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Institute of Management & Entrepreneur Development

CO-POs (MCA Programme)

PROGRAMME OUTCOMES (POs) - MCA

At the end of the MCA programme the learner will possess the

1	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.
2	Identify, formulate, research literature, and solve complex Computing problems reaching substantiated conclusions using fundamental principles of Mathematics, Computing sciences, and relevant domain disciplines.
3	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
4	Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
5	Create, select, adapt and apply appropriate techniques, resources, and modern computing tools to complex computing activities, with an understanding of the limitations.
6	Understand and commit to professional ethics and cyber regulations, responsibilities, and norms of professional computing practice.
7	Recognize the need, and have the ability, to engage in independent learning for continual development as a Computing professional.
8	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.
9	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 receive clear instructions.
10	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.
11	Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary environments.
12	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 (COs) - MCA

MCA Course Outcomes as per Subjects (COs)

Semester-I

IT-11: Java Programming	
CO1	Understand Basic Concepts of OOPs, Java, Inheritance, Package. (Understand)
CO2	Understand Exception handling, arrays and Strings and multi-threading in Java (Understand.)
CO3	Understand collection framework (Understand)
CO4	Develop GUI using Abstract Windows Toolkit (AWT) and event handling (Apply)
CO5	Develop Web application using JSP and Servlet, JDBC (Apply)
IT-12: Data Structure and Algorithms	
CO1	Demonstrate linear data structures linked list, stack and queue (apply)
CO2	Implement tree, graph, hash table and heap data structures (apply)
CO3	Apply brute force and backtracking techniques (apply)
CO4	Demonstrate greedy and divide-conquer approaches (apply)
CO5	Implement dynamic programming technique (apply)
IT-13: Object Oriented Software Engineering	
CO1	Distinguish different process model for a software development. (Understand)
CO2	Design software requirements specification solution for a given problem definitions of a software system. (Analyze)

CO3	Apply software engineering analysis/design knowledge to suggest solutions for simulated problems (Analyze)
CO4	Design user interface layout for different types of applications (Apply)
CO5	Recognize and describe current trends in software engineering (Understand)
IT-14: Operating Systems Concepts	
CO1	Understand structure of OS, process management and synchronization. (Understand)
CO2	Understand multicore and multiprocessing OS. (Understand)
CO3	Explain Realtime and embedded OS (Understand)
CO4	Understand Windows and Linux OS fundamentals and administration. (Understand)
CO5	solve shell scripting problems (Apply)
IT-15: Network Technologies	
CO1	Understand the basic concepts of Computer Network, and principle of layering (Understand)
CO2	Apply the error detection and correction techniques used in data transmission (Apply)
CO3	Apply IP addressing schemes and sub netting (Apply)
CO4	Understand the concept of routing protocols, Application layer protocols and Network Security (Understand)
CO5	Apply the socket programming basics to create a simple chat application (Apply)
IT-11L: Practicals	
CO1	Demonstrate Collection framework (Apply)
CO2	Develop GUI using awt and swing (Apply)
CO3	Develop Web application using JSP and Servlet, JDBC (Apply
CO4	Apply Data Structure to solve problems using JavaScript (Apply)
ITC11: Mini Project	
CO1	Create working project using tools and techniques learnt in this semester (Create)
Semester-II	
IT-21: Python Programming	
CO1	Understand Demonstrate the concepts of python and modular programming. (Understand)
CO2	Apply the concepts of concurrency control in python (Apply)
CO3	Solve the real-life problems using object-oriented concepts and python libraries (Apply)
CO4	Demonstrate the concept of IO, Exception Handling, database (Apply)
CO5	Analyze the given dataset and apply the data analysis concepts and data visualization. (Analyze)
IT-22: Software Project Management	
CO1	Understand the process of Software Project Management Framework and Apply estimation techniques. (Apply)
CO2	Learn the philosophy, principles and lifecycle of an agile project. (Understand)
CO3	Demonstrate Agile Teams and Tools and Apply agile project constraints and trade-offs for estimating project size and schedule (Apply)
CO4	Explain Project Tracking and Interpretation of Progress Report (Understand)
CO5	Analyze Problem statement and evaluate User Stories (Analyze)
MT-21: Optimization Techniques	
CO1	Understand the role and principles of optimization techniques in business world (Understand)
CO2	Demonstrate specific optimization technique for effective decision making (Apply)
CO3	Apply the optimization techniques in business environments (Apply)
CO4	Illustrate and infer for the business scenario (Analyze)
CO5	Analyze the optimization techniques in strategic planning for optimal gain. (Analyze)
IT-23 : Advanced Internet Technologies	
CO1	Outline the basic concepts of Advance Internet Technologies (Understand)
CO2	Design appropriate user interfaces and implements webpage based on given problem Statement (Apply)
CO3	Implement concepts and methods of NodeJS (Apply)
CO4	Implement concepts and methods of Angular (Apply)
CO5	Build Dynamic web pages using server-side PHP programming with Database Connectivity (Apply)
IT-24: Advanced DBMS	

CO1	Describe the core concepts of DBMS and various databases used in real applications (Understand)
CO2	Design relational database using E-R model and normalization (Apply)
CO3	Demonstrate XML database and nonprocedural structural query languages for data access (Apply)
CO4	Explain concepts of Parallel, Distributed and Object-Oriented Databases and their applications (Understand)
CO5	Apply transaction management, recovery management, backup and security – privacy concepts for database applications (Apply)
IT-21L: Practicals	
CO1	implement python programming concepts for solving real life problems. (Apply)
CO2	Implement Advanced Internet Technologies (Apply)
ITC21: Mini Project	
CO1	Create working project using tools and techniques learnt in this semester (Create)
Semester-III	
IT-31: Mobile Application Development	
CO1	Understand Various Mobile Application Architectures. (Understand)
CO2	Apply different types of widgets and Layouts. (Apply
CO3	Describe Web Services and Web Views in mobile applications. (Understand)
CO4	Implement data storing and retrieval methods in android. (Apply)
CO5	Demonstrate Hybrid Mobile App Framework. (Apply)
IT-32: Data Warehousing and Data Mining	
CO1	Understand Data warehouse concepts, architecture and models (Understand)
CO2	Learn and understand techniques of preprocessing on various kinds of data (Understand)
CO3	Apply association Mining and Classification Techniques on Data Sets (Apply)
CO4	Apply Clustering Techniques and Web Mining on Data Sets (Apply)
CO5	Understand other approaches of Data mining (Understand)
IT-33: Software Testing and Quality Assurance	
CO1	Understand the role of software quality assurance in contributing to the efficient delivery of software solutions. (Understand)
CO2	Demonstrate specific software tests with well-defined objectives and targets. (Apply)
CO3	Apply the software testing techniques in commercial environments. (Apply)
CO4	Construct test strategies and plans for software testing. (Analyze)
CO5	Demonstrate the usage of software testing tools for test effectiveness, efficiency and coverage (Apply)
IT-34: Knowledge Representation and Artificial Intelligence: ML, DL	
CO1	Understand basic building block of Artificial Intelligence and Knowledge Representation. (Understand)
CO2	Apply Propositional Logic for knowledge representation. (Apply)
CO3	Design various models based on Machine Learning methodology (Apply)
CO4	Design various models based on Deep Learning methodology (Apply)
CO5	Understand various hardware and software aspect used for AI and its application. (Understand)
IT-35: Cloud Computing	
CO1	Describe the concepts of Cloud Computing and its Service Models& Deployment Models. (Understand)
CO2	Classify the types of Virtualization. (Understand)
CO3	Describe the Cloud Management and relate Cloud to SOA. (Understand)
CO4	Interpret Architecture and Pharrell Programing of Cloud Computing. (Apply)
CO5	Demonstrate practical implementation of Cloud computing. (Apply)
IT-31L: Practicals	
CO1	Develop mobile application. (Apply)
CO2	Develop ML, DL models using Python (Apply)
ITC31: Mini Project	
CO1	Create working project using tools and techniques learnt in this semester (Create)
Semester-IV	
IT-41: DevOps	

CO1	Describe the evolution of technology & timeline (Understand)
CO2	Explain Introduction to various Devops platforms (Remember)
CO3	Demonstrate the building components / blocks of Devops and gain an insight of the Devops Architecture. (Understand)
CO4	Apply the knowledge gain about Devops approach across various domains (Apply)
CO5	Build DevOps application (Apply)
BM-41: PPM and OB	
CO1	Describe and analyze the interactions between multiple aspects of management. (Understand)
CO2	Analyze the role of planning and decision making in Organization (Analyze)
CO3	Justify the role of leadership qualities, Motivation and Team Building. (Analyze)
CO4	Analyze stress management and conflict management (Analyze)
CO5	Describe Personality and Individual Behavior (Understand)
ITC41 : Project	
CO1	Create working project using tools and techniques learnt in the programme (Create)