



Progressive Education Society's
Modern College of Engineering, Shivajinagar, Pune-05.
Department of Artificial Intelligence and Data Science

**COURSE OUTCOMES (SE AIDS 2020 PATTERN
SYLLABUS)**

C201 : Discrete Mathematics

C201.1	Formulate problem precisely, solve the problems, apply formal proof techniques and explain the reasoning clearly.
C201.2	Apply appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real life contexts.
C201.3	Design and analyze real world engineering problems by applying set theory, propositional logic and to construct proofs using mathematical inductions.
C201.4	Specify, manipulate and apply equivalence relations, construct and use functions and apply these concepts to solve new problems.
C201.5	Calculate numbers of possible outcomes using permutations and combinations to model and analyze computational processes using combinatorics.
C201.6	Model and solve computing problem using tree and graph and solve problem using appropriate algorithms.
C201.7	Analyze the properties of binary operations, apply abstract algebra in coding theory and evaluate the algebraic structures.

C202 : Fundamental of Data Structures

C202.1	Design the algorithm to solve programming problems, identify appropriate algorithmic strategy for specific application and analyze the time and space complexity.
C202.2	Discriminate the usage of various structures, design/program/implement the appropriate data structure, use them in implementations of abstract data types and identify the appropriate data structure in approaching the problem solution.
C202.3	Demonstrate use of sequential data structures- Array and Linked lists to store and process data.
C202.4	Understand the computational efficiency of the principal algorithms for searching and sorting and choose the most efficient one for the application.
C202.5	Compare and contrast different implementations of data structures(dynamic and static).
C202.6	Understand, implement and apply principles of data structures- stack and queue to solve computational problems.

C203 : Object Oriented Programming

C203.1	Apply constructs- sequence, selection and iteration; classes and objects, inheritance, use of predefined classes from libraries while developing software.
C203.2	Design object oriented solutions for small systems involving multiple objects.
C203.3	Use virtual and pure virtual functions and complex programming situations.





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C203.4	Apply object-oriented software principles in problem solving.
C203.5	Analyze the strengths of object oriented programming.
C203.6	Develop the application using object oriented programming language.(C++)

C204 : Computer Graphics

C204.1	Identify the basic terminologies of Computer graphics and interpret the mathematical foundation of the concepts of computer graphics.
C204.2	Apply mathematics to develop Computer programs for elementary graphic operations.
C204.3	Illustrate the concepts of windowing and clipping and apply various algorithm to fill and clip polygons.
C204.4	Understand and apply the core concepts of computer graphics, including transformation in two and three dimensions, viewing and projection.
C204.5	Understand the concept of color models, lightening, shading models and hidden surface elimination.
C204.6	Create effective programs using concepts of curves, fractals, animation and gaming.

C205 : Operating System

C205.1	Enlist functions of OS and types of system calls.
C205.2	Apply process scheduling algorithms to solve a given problems.
C205.3	Illustrate deadlock prevention, avoidance and recovery.
C205.4	Explain memory management technique.
C205.5	Illustrate I/O and file management policies.
C205.6	Describe Linux process management.

C206: Data Structure Laboratory

C206.1	Use algorithms on various linear data structure using sequential organization to solve real life problems.
C206.2	Analyze problems to apply suitable searching and sorting algorithm to various applications.
C206.3	Analyze problems to use variants of linked list and solve various real life problems.
C206.4	Designing and implement data structures and algorithms for solving different kinds of problems.





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C207: OOP and Computer Graphics Laboratory

C207.1	Understand and apply the concepts like inheritance, polymorphism, exception handling and generic structures for implementing reusable programming codes.
C207.2	Analyze the concepts of file and apply it while storing and retrieving the data from secondary storage.
C207.3	Analyze and apply computer graphics algorithms for line circle drawing, scan conversion and filling with the help of object oriented programming concepts.
C207.4	Understand the concept of windowing and clipping and apply various algorithms to fill and clip polygons.
C207.5	Apply logic to implement, curves, fractals, animation and gaming programs.

C208: Operating System Laboratory

C208.1	Choose the best CPU scheduling algorithm for a given problem instance.
C208.2	Demonstrate interprocess communication.
C208.3	Apply deadlock avoidance algorithm.
C208.4	Compare performance of page replacement algorithms.
C208.5	Demonstrate the fundamental UNIX commands and system calls.

C209: Business Communication Skills

C209.1	Express effectively through verbal/oral communications and improve listening skills.
C209.2	Write precise briefs or reports and technical documents.
C209.3	Prepare for group discussion/ meetings/ interviews and presentations.
C209.4	Explore goal/target setting, self-motivation and practicing creative thinking.
C209.5	Operate effectively in multi-disciplinary and heterogeneous teams through the knowledge of team work, Inter-personal relationships, conflict management and leadership qualities.

C210: Humanity and Social Science

C210.1	Aware of the various issues concerning humans and society.
C210.2	Aware about their responsibilities towards society.
C210.3	Sensitized about broader issues regarding the social, cultural, economic and human aspects,involved in social changes.
C210.4	Able to understand the nature of the individual and the relationship between self and the community.
C210.5	Able to understand major ideas, values, beliefs, and experiences that have shaped human history and cultures.





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C211(V): Audit Course 3- Foreign Language Japanese Module- I

C211 (V).1	Will have ability of basic communication.	
C211(V).2	Will have the knowledge of Japanese Script.	
C211(V).3	Will get introduced to reading , writing and listening skills	
C211(V).4	Will develop interest to pursue professional Japanese Language course.	

C212: Statistics

C212.1	Identify the use of appropriate statistical terms to describe data.
C212.2	Use appropriate statistical methods to collect, organize, display, and analyze relevant data.
C212.3	Use distribution functions for random variables.
C212.4	Distinguish between correlation coefficient and regression.
C212.5	Understand tests for hypothesis and its significance

C213: Internet of Things

C213.1	Have a thorough understanding of the structure, function and characteristics of computer systems and Understand the structure of various number systems and its application in digital design.
C213.2	Develop the skill set to build IoT systems and sensor interfacing.
C213.3	Explain the concept of Internet of Things and identify the technologies that make up the internet of things.
C213.4	Analyze trade-offs in interconnected wireless embedded device networks. Select appropriate Protocols for IoT Solutions.
C213.5	Design a simple IoT system comprising sensors by analyzing the requirements of IoT Application.
C213.6	Identify the Application of IoT in automation of Commercial and Real World examples.

C214 : Data Structure and Algorithm

C214.1	Identify and articulate the complexity goals and benefits of a good hashing scheme for real- world applications.
C214.2	Apply non-linear data structures for solving problems of various domain.
C214.3	Design and specify the operations of a nonlinear-based abstract data type and implement them in a high-level programming language.
C214.4	Analyze the algorithmic solutions for resource requirements and optimization
C214.5	Use efficient indexing methods and multiway search techniques to store and maintain





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	data.
C214.6	Use appropriate modern tools to understand and analyze the functionalities confined to the secondary storage.

C215 : Software Engineering

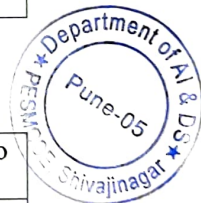
C215.1	Analyze software requirements and formulate design solution for a software.
C215.2	Design applicable solutions in one or more application domains using software engineering approaches that integrate ethical, social, legal and economic concerns.
C215.3	Apply new software models, techniques and technologies to bring out innovative and novelistic solutions for the growth of the society in all aspects and evolving into their continuous professional development.
C215.4	Model and design User interface and component-level.
C215.5	Identify and handle risk management and software configuration management.
C215.6	Utilize knowledge of software testing approaches, approaches to verification and validation.
C215.7	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.

C216 : Management Information Systems

C216.1	Explain the concepts of Management Information System and Business intelligence for MIS.
C216.2	Illustrate the need of information systems in global business and ethical issues.
C216.3	List the IT infrastructure components and explain security in the Information System.
C216.4	Demonstrate the importance of project management and extend its use in the international information system.
C216.5	Illustrate the concepts of decision support systems for business applications.
C216.6	Relate artificial intelligence and data science for Management Information System.

C217 : Internet Of Things Laboratory

C217.1	Understand IOT Application Development using Raspberry Pi/ Beagle board/ Arduino board.
C217.2	Develop and modify the code for various sensor based applications using wireless sensor modules and working with a variety of modules like environmental modules.
C217.3	Make use of Cloud platform to upload and analyse any sensor data.





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C218 : Data Structure and Laboratory

C218.1	Understand the ADT/libraries, hash tables and dictionary to design algorithms for a specific problem.
C218.2	Choose most appropriate data structures and apply algorithms for graphical solutions of the problems.
C218.3	Apply and analyze non linear data structures to solve real world complex problems.
C218.4	Apply and analyze algorithm design techniques for indexing, sorting, multi-way searching, file organization and compression.
C218.5	Analyze the efficiency of most appropriate data structure for creating efficient solutions for engineering design situations.

C219: Project Based Learning II

C219.1	Identify the real life problem from societal need point of view.
C219.2	Choose and compare alternative approaches to select most feasible one.
C219.3	Analyze and synthesize the identified problem from technological perspective.
C219.4	Design the reliable and scalable solution to meet challenges.
C219.5	Evaluate the solution based on the criteria specified.
C219.6	Inculcate long life learning attitude towards the societal problems.

C220: Code of Conducts

C220.1	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.
C220.2	Aware of professional rights and responsibilities of an engineer, responsibilities of an engineer for safety and risk benefit analysis.
C220.3	Understand the impact of the professional Engineering solutions in societal and Environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
C220.4	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.

C221-V : Foreign Language(Japanese)

C221-V.1	Have ability of basic communication.
C221-V.2	Have the knowledge of Japanese script.
C221-V.3	Get introduced to reading , writing and listening skills.
C221-V.4	Develop interest to pursue professional Japanese Language course





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C222-V : Foreign Language(German)

C222-V.1	Have ability of basic communication.
C222-V.2	Have the knowledge of German script.
C222-V.3	Get introduced to reading , writing and listening skills.
C222-V.4	Develop interest to pursue professional German Language course.

