



**Bhujbal Knowledge City, Adgaon, Nashik**  
**MET's Institute of Engineering**  
**Department of Artificial Intelligence & Data Science**

## **COURSE OUTCOMES**

### **2024 Pattern Courses**

▪ **Note: Patterns referred to create this document are:**

A. For FE Artificial Intelligence & Data Science Engineering (Semester- I, II): 2024 Pattern

B. For SE Artificial Intelligence & Data Science Engineering (Semester- III, IV): 2024 Pattern

<b>Class- FE</b>	<b>Course Name : Fundamentals of Programming Languages (ESC-105-COM)</b>	<b>Sem- I</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
ESC-105-COM.1	To Design algorithms for simple computational problems.		
ESC-105-COM.2	To Use mathematical, Logical Operators and Expressions.		
ESC-105-COM.3	To Apply Control Flow structures for decision making.		
ESC-105-COM.4	To Design a solution using Arrays, Character and String Arrays.		
ESC-105-COM.5	To Design and apply user defined functions and structures.		
ESC-105-COM.6	To Implement and evaluate the given problem statement by applying concepts of C		

<b>Class- FE</b>	<b>Course Name : Programming and Problem Solving ( PCC-151-ITT)</b>	<b>Sem- II</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-151-ITT.1	Inculcate and apply various skills in problem solving.		
PCC-151-ITT.2	Choose appropriate programming constructs and features to solve the problems in diversified domains.		
PCC-151-ITT.3	Apply programming skills to solve problems using functions and string manipulations.		
PCC-151-ITT.4	Analyze and implement string manipulation techniques and functions to develop efficient solutions for problem-solving.		
PCC-151-ITT.5	Demonstrate File handling and dictionaries in Python.		
PCC-151-ITT.6	Apply Object Oriented concepts in Python.		

<b>Class- FE</b>	<b>Course Name : Design Thinking and Idea Lab (VSE- 102)</b>	<b>Sem- II</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
VSE-102.1	Identify and define problems from a user's perspective and articulate design criteria.		
VSE-102.2	Apply empathy and observation to gain insights into user needs and behaviors		
VSE-102.3	Generate innovative ideas and solutions through brainstorming and ideation.		
VSE-102.4	Prototype and test design solutions to refine and improve them		
VSE-102.5	Present and communicate design ideas effectively using visual aids and storytelling		
VSE-102.6	Collaborate with peers and industry professionals to address real-world design challenges		

<b>Class- SE</b>	<b>Course Name : Data Structure (PCC-201- AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-201-AID.1	Analyze the performance of searching and sorting techniques based on the Time and Space complexities of Algorithms.		
PCC-201-AID.2	Analyze and apply different hashing techniques, including various collision resolution methods.		
PCC-201-AID.3	Demonstrate the use of Linked lists to store and process structured data.		
PCC-201-AID.4	Apply principles of Stack and Queue Data Structures to solve real time Problems.		
PCC-201-AID.5	Demonstrate the primitive operations of nonlinear data structure-Trees and Graphs.		
PCC-201-AID.6	Design and implement real-world applications by integrating appropriate linear and non-linear data structures, demonstrating		

<b>Class- SE</b>	<b>Course Name : Artificial Intelligence (PCC-202-AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-202-AID.1	Explain the fundamentals of AI and its various applications in real-world scenarios.		
PCC-202-AID.2	Build smart system using different informed search / uninformed search or heuristic approaches.		
PCC-202-AID.3	Design AI systems using adversarial search algorithms and solve problems using constraint satisfaction techniques for structured environments.		
PCC-202-AID.4	Apply knowledge and reasoning algorithms for real-world problem-solving.		
PCC-202-AID.5	Represent complex problems with expressive yet carefully constrained language of representation.		
PCC-202-AID.6	Develop and implement AI solutions using appropriate tools, languages, and frameworks to address real-world.		

<b>Class- SE</b>	<b>Course Name : Operating System (PCC-203- AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-203-AID.1	Use the concepts of virtualization and process management		
PCC-203-AID.2	Analyse various scheduling algorithms		
PCC-203-AID.3	Discuss various memory management techniques		
PCC-203-AID.4	Describe the working of concurrency and locking mechanism in operating systems		
PCC-203-AID.5	Elaborate I/O management concepts		
PCC-203-AID.6	Evaluate the performance and effectiveness of operating system components through case studies and real-time scenarios.		

<b>Class- SE</b>	<b>Course Name : Data Structure Laboratory (PCC-204- AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-204- AID.1	Use the ADT/libraries and hash tables to design algorithms for specific problem.		
PCC-204- AID.2	Choose most appropriate data structures for graphical solutions of the problems.		
PCC-204- AID.3	Apply nonlinear data structures to solve real world complex problems.		
PCC-204- AID.4	Implement algorithm design techniques for indexing, sorting, multi-way searching.		
PCC-204- AID.5	Analyze the efficiency of most appropriate data structure for creating efficient solutions for engineering design situations.		
PCC-204- AID.6	Demonstrate the ability to develop and document structured code solutions using industry-standard tools and practices in C/C++ for a given real-world problem.		

<b>Class- SE</b>	<b>Course Name : Artificial Intelligence Laboratory (PCC-205- AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-205- AID.1	Apply rule-based systems and search algorithms (BFS, DFS, A*) to solve structured problem-solving tasks.		
PCC-205- AID.2	Design and implement solutions for constraint satisfaction problems using backtracking and constraint propagation.		
PCC-205- AID.3	Develop intelligent agents for decision-making in games using Minimax and Alpha-Beta Pruning techniques.		
PCC-205- AID.4	Analyze basic neural network models for classification tasks, including the use of activation functions.		
PCC-205- AID.5	Demonstrate the ability to utilize Generative AI tools (such as ChatGPT, SORA, and AI Image Generators) for solving real-world problems and enhancing creativity through AI-driven content generation.		
PCC-205- AID.6	Apply principles of Prompt Engineering to design effective, context-aware prompts that improve AI model outputs for text, image, and video generation tasks.		

<b>Class- SE</b>	<b>Course Name : Digital Finance (OEL-220B)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
OEL-220B.1	Explain the basics of digital finance, big data, and regulatory frameworks		
OEL-220B.2	Analyze digital payments, FinTech trends, and neo-banking models.		
OEL-220B.3	Illustrate block chain, crypto currencies, and DeFi systems.		
OEL-220B.4	Discuss the role of AI/ML for financial analytics.		
OEL-220B.5	Apply cyber security and compliance strategies for digital finance.		
OEL-220B.6	Design and develop data-driven digital finance solutions using emerging technologies such as AI, blockchain, and digital payment systems to solve real-world financial problems.		

<b>Class- SE</b>	<b>Course Name : Digital Marketing (OEL-220C)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
OEL-220C : 1	Understand the basic Concepts of Digital marketing		
OEL-220C : 2	Apply digital marketing tools for suitable applications		
OEL-220C : 3	Examine the various social media and design Advertising campaigns		
OEL-220C : 4	Learn search engine optimization (SEO) techniques and apply it for suitable application		
OEL-220C : 5	Analyse social media advertising platforms		
OEL-220C : 6	Evaluate the effectiveness of SEO and social media marketing strategies using analytics tools to optimize digital campaigns.		

<b>Class- SE</b>	<b>Course Name : Digital Electronics and Logic Design (MDM-221-AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
MDM-221-AID.1	Simplify Boolean expressions using Karnaugh Maps (K-Maps) for efficient logic design.		
MDM-221-AID.2	Develop Strong understanding of the theoretical and Practical aspects of digital logic, codes and combinational circuits		
MDM-221-AID.3	Implement sequential circuits by applying knowledge of flip-flops, counters, and state machines		
MDM-221-AID.4	Interpret various processor architectures and their use in real-time AI applications.		
MDM-221-AID.5	Analyse and compare different AI-focused processors		
MDM-221-AID.6	Evaluate and select appropriate processor architectures and AI-focused processors for real-time applications based on performance metrics, power efficiency, and design requirements.		

<b>Class- SE</b>	<b>Course Name :Entrepreneurship Development (EEM-231-AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
EEM-231-AID.1	Describe the role of entrepreneurship in economic growth and the startup ecosystem.		
EEM-231-AID.2	Apply creative techniques to viable business ideas based on customer needs.		
EEM-231-AID.3	Develop a basic business model using tools like the Business Model Canvas through market research.		
EEM-231-AID.4	Implement basic marketing strategies for startups.		
EEM-231-AID.5	Deliver a concise business pitch using storytelling and effective communication techniques.		
EEM-231-AID.6	Evaluate and analyze startup ideas, business models, and entrepreneurial strategies to make informed decisions for sustainable business growth.		

<b>Class- SE</b>	<b>Course Name :Universal Human Values and Professional Ethics (VEC-232-AID)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
VEC-232-AID.1	Recognize the concept of self-exploration as the process of value education and see they have the potential to explore on their own right.		
VEC-232-AID.2	Explore the human being as the coexistence of self and body to see their real needs / basic aspirations clearly.		
VEC-232-AID.3	Explain relationship between one self and the other self as the essential part of relationship and harmony in the family		
VEC-232-AID.4	Interpret the interconnectedness, harmony and mutual fulfilment inherent in the nature and the entire existence.		
VEC-232-AID.5	Draw ethical conclusions in the light of Right understanding facilitating the development of holistic technologies production systems and management models.		
VEC-232-AID.6	Apply principles of business etiquettes and professional ethics in professional life.		

<b>Class- SE</b>	<b>Course Name :Community Engagement Project (CEP-241-COM)</b>	<b>Sem- III</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
CEP-241-COM.1	Identify and analyze the real-life problems and needs of the local community.		
CEP-241-COM.2	Demonstrate teamwork and effective communication while engaging with community stakeholders.		
CEP-241-COM.3	Apply engineering concepts and design innovative, practical solutions to address community-based problems. (Redefine)		
CEP-241-COM.4	Implement socially relevant activities that promote awareness and positive impact.		
CEP-241-COM.5	Reflect on personal, social, and ethical responsibilities through active community participation.		
CEP-241-COM.6	Evaluate and present the outcomes of community engagement through reports and presentations.		

<b>Class- SE</b>	<b>Course Name :Database Management systems (PCC-206-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-206-AID.1	Design DBMS using ER models.		
PCC-206-AID.2	Execute SQL and PL/SQL queries.		
PCC-206-AID.3	Apply normalization techniques.		
PCC-206-AID.4	Apply transaction management concepts to real-time scenarios.		
PCC-206-AID.5	Use NoSQL databases for handling unstructured data.		
PCC-206-AID.6	Develop and deploy database-driven applications by integrating DBMS with front-end and back-end technologies.		

<b>Class- SE</b>	<b>Course Name :Data Science (PCC-252-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-252-AID.1	Discuss core concept of data science and its practical applications.		
PCC-252-AID.2	Apply mathematical tools like linear algebra, probability, and statistics to model data driven problem solutions.		
PCC-252-AID.3	Analyze core machine learning algorithms and methodologies to address diverse problem sets.		
PCC-252-AID.4	Recommend effective data cleaning, transformation, and visualization techniques to extract meaningful insights from data.		
PCC-252-AID.5	Use automation tools for AI workflows to enhance the scalability and efficiency of AI driven solutions.		
PCC-252-AID.6	Apply data analytics lifecycle to solve real-world problems.		

<b>Class- SE</b>	<b>Course Name :Probability &amp; Statistics (PCC-253-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-253-AID.1	Utilize key probability theorems to solve practical problems in decision-making and risk analysis.		
PCC-253-AID.2	Apply fundamentals of Statistics for Artificial Intelligence and Data Science		
PCC-253-AID.3	Apply statistical techniques to examine relationships between variables and make predictions.		
PCC-253-AID.4	Use the basic principles of random variables and random processes needed in applications to model and interpret real-world scenarios.		
PCC-253-AID.5	Use probability and statistical models to analyze data and support decision-making in fields like finance, engineering, healthcare, and machine learning.		
PCC-253-AID.6	Interpret and present data using appropriate statistical representations and visualization techniques to effectively communicate insights.		

<b>Class- SE</b>	<b>Course Name :Database Management Lab (PCC-209-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-209-AID.1	Design DBMS using ER models		
PCC-209-AID.2	Execute SQL and PL/SQL queries		
PCC-209-AID.3	Apply normalization techniques		
PCC-209-AID.4	Apply transaction management concepts to real-time scenarios		
PCC-209-AID.5	Use NoSQL databases for handling unstructured data.		
PCC-209-AID.6	Analyze and implement database backup, recovery, and security mechanisms		

<b>Class- SE</b>	<b>Course Name :Data Science Lab (PCC-255-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
PCC-255-AID.1	Implement Linear Algebra concepts using python		
PCC-255-AID.2	Apply data manipulation and preprocessing techniques on datasets.		
PCC-255-AID.3	Use data visualization techniques and tools on the dataset.		
PCC-255-AID.4	Develop machine learning model for application		
PCC-255-AID.5	Analyze performance of an algorithm.		
PCC-255-AID.6	Apply statistical methods for effective data representation and analysis		

<b>Class- SE</b>	<b>Course Name :Project Management</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
AID.1	Explain the principles of project management		
AID.2	Use project management concepts to real-world scenarios		
AID.3	Apply Agile Project Management		
AID.4	Discuss the importance of risk management, quality control, and stakeholder management		
AID.5	Demonstrate skills in project planning, execution, and control		
AID.6	Demonstrate overall understanding of project management concepts.		

<b>Class- SE</b>	<b>Course Name :Principals and Practices of Management</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
AID.1	UNDERSTAND how essential various functions of management are for every business manager.		
AID.2	APPLY the principles of management to the practical situations concerning the management of people and organizations and decision making in real business life.		
AID.3	DEVELOP effective communication and motivating abilities to solve real life problems.		
AID.4	PLAN and DEVELOP strategies for effective decision making under critical condition.		
AID.5	Identify, assess, and manage project risks using risk analysis and mitigation strategies.		
AID.6	Evaluate project performance using monitoring and control techniques including quality management and performance measurement tools.		

<b>Class- SE</b>	<b>Course Name :Embedded Systems (MDM-271-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
MDM-271-AID.1	Apply knowledge of embedded systems, its characteristics, classifications, and real-world applications across various domains.		
MDM-271-AID.2	Make use of micro controllers and develop programming and interfacing skills using Arduino and Raspberry Pi.		
MDM-271-AID.3	Explain the working mechanisms of different sensors and actuators and their relevance in various applications.		
MDM-271-AID.4	Identify the fundamental architecture of ARM Processor.		
MDM-271-AID.5	Compare the working of real-time scheduling algorithms		
MDM-271-AID.6	Design and implement embedded system solutions by integrating microcontrollers, sensors,actuators, ARM architecture concepts, and real-time operating systems for real-world applications.		

<b>Class- SE</b>	<b>Course Name :Object Oriented Programming (VSE-281-AID)</b>	<b>Sem- IV</b>	<b>Pattern: 2024</b>
<b>COs</b>	<b>Course Outcomes</b>		
VSE-281-AID.1	Apply fundamental constructs like control statements, for implementing an application.		
VSE-281-AID.2	Implement java programs using, class, objects, constructors in Java, arrays, managing		
VSE-281-AID.3	Apply object-oriented features like Inheritance, Polymorphism, Dynamic binding for implementing		
VSE-281-AID.4	Apply concepts of exception handling, multi-threading for implementing an application.		
VSE-281-AID.5	Design an interface to connect Java applications with database for performing CRUD		
VSE-281-AID.6	Perform basic statistical analysis and data visualization operations using Java AP		

Class- SE	Course Name :Modern Indian Language (AEC-282-AID)	Sem- IV	Pattern: 2024
<b>COs</b>	<b>Course Outcomes</b>		
AEC-282-AID.1	मराठी भाषेतील मौखिक व लेखी अभिव्यक्ती कौशल्यांचा प्रभावी वापर करणे.		
AEC-282-AID.2	लोकसाहित्य, प्रसारमाध्यमे आणि समाजजीवन यांतील संबंध स्पष्ट करणे.		
AEC-282-AID.3	वर्तमानपत्रीय व प्रसार माध्यमांतील विविधलेखन प्रकारांचे विश्लेषण करणे.		
AEC-282-AID.4	बातमी, संपादकीय, जाहिरात, मुलाखत, नभोनाट्य, ब्लॉग इत्यादी लेखन प्रकार प्रत्यक्ष तयार करणे.		
AEC-282-AID.5	भाषा, जीवन व्यवहार, समाज माध्यमे आणि सामाजिक प्रवाहांचा संदर्भाधारित अभ्यास करणे.		
AEC-282-AID.6	मराठी भाषेचा वापरकरून सर्जनशील, समालोचनात्मक व मूल्याधिष्ठित लेखन सादर करणे.		

Class- SE	Course Name :Technology Commercialization & Startup Development (EEM-283-AID)	Sem- IV	Pattern: 2024
<b>COs</b>	<b>Course Outcomes</b>		
EEM-283-AID.1	Importance of technology commercialization and startup.		
EEM-283-AID.2	Intellectual property rights for protecting invention with product ownership.		
EEM-283-AID.3	Requisite knowledge of Registration process of for startup.		
EEM-283-AID.4	Setup of cost & funding for startup.		
EEM-283-AID.5	Go-to-Market (GTM) strategy for business venture		
EEM-283-AID.6	Evaluate the performance of a startup venture using Key Performance Indicators (KPIs) and agile adaptation strategies for sustainable growth.		

Class- SE	Course Name :Environmental Studies (VEC-284-AID)	Sem- IV	Pattern: 2024
<b>COs</b>	<b>Course Outcomes</b>		
VEC-284-AID.1	Illustrate the interdependence of ecosystems through activity-based exploration		
VEC-284-AID.2	Analyze the role of natural resources in sustainable development using real-world data.		
VEC-284-AID.3	Investigate biodiversity threats and conservation strategies through surveys and projects		
VEC-284-AID.4	Create awareness tools or reports promoting sustainability based on their findings.		
VEC-284-AID.5	Evaluate environmental issues and propose suitable sustainable solutions based on scientific reasoning.		
VEC-284-AID.6	Apply sustainable practices in daily life and demonstrate environmental responsibility.		