

ATSS's
Institute of Industrial & Computer Management &
Research
Nigdi Pune-44

Criterion II Teaching-Learning and Evaluation

Key Indicator: Student Performance and Learning Outcome

Program Outcomes for MCA (2020 Pattern)

PO1: Apply knowledge of computing fundamentals, computing specialization, mathematics, and domain knowledge appropriate for the computing specialization to the abstraction and conceptualization of computing models from defined problems and requirements.

PO2: Identify, formulate, research literature, and solve complex Computing problems reaching substantiated conclusions using fundamental principles of Mathematics, Computing sciences, and relevant domain disciplines.

PO3: Design and evaluate solutions for complex computing problems, and design and evaluate systems, components, or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations.

PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5: Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.

PO6: Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.

PO7: Recognize the need, and have the ability, to engage in independent learning for continual development as a Computing professional.

PO8: Demonstrate knowledge and understanding of computing 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.

PO9: Communicate effectively with the computing community, and with society at large, about complex computing activities by being able to comprehend and write effective reports, design documentation, make effective presentations, and give and understand clear instructions.

PO10: Understand and assess societal, environmental, health, safety, legal, and cultural issues within local and global contexts, and the consequential responsibilities relevant to professional computing practice.

PO11: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.

PO12: Identify a timely opportunity and using innovation to pursue that opportunity to create value and wealth for the betterment of the individual and society at large.

Course Outcomes for MCA (2020 Pattern)

Course	Subject	Outcome
SEMESTER I		
CO1	Java Programming	CO1.1 Understand Basic Concepts of OOPs, Java, Inheritance, Package. (Understand) CO1.2: Understand Exception handling, arrays and Strings and multi-threading in Java (Understand.) CO1.3: Understand collection framework (Understand) CO1.4: Develop GUI using Abstract Windows Toolkit (AWT) and event handling (Apply) CO1.5: Develop Web application using JSP and Servlet, JDBC (Apply)
CO2	Data Structure and Algorithms	CO2.1: Demonstrate linear data structures linked list, stack and queue (apply) CO2.2: Implement tree, graph, hash table and heap data structures


		(apply) CO2.3: Apply brute force and backtracking techniques (apply) CO2.4: Demonstrate greedy and divide-conquer approaches (apply) CO2.5: Implement dynamic programming technique (apply)
CO3	Object Oriented Software Engineering	CO3.1: Distinguish different process model for a software development. (Understand) CO3.2: Design software requirements specification solution for a given problem definitions of a software system. (Analyze) CO3.3: Apply software engineering analysis/design knowledge to suggest solutions for simulated problems (Analyze) CO3.4: Design user interface layout for different types of applications (Apply) CO3.5: Recognize and describe current trends in software engineering (Understand)
CO4	Operating System Concepts	CO4.1: Understand structure of OS, process management and synchronization. (Understand) CO4.2: Understand multicore and multiprocessing OS. (Understand) CO4.3: explain Realtime and embedded OS (Understand) CO4.4: understand Windows and Linux OS fundamentals and administration. (Understand) CO4.5: solve shell scripting problems (Apply)
CO5	Network Technologies	CO5.1: Understand the basic concepts of Computer Network, and principle of layering(Understand) CO5.2: Apply the error detection and correction techniques used in data transmission (Apply) CO5.3: Apply IP addressing schemes and sub netting (Apply) CO5.4: Understand the concept of routing protocols, Application layer protocols and Network Security (Understand) CO5.5: Apply the socket programming basics to create a simple chat application(Apply)
CO6	Open Course 1(Scratch Programming)	CO6.1: Use Scratch to for developing simple projects
CO7	Open Course 2(Digital Marketing)	CO7.1: Creating a digital marketing plan. CO7.2:Identify the importance of the digital marketing for marketing success. CO7.3:Managing customer relationships across all digital channels.
CO8	Practical	CO8.1: Demonstrate Collection framework (Apply) CO8.2: Develop GUI using awt and swing (Apply) CO8.3: Develop Web application using JSP and Servlet, JDBC (Apply) CO8.4: Apply Data Structure to solve problems using JavaScript (Apply)
CO9	Mini Project	CO9.1: Create working project using tools and techniques learnt in this semester (Create)
CO10	Soft Skills - I	CO10.1 Deal with nerves and think more positively about public speaking. CO10.2 Understand ways of grabbing the listener's attention, holding their interest, and concluding strongly;

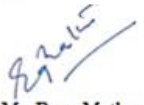
		CO10.3 Make use of slides and visual aids to make presentation effective. CO10.4 Learn how to deliver an enthusiastic and well-practiced presentation
SEMESTER II		
CO11	Python Programming	CO11.1: Understand Demonstrate the concepts of python and modular programming. (Understand) CO11.2: Apply the concepts of concurrency control in python (Apply) CO11.3: Solve the real-life problems using object-oriented concepts and python libraries (Apply) CO11.4: Demonstrate the concept of IO, Exception Handling, database (Apply) CO11.5: Analyze the given dataset and apply the data analysis concepts and data visualization. (Analyze)
CO12	Software Project Management	Student will be able to CO12.1: Understand the process of Software Project Management Framework and Apply estimation techniques. (Apply) CO12.2: Learn the philosophy, principles and lifecycle of an agile project. (Understand) CO12.3: Demonstrate Agile Teams and Tools and Apply agile project constraints and trade-offs for estimating project size and schedule (Apply) CO12.4: Explain Project Tracking and Interpretation of Progress Report (Understand) CO12.5: Analyze Problem statement and evaluate User Stories (Analyze)
CO13	Optimization Techniques	Student will be able to CO13.1: Understand the role and principles of optimization techniques in business world (Understand) CO13.2: Demonstrate specific optimization technique for effective decision making (Apply) CO13.3: Apply the optimization techniques in business environments (Apply) CO13.4: Illustrate and infer for the business scenario (Analyze) CO13.5: Analyze the optimization techniques in strategic planning for optimal gain. (Analyze)
CO14	Advanced Internet Technologies	CO14.1: Outline the basic concepts of Advance Internet Technologies (Understand) CO14.2: Design appropriate user interfaces and implements webpage based on given problem Statement (Apply) CO14.3: Implement concepts and methods of NodeJS (Apply) CO14.4: Implement concepts and methods of Angular (Apply) CO14.5: Build Dynamic web pages using server-side PHP programming with Database Connectivity (Apply)
CO15	Advanced DBMS	Student will be able to CO15.1: Describe the core concepts of DBMS and various databases used in real applications (Understand) CO15.2: Design relational database using E-R model and normalization (Apply)

		CO15.3: Demonstrate XML database and nonprocedural structural query languages for data access (Apply) CO15.4: Explain concepts of Parallel, Distributed and Object-Oriented Databases and their applications (Understand) CO15.5: Apply transaction management, recovery management, backup and security – privacy concepts for database applications (Apply)
CO16	Open Course 3	As it is elective subject Course outcome changes.
CO17	Open Course 4	As it is elective subject Course outcome changes.
CO18	Practical	CO18.1: implement python programming concepts for solving real life problems. (Apply) CO18.2: Implement Advanced Internet Technologies (Apply)
CO19	Mini Project	CO19.1: Create working project using tools and techniques learnt in this semester (Create)
CO20	Soft Skills - II	CO20.1 Prepare resumes & CV-Covering letter (effective usage of MSWord) CO20.2 Understand about Self introduction during interviews CO20.3 Know how to appear for technical and HR interviews.
SEMESTER III		
CO21	Mobile Application Development	CO45.1: Understand Various Mobile Application Architectures CO45.2: Use different types of widgets and Layouts CO45.3: Describe Web Services and Web Views in mobile applications CO45.4: Implement data storing and retrieval methods in android CO45.5: Demonstrate Hybrid Mobile App Framework
CO22	Data Warehousing and Data Mining	CO22.1 To understand the basic principles, concepts and applications of data warehousing and data mining, CO22.2 Ability to do Conceptual, Logical, and Physical design of Data Warehouses OLAP applications . CO22.3 Have a good knowledge of the fundamental concepts like association, classification, clustering in data mining and data warehousing with addition of basic concepts of ES, DSS, AI, ANN, GA.
CO23	Software Testing and Quality Assurance	CO23.1 Understand the role of software quality assurance in contributing to the efficient delivery of software solutions (Understand) CO23.2 Demonstrate specific software tests with well-defined objectives and targets (Apply) CO23.3. Apply the software testing techniques in commercial environments (Apply) CO23.4. Construct test strategies and plans for software testing. ... (Analyze) CO23.5. Demonstrate the usage of software testing tools for test effectiveness, efficiency and coverage (Apply)
CO24	Knowledge Representation &	CO38.1: Develop a basic understanding of AI building blocks presented in intelligent agents- Develop.

	Artificial Intelligence - ML, DL	CO38.2: Choose an appropriate problem solving method and knowledge representation technique – Choose. CO38.3: Apply the different Propositional Logic concepts for knowledge representation-Apply. CO38.4: Analyze and understand the models for reasoning with uncertainty and different planning and learning approaches in the field of Artificial Intelligence – Analyze and understand. CO38.5: Demonstrate awareness and a fundamental understanding of various applications of AI – Demonstrate.
CO25	Cloud Computing	CO25.1.Learn the main concepts, key technologies, strengths, and limitations of cloud computing and the possible applications for state-of-the-art cloud computing. CO25.2.Understand the importance of virtualization in Cloud and Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud and understand applications such as Google App Engine , Salesforce. CO25.3.Explain the core issues of cloud computing such as security, privacy, and interoperability
CO26	Open Course 5	As it is elective subject Course outcome changes.
CO27	Open Course 6	As it is elective subject Course outcome changes.
CO28	Practical	CO28.1: Create android user interface. (Apply) CO28.2:Creating and applying mobile applications (Apply)
CO29	Mini Project	CO29.1: Planning a solution to a programming problem (Apply) CO29.2: Apply data storing and retrieval methods in android (Apply) CO29.3:Creating and applying mobile applications (Apply)
CO30	Soft Skills- III	CO30.1 Apply GD etiquettes in real life scenarios CO30.2 Speak in public with confidence
SEMESTER IV		
CO31	DevOps	CO11.1: Understand Demonstrate the concepts of DevOps and Software Development Life Cycle. (Understand) CO11.2: Apply the concepts of Containers and Virtual Development - Docker, Vagrant (Apply) CO11.4: Demonstrate Configuration Management Tools (Apply) CO11.5: Analyze continuous monitoring. (Analyze)
CO32	PPM and OB	CO32.1. Describe and analyze the interactions between multiple aspects of management. CO32.2. Analyze the role of planning and decision making in Organization CO32.3. Justify the role of leadership qualities, Motivation Group dynamics and Team Building. (Remember) CO32.4. Compare the controlling process(Remember)
CO33	Project	CO33.1 Develop quality software using the concepts of Software Engineering from requirements elicitation to deployment of software within stipulated time as per the estimated cost.(Apply) CO33.2 Demonstrate their understanding of all subjects pertaining

		to programming, database, quality assurance, networking and project management. (Apply) CO33.3 Work as an individual and as part of a multidisciplinary team to develop and deliver quality software (Apply)
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