



Vishwabharati Academy's
COLLEGE OF ENGINEERING
Sarola Baddi, Jamkhed Road, AHMEDNAGAR-414201

DEPARTMENT OF COMPUTER ENGINEERING

COURSE OUTCOMES (CO's)

SEMESTER- III

210241: Discrete Mathematics

- CO1: Formulate** problems precisely, solve the problems, apply formal proof techniques, and explain the reasoning clearly.
- CO2: Apply** appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real-life contexts.
- CO3: Design and analyze** real world engineering problems by applying set theory, propositional logic and to construct proofs using mathematical induction.
- CO4: Specify, manipulate and apply** equivalence relations; construct and use functions and apply these concepts to solve new problems.
- CO5: Calculate** numbers of possible outcomes using permutations and combinations; to model and analyze computational processes using combinatorics.
- CO6: Model and solve** computing problem using tree and graph and solve problems using appropriate algorithms.
- CO7: Analyze** the properties of binary operations, apply abstract algebra in coding theory and evaluate the algebraic structures.

210242: Fundamentals of Data Structures

- CO1: Design** the algorithms to solve the programming problems, **identify** appropriate algorithmic strategy for specific application, and **analyze** the time and space complexity.
- CO2: Discriminate** the usage of various structures, **Design/Program/Implement** the appropriate data structures; use them in implementations of abstract data types and Identity the appropriate data structure in approaching the problem solution.
- CO3: Demonstrate** use of sequential data structures- Array and Linked lists to store and process data.
- CO4: Understand** the computational efficiency of the principal algorithms for searching and sorting and choose the most efficient one for the application
- CO5: Compare and contrast** different implementations of data structures (dynamic and static).
- CO6: Understand, Implement and apply** principles of data structures-stack and queue to solve computational problems.

210243: Object Oriented Programming (OOP)

- CO1: Apply** constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software.
- CO2: Design** object-oriented solutions for small systems involving multiple objects.
- CO3: Use** virtual and pure virtual function and complex programming situations.
- CO4: Apply** object-oriented software principles in problem solving.
- CO5: Analyze** the strengths of object-oriented programming.
- CO6: Develop** the application using object oriented programming language (C++).

210244: Computer Graphics

- CO1: Identify** the basic terminologies of Computer Graphics and interpret the mathematical foundation of the concepts of computer graphics.
- CO2: Apply** mathematics to develop Computer programs for elementary graphic operations.
- CO3: Illustrate** the concepts of windowing and clipping and apply various algorithms to fill and clip polygons.
- CO4: Understand** and **apply** the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.
- CO5: Understand** the concepts of color models, lighting, shading models and hidden surface elimination.
- CO6: Create** effective programs using concepts of curves, fractals, animation and gaming.

210245: Digital Electronics and Logic Design

- CO1: Simplify** Boolean Expressions using K Map.
- CO2: Design and implement** combinational circuits.
- CO3: Design and implement** sequential circuits.
- CO4: Develop** simple real-world application using ASM and PLD.
- CO5: Differentiate and choose** appropriate logic families IC packages as per the given design specifications.
- CO6: Explain** organization and architecture of computer system

210246: Data Structures Laboratory

CO1: Use algorithms on various linear data structure using sequential organization to solve real life problems.

CO2: Analyze problems to **apply** suitable searching and sorting algorithm to various Applications.

CO3: Analyze problems to **use variants of** linked list and solve various real life problems.

CO4: Designing and implement data structures and algorithms for solving different kinds of problems.

210247: OOP and Computer Graphics Laboratory

CO1: Understand and **apply** the concepts like inheritance, polymorphism, exception handling and generic structures for implementing reusable programming codes.

CO2: Analyze the concept of file and **apply** it while storing and retrieving the data from secondary storages.

CO3: Analyze and **apply** computer graphics algorithms for line-circle drawing, scan conversion and filling with the help of object oriented programming concepts.

CO4: Understand the concept of windowing and clipping and **apply** various algorithms to fill and clip polygons.

CO5: Apply logic to implement, curves, fractals, animation and gaming programs.

210248: Digital Electronics Laboratory

CO1: Understand the working of digital electronic circuits.

CO2: Apply the knowledge to appropriate IC as per the design specifications.

CO3: Design and implement Sequential and Combinational digital circuits as per the specifications.

210249: Business Communication Skills

CO1: Express effectively through verbal/oral communication and improve listening skills

CO2: Write precise briefs or reports and technical documents.

CO3: Prepare for group discussion / meetings / interviews and presentations.

CO4: Explore goal/target setting, self-motivation and practicing creative thinking.

CO5: Operate effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership qualities.

210250: Humanity and Social Science

CO1: Aware of the various issues concerning humans and society.

CO2: Aware about their responsibilities towards society.

CO3: Sensitized about broader issues regarding the social, cultural, economic and human aspects, involved in social changes.

CO4: Able to understand the nature of the individual and the relationship between self and the community.

CO5: Able to understand major ideas, values, beliefs, and experiences that have shaped human history and cultures.

SEMESTER- IV

207003: Engineering Mathematics III

CO1: Solve linear differential equations, essential in modeling and design of computer-based systems.

CO2: Apply concept of Fourier transform and Z-transform and its applications to continuous and discrete systems and image processing.

CO3: Apply Statistical methods like correlation and regression analysis and probability theory for data analysis and predictions in machine learning.

CO4: Solve Algebraic and Transcendental equations and System of linear equations using numerical techniques.

CO5: Obtain Interpolating polynomials, numerical differentiation and integration, numerical solutions of ordinary differential equations used in modern scientific computing.

210252: Data Structures and Algorithms

CO1: Identify and articulate the complexity goals and benefits of a good hashing scheme for real-world applications.

CO2: Apply non-linear data structures for solving problems of various domains.

CO3: Design and specify the operations of a nonlinear-based abstract data type and implement them in a high-level programming language.

CO4: Analyze the algorithmic solutions for resource requirements and optimization

CO5: Use efficient indexing methods and multiway search techniques to store and maintain data.

CO6: Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.

210253: Software Engineering

- CO1:** Analyze software requirements and formulate design solution for a software.
- CO2:** Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
- CO3:** Apply new software models, techniques and technologies to bring out innovative and Novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.
- CO4:** Model and design User interface and component-level.
- CO5:** Identify and handle risk management and software configuration management.
- CO6:** Utilize knowledge of software testing approaches, approaches to verification and validation.
- CO7:** Construct software of high quality – software that is reliable, and that is reasonably easy to understand, modify and maintain efficient, reliable, robust and cost-effective software solutions.

210254: Microprocessor

- CO1:** Exhibit skill of assembly language programming for the application.
- CO2:** Classify Processor architectures.
- CO3:** Illustrate advanced features of 80386 Microprocessor.
- CO4:** Compare and contrast different processor modes.
- CO5:** Use interrupts mechanism in applications
- CO6:** Differentiate between Microprocessors and Microcontrollers.
- CO7:** Identify and analyze the tools and techniques used to design, implement, and debug microprocessor-based systems.

210255: Principles of Programming Languages

- CO1:** Make use of basic principles of programming languages.
- CO2:** Develop a program with Data representation and Computations.
- CO3:** Develop programs using Object Oriented Programming language : Java.
- CO4:** Develop application using inheritance, encapsulation, and polymorphism.
- CO5:** Demonstrate Multithreading for robust application development.
- CO6:** Develop a simple program using basic concepts of Functional and Logical programming paradigm.

210258: Project Based Learning II

- CO1:** Identify the real life problem from societal need point of view
- CO2:** Choose and compare alternative approaches to select most feasible one
- CO3:** Analyze and synthesize the identified problem from technological perspective
- CO4:** Design the reliable and scalable solution to meet challenges
- CO5:** Evaluate the solution based on the criteria specified
- CO6:** Inculcate long life learning attitude towards the societal problems

210259: Code of Conduct

- CO1:** Understand the basic perception of profession, professional ethics, various moral and social issues, industrial standards, code of ethics and role of professional ethics in engineering field.
- CO2:** Aware of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis.
- CO3:** Understand the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- CO4:** Acquire knowledge about various roles of engineers in variety of global issues and able to apply ethical principles to resolve situations that arise in their professional lives.

Audit Course 4 Options

- CO1:** Understand philosophy and religion as well as daily life issues will be challenged and enhanced.
- CO2:** Enhances the immune system.
- CO3:** Intellectual and philosophical understanding of the theory of yoga and basic related Hindu scriptures will be developed.
- CO4:** Powers of concentration, focus, and awareness will be heightened.