, review research literature, and analyze complex problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and sciences.
PO3	**Design/development of solutions:** Design solutions for complex problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern IT tools including prediction and modelling to complex activities with an understanding of the limitations.
PO6	**The Graduate and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional practice.
PO7	**Environment and sustainability:** Understand the impact of the professional solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the professional practice.
PO9	**Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex activities with the professional community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO11	**Project management and finance:** Demonstrate knowledge and understanding of the science and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

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Department of Computer Application
Course Objectives & Course Outcomes(CO)
Class:-F.Y.B.C.A
SEM –I

CA – 101 – T: Problem Solving and Programming in C

Course Objectives:
- To provide a broad overview of problem solving techniques
- To learn C programming to solve problems

Course Outcomes: At the end of the course, students will be able to
- Define algorithms and explain their characteristics
- Formulate algorithm and draw flow chart to solve a given problem
- Explain use of appropriate data types, control statements
- Demonstrate ability to use top-down program design

CA – 102 – P: Lab Course on CA – 101 - T

Course Objectives:
- To learn formulation of algorithm for a given problem
- To study various data types, arrays and functions in C
- To understand input-output and, control and iterative statements in C

Course Outcomes: On completion of the course, students will be able to–
- Formulate an algorithm and draw flowchart for the given problem
- Implement the given algorithm in C
- Write programs using appropriate data types and control structures in C

CA – 103 – T: Computer Organization and Architecture

Course Objectives:
- To study number system, logic gates
- To understand combinational and sequential circuits
- To provide a broad overview of architecture and functioning of computer systems
- To learn the basic concepts behind the architecture and organization of computers.

Course Outcomes: On completion of the course, student will be able to–
- Design of combinational circuits
- Design of sequential circuits
- Describe block diagram of CPU, Memory and types of I/O transfers.

CA-104-P: Lab Course on CA-103-T

Course Objectives:

- To study number system, logic gates
- To understand combinational and sequential circuits
- To provide a broad overview of architecture and functioning of computer systems
- To learn the basic concepts behind the architecture and organization of computers.

Course Outcomes: On completion of the course, student will be able to–

- Design of combinational circuits.
- Design of sequential circuits.
- Describe block diagram of CPU, Memory and types of I/O transfers.

CA – 105 – T: Discrete Mathematics and Statistics

Course Objectives:

- Learn basic terminology formal logic, proofs, sets, relations, functions and perform the operations associated with same.
- Use formal logic proof and logical reasoning to solve problems.
- To understand significance of statistical measures.
- To study Correlation and Probability.

Course Outcomes: On completion of the course, students will be able to–

- Relate and apply techniques for constructing mathematical proofs and make use of appropriate set operations, propositional logic to solve problems
- Use function or relation models to interpret associated relationships
- Apply basic counting techniques and use principles of probability
- Given a data, compute various statistical measures of central tendency
- Use appropriate Sampling techniques.

CA-106 - P: Laboratory Course Based on CA-105 - T

Course Objectives:

- To learn to apply theoretical concepts of discrete mathematics and statistics to solve problems.
- To provide hands-on experience on R software.

Course Outcomes: On completion of the course, student will be able to

- Demonstrate understanding of fundamental mathematical concepts.
- Apply mathematical and statistical concepts to solve problems.
- Use R software to perform statistical operations and data visualization.

VSEC-101-CA: HTML and Webpage Designing

Course Objectives:

- To understand web based application development process.
- To study basics of HTML elements and tag.
- To know usage of CSS in HTML.
- To design and create simple websites.
- To apply JavaScript to websites.

Course Outcomes: After successful completion of this course, learner will be able to

- Enlist various HTML elements and tags
- Use HTML elements and tags
- Apply CSS and Java script features.
- Design a website using HTML, CSS and JavaScript.

SEM –II

CA – 151 - T: Advanced C Programming

Course Objectives:

- To learn advanced features in C Programming
- To study advanced data types
- To understand built-in library functions

Course Outcomes: On completion of the course, student will be able to–

- Write programs using pointers and structures
- Use Pre-processor directives
- Manipulate strings using library functions
- Write programs to perform operations on Files

CA – 152 – P : Lab Course on CA – 151 - T

Course Objectives:

- To learn advanced features in C Programming
- To study advanced data types
- To understand built-in library functions

Course Outcomes: On completion of the course, student will be able to–

- Write programs using pointers and structures
- Use Pre-processor directives
- Manipulate strings using library functions
- Write programs to perform operations on Files

CA – 153 – T : Introduction to Microcontrollers

Course Objectives:

- To study the basics of microcontroller.
- To learn 8051 Programming.
- To understand interfacing techniques of 8051microcontroller.
- To learn to design simple applications using 8051microcontroller.

Course Outcomes: On completion of the course, student will be able to–

- Write programs using instruction set of 8051 microcontroller.
- Interface I/O peripherals to 8051 microcontroller.
- Design simple microcontroller-based applications.

CA-154-P: Lab Course on CA-153-T

Course Objectives:

- To study the basics of microcontroller.
- To learn 8051 Programming.
- To understand interfacing techniques of 8051microcontroller.
- To learn to design simple applications using 8051microcontroller.

Course Outcomes: On completion of the course, student will be able to–

- Write programs using instruction set of 8051 microcontroller.
- Interface I/O peripherals to 8051 microcontroller.
- Design simple microcontroller-based applications.

CA – 155 – T : Linear Algebra

Course Objectives:

- To offer the learner the relevant Linear Algebra concepts through Computer Science applications.
- To interpret existence and analyse the solution set of a system of linear equations.
- To formulate, solve, apply, and interpret properties of linear systems.
- To learn about the concept of linear independence of vectors and the dimension of a vector space.
- To interpret basic concepts of linear transformations, dimension, matrix representation of a linear transformation.

Course Outcomes: On completion of the course, students will be able to–

- Appreciate the relevance and applications of Linear Algebra in the field of Computer Science.
- Instill a computational thinking while learning linear algebra.
- Express clear understanding of the concept of a solution to a system of equations.
- Find eigenvalues and corresponding eigenvectors for a square matrix.
- Represent linear transformations using matrices.

CA-156 - P: Laboratory Course Based on CA-155 - T

Course Objectives:

- To learn to apply theoretical concepts of discrete mathematics and statistics to solve problems.
- To provide hands-on experience on R software.

Course Outcomes: On completion of the course, student will be able to

- Demonstrate understanding of fundamental mathematical concepts.
- Apply mathematical and statistical concepts to solve problems.
- Use R software to perform statistical operations and data visualization.

VSEC-151: Software Tools for Business Communication

Course Objectives:

- To study word processing, spread sheets and presentation tools
- To learn G-suit
- To be familiar with tools for Electronic communications

Course Outcomes: At the end of the course, students will be able to

- Perform various word processing tasks
- Prepare spread sheets and presentations
- Collect feedbacks and make surveys
- Communicate and collaborate through electronic communications

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Department of Computer Application
Course Objectives & Course Outcomes (CO)
Class:-S.Y.B.B.A (CA)
SEM –III

Course Code: CA-301 Digital Marketing

Course Objectives:

- The aim of this syllabus is to give knowledge about using digital marketing in and as business.
- To make SWOT analysis, SEO optimization and use of various digital marketing tools.

Course Code: CA-302 Data Structure

Course Objectives:

- To understand the concepts of ADTs.
- To learn linear data structures – lists, stacks, and queues.
- To understand sorting, searching and hashing algorithms.
- To apply Tree and Graph structures.

Course Code: CA-303 Software Engineering

Course Objectives:

- To understand System concepts.
- To understand Software Engineering concepts.
- To understand the applications of Software Engineering concepts and Design in Software development

Course Code: CA- 304 (Option) Angular – JS

Course Objectives:

- By the end of this course, the students should be able to Understand Client Side MVC and SPA
- Explore AngularJS Component
- Develop an AngularJS Single Page Application
- Create and bind controllers with JavaScript
- Apply filter in AngularJS application

Course Code: CA- 304(Option) PHP

Course Objectives:

- Understand how server-side programming works on the web.
- Using PHP built-in functions and creating custom functions
- Understanding POST and GET in form submission.
- How to receive and process form submission data.
- Read and process data in a MySQL database.

Course Code: CA- 305(Option) Big Data

Course Objectives:

- To enable learners to develop expert knowledge and analytical skills in current and developing areas of analysis statistics, and machine learning.
- To enable the learner to identify, develop and apply detailed analytical, creative, problem solving skills.
- Provide the learner with a comprehensive platform for career development, innovation and further study.

Course Code: CA-305 (Option) BlockChain

Course Objectives:

By the end of the course, students will be able to-

- Understand how blockchain systems (mainly Bitcoin and Ethereum) work,
- To securely interact with them,
- Design, build, and deploy smart contracts and distributed applications,
- Integrate ideas from blockchain technology into their own projects.

Skill Enhancement (Add-On) Courses

AECC - Course Title: - (M) Basic Course in Environmental Awareness

Course Objectives:

- To provide an opportunities to acquire the knowledge, values, attitudes, commitment, and skills needed to protect and improve the environment
- To develop conscious towards a cleaner and better managed environment

Skill Enhancement (Add-On) Courses

AECC - Course Title: - (N) Advance Course in Environmental Awareness

Course Objectives:

- Understand current concern about our impact on the environment.
- Recognize the things they do affect the environment.
- Promote green practices at home and at work.
- Describe what is being done and what we all can do to help prevent harm to the environment.

SEM –IV

Course Code: CA-401 Networking

Course Objectives:

- To gain knowledge about Computer Networks concepts.
- To know about working of networking models, addresses, transmission medias and connectivity devices.
- To acquire information about network security and cryptography.

Course Code: CA-402 Object Oriented Concepts through CPP

Course Objectives:

- Acquire an understanding of basic object-oriented concepts and the issues involved in effective class design.
- Enable students to write programs using C++ features like operator overloading, constructor and destructor, inheritance, polymorphism and exception handling.

Course Code: CA-403 Operating System

Course Objectives:

- To know the services provided by Operating System
- To know the scheduling concept
- To understand design issues related to memory management and various related algorithms.
- To understand design issues related to file management and various related algorithms.

Course Code: CA- 404 (Option) Advance PHP

Course Objectives:

- To know & understand concepts of internet programming.
- Understand how server-side programming works on the web.
- Understanding How to use PHP Framework (Joomla / Druple)

Course Code: CA- 404 (Option) Nodes – JS

Course Objectives:

- Understand the JavaScript and technical concepts behind Node JS
- Structure a Node application in modules
- Understand and use the Event Emitter
- Understand Buffers, Streams, and Pipes
- Build a Web Server in Node and understand how it really works
- Connect to a SQL or Mongo database in Node.

Subject Code: - 407 jQuery

Objectives:

- To get hands-on experience on JavaScript and jQuery.
- To learn how to work with binding events to the controls in JavaScript.
- To learn how to download jQuery library and refer it to the Html page.
- To learn the importance of $(document).ready(function(){ });
- To learn selecting the Html elements by name, attribute name, id or by content. To Learn Traversing of Html elements.
- To learn handling different events for different Controls.
- To learn how to provide effects to the elements or sections in the Html page. To learn manipulating elements by adding CSS classes dynamically, by inserting elements.

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Department of Computer Application
Course Objectives & Course Outcomes (CO)
Class:-T.Y.B.B.A (CA)
SEM –V

Course Code: CA-501 Cyber Security

Course Objectives:

- To understand the fundamentals of cyber security.
- To understand various categories of Cybercrime, Cyber-attacks on mobile, tools and techniques used in Cybercrime and case studies.
- To have an overview of the Cyber laws and concepts of Cyber forensics.

Course Outcome:-

- Have a good understanding of Cyber Security and the Tools.
- Identify the different types of Cyber Crimes.
- Have a good understanding of Cyber laws
- To develop Cyber forensics awareness.
- Identify attacks, security policies and credit card frauds in mobile and Wireless Computing Era.

Course Code: CA-502 Object Oriented Software Engineering

Course Objectives:

- To understand the fundamentals of object modeling
- To understand and differentiate Unified Process from other approaches.
- To design with static UML diagrams.
- To design with the UML dynamic and implementation diagrams.
- To improve the software design with design patterns.
- To test the software against its requirements specification.

Course Outcomes:

- Students will be able to give Design Specifications for Project.
- Students will acquire Knowledge in Basic Modeling.
- Students will acquire Project Management Skills.

Course Code: CA-503 Core Java

Course Objectives:

- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/o classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications

Course Code: CA-503 Subject: Core Java

Course Objectives:

- To introduce the object oriented programming concepts.
- To understand object oriented programming concepts, and apply them in solving problems.
- To introduce the principles of inheritance and polymorphism; and demonstrate how they relate to the design of abstract classes
- To introduce the implementation of packages and interfaces
- To introduce the concepts of exception handling and multithreading.
- To introduce the design of Graphical User Interface using applets and swing controls.

Course Outcomes:

- Able to solve real world problems using OOP techniques.
- Able to understand the use of abstract classes.
- Able to solve problems using java collection framework and I/o classes.
- Able to develop multithreaded applications with synchronization.
- Able to develop applets for web applications.
- Able to design GUI based applications

Course Code: CA-504 MongoDB

Course Objectives:

- Understand importance of No SQL Databases.
- Learn various MongoDB commands and MongoDB design goals.
- Design basic and general-purpose database using MongoDB.

Course Outcomes:

- Learned to work with MongoDB shell and MongoDB tools.
- Able to do Schema design, Data modelling and all sorts of CRUD Operations.
- Learned to optimize query performance.
- Become capable to analyze the data stored in MongoDB.

Subject Code: 504 Python

Course Objectives:

- To learn and understand Python programming basics and paradigm.
- To learn and understand python looping, control statements and string manipulations.
- Students should be made familiar with the concepts of GUI controls and designing GUI applications.
- To learn and know the concepts of file handling, exception handling.

Course Outcomes:

- Define and demonstrate the use of built-in data structures "lists" and "dictionary".
- Design and implement a program to solve a real world problem.
- Design and implement GUI application and how to handle exceptions and files.

Subject Code: CA-507 Internet of Things (IoT)

Course Objectives:

- To understand Technical aspects of Internet of things.
- To describe smart objects and IoT Architecture.
- To study and compare different Application protocols of IoT.
- To understand IoT platform using Arduino Uno.

Course Outcomes:

- To explain key technologies, smart objects, IoT Architecture and security in Internet of Things.
- To illustrate the role of IoT protocols for efficient network communication.
- To understand IoT platform such as Arduino Uno.

SEM –VI

Subject Code: CA-601 Recent Trends in IT

Course Objectives:

- To introduce upcoming trends in Information technology.
- To study Eco friendly software development concepts.
- To provide a strong foundation of fundamental concepts in Artificial Intelligence.
- To evaluate the performance of various data mining task.
- To understand Data analytics using Spark Programming.

Course Outcomes:

- To discuss the basic concepts AI.
- To apply basic, intermediate and advanced techniques to mine the data.
- To provide an overview of the concept of Spark programming.

Subject Code: CA-602 Software Testing

Course Objectives:

- To provide learner with knowledge in Software Testing techniques.
- To understand how testing methods can be used as an effective tool in providing quality assurance for software.
- To provide skills to design test case plan for testing software.

Course Outcomes:

- Students will be introduced to testing tools.
- Students will acquire Knowledge of Basic SQA.
- Students will be able to design basic Test Cases.

Subject Code: CA-603 Advanced Java

Course Objectives:

- To know the concept of Java Programming.
- To understand how to use programming in day to day applications.
- To develop programming logic.

Course Outcomes:

- Students will know the concepts of JDBC Programming.
- Students will know the concepts of Multithreading and Socket Programming.
- Students will know the concepts of Spring and Hibernate.
- Students will develop the project by using JSP and JDBC.
- Students will develop applications in Spring and hibernate.

Subject Code: CA-604 Android Programming

Course Objectives:

- To understand the Android Operating System and develop applications using Google's Android open-source platform.
- To understand the issues relating to Wireless applications.

Course Outcomes:

- Student will be able to write simple GUI applications, use built-in widgets and components, work with the database to store data locally, and much more.
- Demonstrate their understanding of the fundamentals of Android operating systems Demonstrate their skills of using Android software development tools.

Subject Code: CA-604 Dot Net Framework

Course Objectives:

- To learn Microsoft framework architecture.
- Understand development of windows application.
- To learn data access mechanism.
- Create and consume libraries.
- Create a web application.
- To develop the website and application.

Course Outcome:

- Use the features of Dot Net Framework along with the features of VB, C# and ASP
- Design and develop window based and web based .NET applications.
- Design and develop a Website.
- Design and Implement database connectivity using ADO.NET for VB, C# and ASP.

Subject: Soft Skill Course Code: CA – 607

Course Objectives:

- It helps participants to communicate effectively and to carry themselves confidently.
- They also learn how to identify and overcome the barriers in interpersonal relationships.
- To improve oral and written communication, teamwork, leadership, problem-solving and decision- making skills, to gain best results.
- This course is useful for landing a great job, building a career and also finding employment as soft skills trainers.

Course Outcome:

- Understand the significance and essence of a wide range of soft skills
- Learn how to apply soft skills in a wide range of routine social and professional settings.
- Learn how to employ soft skills to improve interpersonal relationships.
- Learn how to employ soft skills to enhance employability and ensure workplace and career success.