

Course outcomes

MCA (2years) Syllabus WEF June 2020

CA-101 Database Management System (DBMS)

- CO1. To understand apply the relational model, specify integrity constraints, and explain how to create relational database using an ER diagram and normalization techniques.
- CO2. To understand and apply SQL to create, query and manipulate relational databases.
- CO3. To Apply different normal forms to design the Database and it's implementation.
- CO4. To summarize concurrency control protocols and recovery algorithms
- CO5. To determine partitioning and distribution of data across networked nodes of a DBMS and data optimization in a distributed environment.

CA-102 Operating Systems

- CO1. The core structure, functions and design principles of operating system will be introduced with this subject
- CO2. Differentiate between threads and processes and compare different processor scheduling algorithms
- CO3. To understanding Basic Working of O.S

CA-103 Fundamentals of Artificial Intelligence

- CO1. Student will learn historical perspective of AI & it's foundations.
- CO2. Student shall be design smart system using different informed/ uninformed or heuristics approaches.
- CO3. Student shall be able to identify problems that are amenable to solution by AI methods.
- CO4. Student will learn & use game playing techniques.
- CO5. Student will learn to apply mathematical logic & inferences in AI.
- CO6. Student shall be able to identify appropriate AI methods to solve a given problem.

CA-104(A) Computer Programming and Problem Solving

- CO1. Understand foundations of computing, programming and problem-solving.
- CO2. To develop logical ability for problem-solving.
- CO3. Learn basic programming structures necessary for coding.
- CO4. Design blocks of the problems and their interdependencies
- CO5. Build logic for solving new problems on paper.
- CO6. Design appropriate Model of the logic for the given problem.

CA-104(B) Web Programming

- CO1. Apply dynamic paging using AngularJS / JQuery.
- CO2. Use JavaScript / JSON / Node.JS to make design and scripting.
- CO3. Design web applications/sites using HTML / HTML 5
- CO4. Design Web pages using CSS and develop dynamic, responsive web pages using Bootstrap

CA-105(A) Based Java Programming (Core Java)

- CO1. understand object oriented programming in Java and also understand String, String Buffer and wrapper classes.

- CO2. understand advanced object oriented concepts like inheritance, polymorphism, abstract class, interface and packages.
- CO3. understand multithreading in Java programs, file handling and exception handling methods.
- CO4. understand the basics of GUI (Graphical User Interface) programming, event handling and JDBC (Java Database Connectivity).

CA-105(B) Object Oriented Programming using C++

- CO1. Understand and use the basic programming constructs of C++ and manipulate various C++ data types, such as arrays, strings, and pointers.
- CO2. Create class with different type of data members and member functions.
- CO3. Manage memory appropriately using proper allocation / de-allocation procedures.
- CO4. Write small-scale C++ programs using Object Oriented Programming skills.

CA-201 Advanced Software Development Methodologies

- CO1. Use Git for software development and deployment.
- CO2. Apply a thorough understanding of agile principles and specific practices.
- CO3. Judge, craft and evaluate appropriate adaptations to existing practices or processes depending upon analysis of typical problems.
- CO4. Identify and apply the agile information systems and main knowledge areas for Software Project Management.
- CO5. Demonstrate different techniques and Agile Metrics for managing agile requirements to deliver high quality software.

CA-202 Mathematical Foundations of Computer: Science

- CO1. Apply permutation, combination and pigeonhole principle to solve real time problems.
- CO2. Able to formulate problems and solve recurrence relations.
- CO3. Analyze the behavior of the data, model the data using statistical measures and represent it graphically on paper without using available computerized tools.
- CO4. Understand basic concepts probability theory.
- CO5. Understand basic concepts probability distribution, mass functions and Stochastic Processes.

CA-203 Data Structures and Algorithms

- CO1. Understand the concept of Dynamic memory management, abstract data types, algorithms, Big O notation, data structure and types.
- CO2. Understand and use data structures such as arrays, linked lists, stacks and queues.
- CO3. Solve problem involving binary trees and graphs.
- CO4. Apply different sorting, searching and hashing algorithms.

CA-204(A) Machine Learning

- CO1. Student will understand fundamentals of Machine Learning such as its types, applications and other preliminaries.
- CO2. Student will learn all important techniques of Machine Learning such as Classification, Regression and Clustering.
- CO3. Student will be able to apply different Classifiers- rule based, decision tree, probabilities, Bayes theory and SVM.
- CO4. Student will acquire in-depth knowledge of various facets of Machine Learning methods/techniques and algorithms.

- CO5. Student will envisage practical application of Machine Learning to Business and Research Computational problems using Artificial Neural Network
- CO6. Student will use knowledge of Machine Learning for product / service development.

CA-204(B) Digital Image Processing & Computer Vision

- CO1. Develop scientific and strategic approach to solve complex problems in the domain of Computer Graphics and Digital Image Processing; expose students to MATLAB Image Processing Toolbox.
- CO2. Demonstrate various algorithms for scan conversion and filling of basic primitives objects and their comparative analysis and applied 2-D and 3-D geometric transformations, viewing and clipping on graphical objects.
- CO3. Use the Mathematics for digital image representation, image acquisition, image transformation, image enhancement and restoration.

CA-205(A) Advanced Java (Technologies)

- CO1. Students will be able to understand Collection classes and Remote Method Invocation (RMI).
- CO2. Students will be able to understand advanced features of Java language like Java Beans and Enterprise Java Beans (EJB).
- CO3. Students will be able understand MVC, Java Servlets and Java Server Pages (JSP) for development of web applications.
- CO4. Students will be able to understand Strut and Hibernate in development of dynamic web applications.

CA-205(B) Python Programming

- CO1. To use basics of python programming: data types, operators, conditional and logical statements, control structures, looping and functions to write python program.
- CO2. To use String, List, Tuple and dictionary objects with its related properties and methods.
- CO3. To handle file (creation, reading, writing and working with directory object, create user defined class-object and using OOP concepts.
- CO4. Use Regular Expressions, Exceptions handling, GUI Programming using TKinter to solve problems.
- CO5. To use Advance Functions like Lambda, map, filter and reduce. Use Module and Packages. To use MySQL database, understand Django Framework.

CA-301 Compiler Construction

- CO1. Understand the basic structure of compiler, concepts and terminology in programming languages.
- CO2. Explain lexical analysis, finite state techniques, scanner generator, parsing, and kinds of parsers, designing lexical analyzer, scanner and parsers, principal ideas with intermediate code generation, optimizations.
- CO3. Understanding of all concepts is essential to design compiler in general for programming languages.

CA-302 Design and Analysis of Algorithms

- CO1. Analyze the asymptotic performance of algorithms and write rigorous correctness proofs for algorithms, understanding tree and graph representation.
- CO2. Design and analyze problems using different techniques like, divide-and-conquer, greedy and dynamic-programming based algorithms.
- CO3. Solve the problem using searching, traversing and backtracking techniques.
- CO4. Classify nondeterministic problems, polynomial time algorithms, understanding the class of problems.

CA-303 High Performance Computing Paradigms and Applications

- CO1. course covers technologies required to build classic (traditional), virtualized, and cloud data center
- CO2. environments.
- CO3. These technologies include compute, storage, networking, desktop and application virtualization
- CO4. Additional areas of focus include backup/recovery, business continuity, security, and management

CA-304(A) Natural Language Processing

- CO1. Ability to know the basic concepts of NLP.
- CO2. Ability to apply Mathematical Foundation in NLP problems.
- CO3. Ability to develop manual and machine learned methods for Parts of Speech tagging.
- CO4. Ability to design and develop FSM for Words & Morphology parsing algorithms / methods.
- CO5. Ability to understand the concept of N-Gram Models and apply it in NLP problems.
- CO6. CO6: Ability to write and present research paper on different research and publication domains of NLP.

CA-304(B) AI in Practice with Python

- CO1. This course will cover fundamental algorithms/techniques used in data analytics and will provide exposure to theory as well as practical systems and software used in data analytics.
- CO2. The statistical foundations will be covered first, followed by various machine learning and data mining algorithms.
- CO3. Learn and understand various basic analysis techniques applied on data.
- CO4. Technological aspects like data management (Hadoop), scalable computation (Map Reduce) and visualization will also be covered.

CA-304(C) Data Analytics

- CO1. This course will cover fundamental algorithms/techniques used in data analytics and will provide exposure to theory as well as practical systems and software used in data analytics.
- CO2. The statistical foundations will be covered first, followed by various machine learning and data mining algorithms.
- CO3. Learn and understand various basic analysis techniques applied on data.
- CO4. Technological aspects like data management (Hadoop), scalable computation (Map Reduce) and visualization will also be covered.

CA-305(A) Mobile Application Development (Android Programming)

- CO1. Install and use the IDE to develop and run basic mobile application programs(Hello World).
- CO2. Create simple android applications by using different layouts and UI design menus.
- CO3. Develop mobile applications by experimenting on different intent, broadcast receiver and internet services.
- CO4. Develop mobile applications with different background services.
- CO5. Develop mobile applications by using data files.
- CO6. Analyze data and develop relevant databases, write applications using SQLite.

CA-305(B) Microsoft .Net Technologies

- CO1. Understand the Microsoft .NET Framework and ASP.NET page structure.
- CO2. Create a Web form with server controls.
- CO3. Separate page code from content by using code-behind pages, page controls, and components.
- CO4. Display dynamic data from a data source by using Microsoft ADO.NET and data binding.

CA-305(C) Ruby on Rails

- CO1. Understand Ruby Programming language with lexical and syntactic structure of Ruby programs, Datatypes and Objects, Expressions and Operators, Statements and Control Structures, Methods, procs, lambdas, and closures, Classes and modules, Reflection and Metaprogramming.
- CO2. Use the Ruby TK (GUI for Ruby).
- CO3. Design web applications using Rails framework.

CA-401 Full Time Industrial Training

- CO1. Handle specialized technology and update themselves with latest changes in technological world with ability to communicate effectively.
- CO2. Be multi-skilled IT professional with good technical knowledge, management, leadership and entrepreneurship skills.
- CO3. Be able to identify, formulate and model problems and find engineering solution based on a systems approach.

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