

	ZEAL EDUCATION SOCIETY'S ZEAL INSTITUTE OF BUSINESS ADMINISTRATION, COMPUTER APPLICATION AND RESEARCH (ZIBACAR) NARHE PUNE -41 INDIA Programme – MBA & MCA	
	Revision: 00	Date:01/09/2023

Programme: MCA
Course: MCA I Semester: SEM I

Course name with code: IT11 – Python Programming

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	To learn and apply basic constructs of python such as data, operations, conditions, loops, data types.
CO2	Apply	To understand advance concepts of python and apply it for solving the complex problems.
CO3	Apply	To develop Python programs that incorporate OOPS concept, regular expressions and multithreading for complex problem-solving and performance.
CO4	Apply	To implement various types of database operations in MongoDB.
CO5	Apply	To develop comprehensive web applications using Django Framework.

Course name with code: IT12 – Data Structure and Algorithms

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Implement linear data structures and its various real time applications.
CO2	Apply	Demonstrate linked list data structure and its types
CO3	Apply	Demonstrate dynamic linear data structures like stack, queue and analyze their various applications.
CO4	Apply	Implement techniques of Non-Linear data structures like Tree and Graph
CO5	Apply	Demonstrate and compare various approaches of Searching, Sorting, Hashing and Heaps.

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Course name with code: IT13 – Advanced DBMS

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Demonstrating the concept of fundamentals of relational database systems include: data models, database & DDBS architectures, and ER features.
CO2	Understand	Understand the concepts of transaction concurrency control, Query Processing and Security aspects.
CO3	Apply	Apply SQL & NoSQL development tools on different types of Schemas.
CO4	Apply	Demonstrate database design and Computation techniques for parallel and distributed database Technology.
CO5	Apply	Implement Real Time applications using Database tools.

Course name with code: MT14 – Business Statistics

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the role and importance of statistics in business decision-making.
CO2	Apply	Apply measures of central tendency and dispersion to summarize data.
CO3	Understand	Understand basic probability concepts and rules.
CO4	Apply	Apply correlation and regression techniques to analyze relationships between variables.
CO5	Apply	Apply time series analysis techniques to forecast business trends.

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Course name with code: IT14 – Software Engineering and Project Management

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Apply concepts, principles of software engineering to develop comprehensive Software Requirement Specification.
CO2	Apply	Use software engineering analysis and design modelling technique to represent systems.
CO3	Apply	Illustrate Software Project Management models for effective plan, manage and enhance projects.
CO4	Apply	Implement Agile methodologies to enhance project adaptability and responsiveness to changing requirements.
CO5	Apply	Employ Agile tools effectively to manage, navigate and facilitate collaboration and streamline project workflows in software development.

Course name with code: EC11-1 – Fundamentals of Cloud Computing

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Describe the concepts of Cloud Computing, Dockers and Container.
CO2	Understand	Explore the various Cloud Service Models and Deployment Models.
CO3	Apply	Implement concepts, hypervisors, virtual machines, VMware, Microsoft Hyper-V, and Open-Source Virtualization Manager.
CO4	Understand	Describe the Cloud Architecture and relate Cloud to SOA along with SLA management, cloud bursting strategies.
CO5	Analyze	Compare different Cloud Platforms – AWS, GCP, IBM Cloud.

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Course name with code: EC11-2 – Web Development

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Design appropriate user interfaces by implementing new features of HTML5.
CO2	Apply	Design user interfaces and implement CSS3 features.
CO3	Apply	Demonstrate the concept of responsive web design and its importance.
CO4	Apply	Build Dynamic web pages using server-side PHP programming.
CO5	Apply	Develop and deploy web application.

Course name with code: EC11-3 – Fundamental of Data Science

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the core concepts, techniques and methodologies used in data science.
CO2	Apply	Apply Computational Mathematics concepts to solve data-related problems effectively.
CO3	Apply	Apply the principles of data collection, cleaning, and pre-processing.
CO4	Apply	Perform exploratory data analysis using Numpy and Pandas to derive insights from datasets.
CO5	Apply	Apply the strategies for visualizing the data.

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Course name with code: EC11-4 – Introduction to Cyber Security

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understanding the knowledge of cybercrimes, cyber security and cyber-attacks, vulnerabilities, techniques.
CO2	Apply	Illustrate the security aspects of social media, network platforms and ethical aspects associated with use of social media.
CO3	Apply	Articulate the importance of personal data theft, financial frauds and identify data privacy and security.
CO4	Apply	Apply existing legal framework and laws on cyber security.
CO5	Understand	Understand the need of information security, standards and policies.

Course name with code: IT11L – Practical

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Demonstrate Basics of Python and OOPs concepts.
CO2	Apply	Demonstrate CRUD Operation using MongoDB.
CO3	Apply	Design and Develop web application using Django.
CO4	Apply	Implement Linear data structure like stack, queue and Linked list and demonstrate various searching and sorting techniques.
CO5	Apply	Implement various operation of non-Linear data structure like Tree and Graph.

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Course name with code: ITC11 – Mini Project

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Apply knowledge of software engineering principles and methodologies in designing and implementing the project.
CO2	Apply	Demonstrate the ability to develop a functioning software application or solution that meets specified requirements and objectives.
CO3	Apply	Design comprehensive documentation that includes project requirements, design specifications, implementation details, testing strategies, and user manuals.

Course name with code: IK11 – Indian Knowledge system (IKS)

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand about Indian philosophy, Culture, knowledge in different domains.
CO2	Understand	Explore the ethical and moral perspectives within Indian philosophical and spiritual traditions.
CO3	Apply	Understand Indian knowledge system and apply in current area and applications.
CO4	Understand	Understand the basics of Indian ethics and values.
CO5	Understand	Explore the Indian traditions and their application in modern contexts.

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Course: MCA I Semester: SEM I

Course name with code: IT21 – Java Programming

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Apply the concept of Object-Oriented Programming to map and solve simple real world problem.
CO2	Apply	To design and develop robust, efficient, multithreaded and scalable Java applications using the collection framework, multithreading, and exception handling.
CO3	Apply	To develop Web application for solving real life problem using Servlet
CO4	Apply	To develop Web application for solving real life problem using JSP, JDBC
CO5	Apply	To develop robust web applications using Spring MVC.

Course name with code: MT21 – Optimization Techniques

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Understand and formulate linear programming models to solve optimization problems in various business contexts.
CO2	Apply	Apply sequential models to make informed decisions in dynamic and uncertain environments.
CO3	Apply	Utilize Markov chains and simulation techniques to model and solve complex inventory management problems.
CO4	Apply	Apply PERT/CPM techniques to plan, schedule, and control projects effectively, including managing replacement decisions.
CO5	Apply	Apply decision-making processes and strategic interactions using decision theory and game theory frameworks.

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Course name with code: MT22 – Software Testing and Quality Assurance

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the role of software quality assurance in contributing to the efficient delivery of software solutions.
CO2	Understand	Understand specific software tests with well-defined objectives and targets.
CO3	Apply	Apply the software testing techniques in commercial environments.
CO4	Analyze	Construct test strategies and plans for software testing.
CO5	Apply	Demonstrate the usage of software testing tools for test effectiveness, efficiency, and coverage.

Course name with code: RM21 – Research Methodology

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the basic concepts, purposes, and significance of research methodology in academic and professional contexts.
CO2	Apply	Apply various research designs and their appropriateness for different types of research questions and objectives
CO3	Apply	Apply suitable data collection and sampling methods to gather reliable and valid data for research studies.
CO4	Apply	Use appropriate statistical tools and techniques to demonstrate research data and interpret the results effectively.
CO5	Apply	Apply skills in writing clear, coherent, and well-structured research reports that effectively communicate research findings.

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Course name with code: EC21-1 – Cloud Computing Management and Security

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand and describe the fundamentals of Cloud Management, Security Concepts, Quality services.
CO2	Understand	Understand and explain the concept of Cloud Database and File System with Cloud Database Services.
CO3	Apply	Demonstrate Security Concepts in AWS and security services.
CO4	Understand	Recognize the Cloud Backup and Disaster Recovery strategies.
CO5	Apply	Use and understand the various Cloud Compute Services.

Course name with code: EC21-2 – JavaScript

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Utilize Basic JavaScript concepts for writing simple Java script program.
CO2	Apply	Design and develop simple application using build-in objects and browser object Model.
CO3	Apply	Implement the concepts of OOPs , event handling and Asynchronous JavaScript for developing simple real life problem solving web application.
CO4	Create	Create interactive web page of application for problem solving.
CO5	Apply	Demonstrate server-side and client-side aspects of web applications using Node.js and React.

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Course name with code: EC21-3 – Machine Learning Techniques

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Describe the workflow of a machine learning project, including data pre-processing, model training, evaluation, and deployment.
CO2	Apply	Apply the various algorithms of supervised and learning.
CO3	Apply	Apply the various algorithms of unsupervised learning.
CO4	Apply	Apply the fundamental algorithms in semi-supervised and reinforcement learning.
CO5	Apply	Apply real-world applications of supervised and unsupervised learning across diverse domains.

Course name with code: EC21-4 – Essentials of Cyber Security

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the importance of cybersecurity practices, understand how to secure a network against intrusion tactics, understand types cyber-crime attacks.
CO2	Understand	Understand how data is sent and received over a network, Incidence response, Disaster Recovery.
CO3	Apply	Identify common risks, threats, and vulnerabilities, as well as techniques to mitigate them.
CO4	Apply	Evaluate risk and identify security management tools, apply cyber security technologies.
CO5	Understand	Understand digital forensics and its needs.

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Course name with code: EC22-1 – Essentials of Cloud Computing and Security

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Describe the concepts of Cloud Software Security Fundamentals.
CO2	Understand	Discuss and Classify different Programming Environments.
CO3	Understand	Define Emerging Trends in Cloud Computing.
CO4	Understand	Discuss Resource pooling, Sharing and Provisioning
CO5	Apply	Demonstration of various applications in cloud computing.

Course name with code: EC22-2 – Advance Web Development

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Implement a Web Server in Node.
CO2	Apply	Apply TypeScript features such as decorators, generics, and modules for creating reusable and maintainable code.
CO3	Apply	Implement concepts and methods of Angular.
CO4	Apply	Implement Angular services, dependency injections and Asynchronous operations
CO5	Create	Develop website using Next.js

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Course name with code: EC22-3 – Power BI

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Demonstrate the concepts and importance of data modelling, data source, data cleaning, data transformation in Power BI.
CO2	Analyse	Analyse data relationships and model data using DAX
CO3	Analyse	Assess the interactivity of visualizations using slicers, filters, and drill through features.
CO4	Apply	Use M Queries to extract, transform, and load data from various sources
CO5	Analyse	Examine Power BI solutions that solve real-world business problems as outlined in case studies

Course name with code: EC22-4 – Essentials of Information Security

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand the fundamental concepts of cybersecurity, including its importance and various threats in cyberspace.
CO2	Understand	Understand the vulnerable to threats in systems.
CO3	Apply	Design and Apply the need for security architecture and its relevance to systems, service continuity and reliability.
CO4	Understand	Ability to describe the various auditing tools that can be used in cybersecurity management.
CO5	Apply	Identifies the needs of users in the field of developing information systems and building secure computer networks.

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Course name with code: IT21L – Practical

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Demonstrate fundamental concepts of Java
CO2	Create	Design and implement classes and objects in Java, applying principles of inheritance, polymorphism, encapsulation, and abstraction
CO3	Create	Establish database connectivity using JDBC, execute SQL queries, handle result sets, and manage database transactions from Java applications
CO4	Create	Develop dynamic web applications using Java Servlets and JSP.
CO5	Create	Use spring MVC framework to build web application.

Course name with code: ITC21 – Mini Project

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Apply	Apply knowledge of software engineering principles and methodologies in designing and implementing the project
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CO3	Apply	Design comprehensive documentation that includes project requirements, design specifications, implementation details, testing strategies, and user manuals

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Course name with code: IK21 – Indian Knowledge system (IKS)

Outcomes: On successful completion of the course the learner will be able to

CO#	COGNITIVE DOMAIN	COURSE OUTCOMES
CO1	Understand	Understand about Indianan philosophy, Culture, knowledge in different domains.
CO2	Understand	Explore the ethical and moral perspectives within Indian philosophical and spiritual traditions.
CO3	Apply	Understand Indian knowledge system and apply in current area and applications.
CO4	Understand	Understand the basics of Indian ethics and values.
CO5	Understand	Explore the Indian traditions and their application in modern contexts.


HOD, MCA


Director


Head, Management Programme

