



P.E.S's
Modern College of Engineering, Pune-05
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Program Education Objectives(P.E.O.'S)

PEO 1: The broad knowledge of computer applications for successful careers in industry.

PEO 2: The habit of lifelong learning for career development in this dynamic and rapidly changing field.

PEO 3: the ability to inculcate effective communication in the team through demonstration of good analytical, design, development and implementation skills.

Program Outcomes (PO's):

After completing MCA degree student will be able to:

1. PO1. Apply knowledge of mathematics, computer science appropriate for real world applications.
2. PO2. Identify, formulate, analyze and solve *complex* computing problems using relevant domain disciplines.
3. PO3. Design and evaluate solutions for *complex* computing problems that meet specified needs for real world applications.
4. PO4. Apply programming logic including design of algorithm, programs, analysis and interpretation of data to provide valid solutions
5. PO5. Apply appropriate techniques and modern computing tools for development of real world applications.
6. PO6. Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practices.
7. PO7. Understand the need and develop the capacity to persistent learning for continual development as a computer professional.
8. PO8. Participate as a member and leader in a team and stand out in multidisciplinary environments to demonstrate computing and management skills.



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- 9. PO9. Communicate effectively to comprehend and present effective technical Documentation.**
- 10. PO10. Apply the computing knowledge efficiently & effectively with concern for societal, environmental, and cultural aspects relevant to professional computing practices.**
- 11. PO11. To contribute effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.**
- 12. PO12. To identify a timely opportunity and innovation with entire effort to function as a successful entrepreneur.**



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Course Name	Course Outcome	
MCAFY IstSem		
C & C++ Programmimg TH- (310901) PR(310907)	C101.1	Explain the fundamentals of C programming and usage of functions.
	C101.2	Write programs using basic features of C Language
	C101.3	Describe Object Oriented Paradigm, classes, Constructor & destructors using C++
	C101.4	Apply OOP's featuresto solve various computing problems using C++
	C101.5	Implement file operations in C & C++ programming for a given application.
Computer Organization TH(310902)	C102.1	Describe function & characteristics of computer system & different Logic Gates
	C102.2	Explain various functional units of digital computer
	C102.3	Explain the organization of CPU
	C102.4	Describe different processor architecture
	C102.5	Explain basics of Parallel Computer Architecture
Principles of Programming Practices TH- (310903)	C103.1	Define fundamental concept of computer hardware, software and types of computer languages
	C103.2	Develop analytical and logical thinking with problem solving capabilities
	C103.3	Explain general principles of computer programming such as simple loops , decision structures and functions
	C103.4	Design simple and complex algorithms and determine their time complexity
	C103.5	Explain the importance of the software development process including specifications, design, implementation, testing and documentation.
Discrete Mathematics TH-(310904)	C104.1	Solve mathematical problems by using various mathematical induction approaches.
	C104.2	Prove mathematical statements using various methods of proofs.
	C104.3	Apply logical reasoning to solve a variety of problems.
	C104.4	Describe and implement relations and functions.
	C104.5	Use the basic properties of graphs and trees to model simple applications.
Probability & Statistics TH-(310905)	C105.1	Apply statistical concepts to solve basic problems
	C105.2	Solve the problems of Discrete Distributions and Continuous Distributions.
	C105.3	Explain various Descriptive Statistical concepts
	C105.4	Describe Hypothesis and its estimates
	C105.5	Analyze Categorical Data using Statistical Quality Control techniques.
Business	C106.1	Apply knowledge of principles of business communication.



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Communications TH-(310906)	C106.2	Perform self-SWOT analysis.
	C106.3	Improve presentation skills
	C106.4	Write technical documents and business reports
	C106.5	Explain IT ethics & etiquette
C & C++ Laboratory PR-(310907)	C107.1	Implement basic concepts of programming using C Language
	C107.2	Implement Modular Programming with Functions using C.
	C107.3	Write programs using classes, Constructors & destructors using C++
	C107.4	Apply basic Object Oriented Concepts using C++ Language.
	C107.5	Implement File handling concepts using C and C++ language
Open Source Tools Laboratory PR-(310908)	C108.1	Install various Operating Systems and implement Linux commands.
	C108.2	Design documents using Writer, Impress and Calc.
	C108.3	Design a web page using HTML and DHTML.
	C108.4	Create blogs and groups for open source tools.
MCAFY IIndSem		
Java Programming Th-(310909)	C201.1	Explain Java programming environment.
	C201.2	Explain classes and interfaces in Java Programming
	C201.3	Describe various OOPs concepts in Java Programming
	C201.4	Define multithreading concepts in Java Programming
	C201.5	Develop GUI using AWT and Swing in Java Programming
Data Structures using C Th-(310910)	C202.1	Explain applications of basic data structures Array & Linked List
	C202.2	Explain various data structures such as stacks, queues, trees and graphs.
	C202.3	Describe different searching and sorting algorithms
	C202.4	Explain file handling concepts.
Web Technologies Th-(310911)	C203.1	Explain basic components of Web Technologies.
	C203.2	Design static web pages using HTML.
	C203.3	Design dynamic and interactive web pages using VBScript and JavaScript.
	C203.4	Create XML documents for web development
	C203.5	Design dynamic website using PHP.
System Analysis & Design Th-(310912)	C204.1	Describe Software engineering, Process models and information system.
	C204.2	Explain SDLC cycle and Requirement Engineering.
	C204.3	Design data flow diagrams, decision tables and ERD.
	C204.4	Describe software testing, software security, software maintenance and control and audit of information system



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	C204.5	Explain software deployment, component based software engineering, distributed software engineering and service oriented architecture.
Management Theory & Practices Th-(310913)	C205.1	Describe the Functions and activities of the Management.
	C205.2	Explain the Organizational structure.
	C205.3	Describe the Leadership, Team Building Models
	C205.4	Elaborate the Conflict Management, Total Quality Management and Re-engineering Process
	C205.5	Explain Management Information System, Customer Relationship and Supply Chain Management
	C205.6	Elaborate Managerial Decision Making Models
Web Technologies Laboratory PR-(310914)	C206.1	Design static web pages.
	C206.2	Design dynamic and interactive web pages using VBScript and JavaScript
	C206.3	Write scripts using XML.
	C206.4	Create dynamic websites using PHP.
Java Programming Laboratory PR-(310915)	C207.1	Implement OOPs concepts using Java programming.
	C207.2	Implement the concept of multithreading.
	C207.3	Design GUI using Java Program.
	C207.4	Write Client Side Programs
	C207.5	Implement file handling using Java.
	C207.6	Create connectivity using JDBC and networking concepts.
Data Structures Lab PR-(310916)	C208.1	Implement elementary data structures such as Arrays, linked lists using C.
	C208.2	Demonstrate practical knowledge on the applications of stacks, queues, trees and graph.
	C208.3	Implement different searching and sorting algorithms.
	C208.4	Implement file handling with data structure in C Programming.
MCASY IIIrdSem		
Advanced Java Th-(410901)	C301.1	Describe the use of various types of JDBC drivers.
	C301.2	Develop web application using Servlet & JSP.
	C301.3	Implement business logic using EJB.
	C301.4	Develop web application with Spring MVC.
	C301.5	Perform database operations using HQL
DBMS Th-(410902)	C302.1	Describe the basic concepts of DBMS.
	C302.2	Design E-R model for real world applications.
	C302.3	Apply concepts of relational model & relational database design for database applications.
	C302.4	Create database applications using nonprocedural & procedural query languages.
	C302.5	Explain non-relational databases.



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Operating Systems Th-(410903)	C303.1	Describe the basics of System Softwares like Assembler, Compiler, Linker, Loader
	C303.2	Evaluate the various CPU scheduling algorithms and deadlock algorithms
	C303.3	Illustrate various memory management techniques and page replacement algorithm.
	C303.4	Apply disk management and disk scheduling algorithms for better utilization of external memory.
	C303.5	Explain the basic concepts of Linux OS and implement basic Shell commands.
OOAD Th-(410904)	C304.1	Describe different object oriented software development methodologies.
	C304.2	Analyse software requirements using Use cases.
	C304.3	Produce initial software Design using class and Object diagrams.
	C304.4	Apply concept to produce detailed design using various UML diagrams.
Operations Research Th-(410905)	C305.1	Apply various methods of Linear Programming Problem for real world problems.
	C305.2	Implement Transportation and Assignment Problems to map real world problems.
	C305.3	Analyse Project management Techniques.
	C305.4	Apply various Strategies for decision making.
	C305.5	Use Simulation and Random numbers techniques for statistical analysis.
HBASE Lab PR-(410906)	C306.1	Design and implement a database schema for a real world application using entity relationship diagram as well as normalization
	C306.2	Retrieve the information from database using MYSQL/Oracle.
	C306.3	Apply stored procedures and functions to access and manipulate database using PL/SQL
	C306.4	Execute the non-relational database like Hbase basic commands.
Advance Java Lab PR-(410907)	C307.1	Get acquainted with J2EE environment and JDBC
	C307.2	Implement server side application.
	C307.3	Design Information management and processing system.
	C307.4	Implement Enterprise level application.
	C307.5	Build web application using Spring MVC.
	C307.6	Apply basic concepts of Hibernate and HQL.
UML Lab – umbrella	C308.1	Implement requirement analysis by designing Use Case Diagram using UML tool for real world application.



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PR-(410907)	C308.2	Design static structure of real world application using UML tool.
	C308.3	Design dynamic and behavioral structure of real world application using UML tool.
MCASY IVthSem		
Advanced Web Technology Th-(410909)	C401.1	Describe the concept of .NET Framework
	C401.2	Explain the role of C# in .NET Framework.
	C401.3	Define the importance of ASP.NET in .NET Framework.
	C401.4	Describe Silverlight application.
	C401.5	Demonstrate ADO.NET applications.
	C401.6	Describe the concept of LINQ.
Banking and FAM Th-(410910)	C402.1	Implement the basic Accounting concepts in the banking and financial applications
	C402.2	Apply the basics of cost accounting concepts in real world problem
	C402.3	Implement the working capital concepts.
	C402.4	Use the concepts of banking domain
CN & Information Security Th-(410911)	C403.1	Describe various data communication devices and their functions.
	C403.2	Explain the roles and services of protocols in networking.
	C403.3	Explain security and cryptographic algorithms.
	C403.4	Explain Secure binding of public and private values and network infrastructure services.
Elective I IS Audit Th-(410912)	C404A.1	Describe Information System audit concepts and purpose of controls in information system environment.
	C404A.2	Evaluate General and Business Process Application and Management Controls of Information System environment
	C404A.3	Recognize the susceptibility of errors and remedies in processes involving Information Technology
	C404A.4	Provide assurance regarding IS Audit objectives to IT Enabled services by using ISA guidelines.
	C404A.5	Use of Information systems audit standards with COBIT framework
Elective I Cyber Laws Th-(410912)	C404B.1	Describe the concept and Social issues of Cyber space.
	C404B.2	Discuss the different IT-Act.
	C404B.3	Explain the various cybercrimes.
	C404B.4	Distinguish the Intellectual Property Protection of Cyberspace
	C404B.5	Explain the concept of Privacy and data protection.
Elective I ITSM	C404C.1	Explain basic concepts and best practices of Service management



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Th-(410912)	C404C.2	Describe life cycle, design and strategy of IT Service.
	C404C.3	Describe Service transition, process, operation and Continuity management
	C404C.4	Explain Information security policy , Information security management system and access management
	C404C.5	Elaborate IT operations and Technical managements purpose and relationship with other service management
Adv DBMS Th-(410913)	C405.1	Implement query processing techniques and respective algorithms
	C405.2	Characterize Centralized databases and Parallel Databases applications
	C405.3	Identify Distributed Database Process, Architecture, and Design Principles.
	C405.4	Design, Develop and analyze Object Based Database
	C405.5	Design and code data transfer scripts using XML languages
	C405.6	Analyze and evaluate variety of NoSQL databases
WT Lab PR-(410914)	C406.1	Explain .NET Framework.
	C406.2	Develop C#.Net Applications.
	C406.3	Design Web Applications using ASP.NET
	C406.4	Process data in ASP.NET using XML.
	C406.5	Describe SilverLite and LINQ.
Advance DBMS Lab PR-(410915)	C407.1	Implement the basic concepts of database using RDBMS & SQL
	C407.2	Solve the complex queries of SQL
	C407.3	Explain the setup of distributed Database environment.
	C407.4	Implement object oriented queries using SQL
	C407.5	Design the database using XML and solve XML queries
Network & Security Lab PR-(410916)	C408.1	Implement different networking commands using CISCO packet writers.
	C408.2	Describe campus LAN Design and testing of LAN using ping command.
	C408.3	Implement Echo server using C/C++/Java programming language.
	C408.4	Configure Web Server and Client.
	C408.5	Implement Symmetric and Asymmetric key cryptographic algorithm using C Programming.
MCATY VthSem		
Recent Technologies in IT	C501.1	Describe LAMP Technology.
	C501.2	Illustrate various CRUD Operations.
	C501.3	Implement concept of OOP using PHP.



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Th-(510901)	C501.4	Apply file handling concepts using PHP.
	C501.5	Develop session Management and cookies using PHP.
Software Testing and Quality Assurance Th-(510902)	C502.1	Describe software quality, Quality control, quality assurance and process improvement.
	C502.2	Design Test Plan, manual Test Cases for software projects.
	C502.3	Apply software testing Methodologies like White Box and Black Box.
	C502.4	Explain various software testing types
	C502.5	Describe Defect management for software system
	C502.6	Explain software testing automation
Software Engineering Th-(510903)	C503.1	Describe various software development and process models
	C503.2	Explain the Preliminary Planning of an IT Project
	C503.3	Explain software Project Management
	C503.4	Explain the dependability properties and security specification in software development
	C503.5	Explain different software architectures and product matrices used for software development
Data warehousing, Data mining and BI Th-(510904)	C504.1	Perform operations on Data Warehouse using OLAP tool.
	C504.2	Describe process of data mining and different statistical techniques to know the data
	C504.3	Solve real data mining problems by using the right tools to find interesting patterns
	C504.4	Describe a Business Intelligence Fundamentals, Architecture
	C504.5	Identify the different Business intelligence reporting tools.
Elective – II Animation & Gaming Th-(510905)	C505.1	Explain concept of graphics and its algorithms.
	C505.2	Describe the basics of types, techniques and principles required to develop animation application.
	C505.3	Describe basic concepts and development platform of Gaming applications
	C505.4	Explain structure of game and core architecture using state controls in Java.
Elective – II Mobile Computing Th-(510905)	C506.1	Describe the concept and technique of Wireless telephony.
	C506.2	Explain the concept of wireless networking.
	C506.3	Describe data management issue of mobile wireless network.
	C506.4	Design and create mobile application.
RTIT Lab PR-(510906)	C507.1	Install and configure LAMP server.
	C507.2	Implement CRUD Operations using MySQL, HTML.



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	C507.3	Develop an application using session management.
	C507.4	Implement PHP Program using File handling.
	C507.5	Create a program using Google API.
STQA Lab PR-(510907)	C508.1	Design Test Plan, manual Test Cases for given real world applications.
	C508.2	Design White Box and Black Box testing test cases for real world applications
	C508.3	Prepare Defect Repository for real world applications
	C508.4	Use Open Source testing tools such as selenium IDE for GUI testing.
Mini Project #1 (510908)	C509.1	Develop team building skills.
	C509.2	Apply software development life cycle to real life projects
	C509.3	Apply technologies learnt during program to real life projects.
MCATY VIthSem		
Major Project (510909)	C601.1	Analyze real life projects.
	C601.2	Provide solutions to real life projects.
	C601.3	Develop team building skill and communicate effectively with stakeholders of project
Seminar on Domain of Major Project #2 (510910)	C602.1	Review the literature.
	C602.2	Improve the presentation and communication skill.
	C602.3	Enhance domain knowledge.
	C602.4	Improve Technical writing skills.