

Savitribai Phule Pune University
Final Year of Artificial Intelligence and Data Science (2020 Course)
(With effect from Academic Year 2023-24)

Semester-VII

Course Code	Course Name	Course Outcomes <i>(On completion of the course, learner will be able to-)</i>
417521	Machine Learning	C01: Describe and compare different models of machine learning C02: Design ML models to make predictions by using linear, non-linear and logistic regression techniques C03: Implement classification models for two class problems and multiclass problems C04: Implement clustering models for unlabelled data C05: Integrate multiple machine learning algorithms in the form of ensemble learning C06: Apply reinforcement learning and its algorithms for different applications
417522	Data Modelling & Visualization	C01: Summarize data analysis and visualization in the field of exploratory data science C02: Analyze the characteristics and requirements of data and select an appropriate data model C03: Describe to load, clean, transform, merge and reshape data C04: Design a probabilistic data modelling, interpretation, and analysis C05: Evaluate time series data C06: Integrate real world data analysis problems
417523	Elective III(B) Industrial Internet of Things	C01: Understand the basic knowledge of Industrial IOT, its challenges, benefits and significance in industrial applications C02: Illustrate the use of sensors, actuators and communication protocols used in implementation of IIOT C03: Elaborate the IIOT components required for IIOT architecture C04: Analyze the role of cloud computing in IIOT including data storage, processing and data analytics and Digital Twin C05: Recognize the importance of security in IIOT and solutions to mitigate security risks C06: Categorize the various IIOT applications and use cases of IIoT implemented in various industries
417524	Elective IV (C) UI/UX Design	C01: Understand the principles of User Interface C02: Describe user experience fundamentals C03: Explore strategies for managing design projects C04: Recognize the quality of service and data visualization C05: Explore the challenges associated with information visualization C06: Test the usability of a design through usability evaluations
417525	Computer Laboratory I	C01: Implement regression, classification and clustering models C02: Integrate multiple machine learning algorithms in the form of ensemble learning C03: Apply reinforcement learning and its algorithms for real world applications C04: Analyze the characteristics, requirements of data and select an appropriate data model C05: Apply data analysis and visualization techniques in the field of exploratory data science C06: Evaluate time series data
417526	Computer Laboratory II	PART A: (Elective III: Industrial Internet of Things) C01: Understand IIoT technologies, architectures, standards, and regulation C02: Build IIOT systems that include hardware and software and be exposed to modern and exciting hardware prototyping platforms C03: Develop real applications and improve them through smart technologies PART B: (Elective IV: UI /UX Design) C01: Apply user-cantered design methodologies C02: Create effective user interfaces / user experiences C03: Develop proficiency in design tools C04: Design for multiple platforms and devices C05: Conduct usability testing and analysis C06: Develop a portfolio of UI/UX design projects

417527	Project Stage I	C01: Solve real life problems by applying knowledge C02: Analyze alternative approaches, apply and use most appropriate one for feasible solution C03: Write precise reports and technical documents in a nutshell C04: Participate effectively in multi-disciplinary and heterogeneous teams exhibiting team work C05: Inter-personal relationships, conflict management and leadership quality
417528	MOOC	C01: To acquire additional knowledge and skill C02: Explore new areas of interest in a relevant field

Semester-VIII

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417530	Computational Intelligence	C01: Understand Computational Intelligence techniques to solve real-life problems C02: Apply fuzzy logic techniques to solve real life problems C03: Design and implement evolutionary algorithms to solve optimization problem C04: Analyze and evaluate the performance of genetic algorithms in terms of convergence and computational efficiency C05: Interpret and analyse the results obtained from computational intelligence models in NLP, providing meaningful insights and recommendations C06: Design and Develop Artificial Immune System to solve complex problems
417531	Distributed Computing	C01: Understand the features and properties of Distributed computing system with integration of AI C02: Analyze the Concept of data management and storage in distributed computing C03: Understand the algorithm used in distributed computing by applying artificial intelligence C04: Understand the integration of machine learning algorithm and advanced tools used in distributed computing C05: Analyze how big data is processed in distributed computing C06: Identify Security and privacy issues of distributed computing and apply on specific application
417532	Elective V (B) Big Data analytics	C01: Apply the techniques to handle missing data for real world applications. C02: Exemplify Analytical Methods like Clustering and Association Rule for Big Data Analytics C03: Use the novel architectures and platforms introduced for Big data, in particular Hadoop and Map Reduce C04: Differentiate the advanced predictive analytics algorithms in various applications like Retail, Finance, Healthcare C05: Evaluate needs, challenges, and techniques for big data visualization C06: Design various applications and simulate the analytics tools
417533	Elective VI(B) Business Intelligence	C01: Apply conceptual knowledge on how BI is used in decision support systems C02: Use Modelling Concepts in Business Intelligence C03: Understand and apply the concept of data provisioning and data Visualization C04: Apply different data pre-processing techniques on data set C05: Implement machine learning algorithms as per business needs C06: Identify role of BI in Management, Inventory, Production, Logistics and Management
417534	Computer Laboratory III	C01: Apply the principles on which the internet and other distributed systems are based C02: Understand and apply the basic theoretical concepts and algorithms of distributed systems in problem solving C03: Apply fuzzy logic techniques to model and solve problems C04: Design and implement evolutionary algorithms to solve optimization and search problems in diverse domains C05: Design and implement artificial immune system algorithms to solve complex problems in different domains
417535	Computer Laboratory IV	C01: Apply basic principles of elective subjects to problem solving and modelling C02: Use tools and techniques in area of software development to build mini projects C03: Design and develop applications on subjects of their choice C04: Implement and manage deployment, administration & security

417536	Project Stage II	C01: Show evidence of independent investigation C02: Critically analyse the results and their interpretation C03: Report and present the original results in an orderly way and placing the open questions in the right perspective C04: Link techniques and results from literature as well as actual research and future research lines with the research C05: Appreciate practical implications and constraints of the specialist subject
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