



2.6.1 Course Outcomes

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S.Y. B. Tech. Semester III: Course Outcomes

DJS23CTPC301 - Computational Mathematics & Computational Mathematics Tutorial

On completion of the course, the learner will be able to:	
DJS23CCPC301.1	Apply the concepts of eigenvalue, eigenvectors, and diagonalization to engineering problems.
DJS23CCPC301.2	Apply the concept of probability distribution to engineering problems.
DJS23CCPC301.3	Draw conclusions on population based on large and small samples taken and hence apply it to understand data science problems.
DJS23CCPC301.4	Apply nonparametric test and perform Analysis of Variance on the population to analyze data.

DJS23CCPC302 & DJS23CLPC302 - Data Structures & Data Structures Laboratory

On completion of the course, the learner will be able to:	
DJS23CCPC302.1	Assimilate the concept of various linear and non-linear data structures.
DJS23CCPC302.2	Solve the problem using appropriate data structure.
DJS23CCPC302.3	Implement appropriate searching and sorting algorithms for a given problem.

DJS23CCPC303 & DJS23CLPC303 - Database Management System & Database Management System Laboratory

On successful completion of this course, learners will be able to:	
DJS23CCPC303.1	Design an optimized database.
DJS23CCPC303.2	Construct SQL queries to perform operations on the database.
DJS23CCPC303.3	Demonstrate appropriate transaction management and recovery techniques for a given problem.
DJS23CCPC303.4	Apply indexing mechanisms for efficient retrieval of information from database.



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DJS23CCMD301 - Digital Electronics

On completion of the course, the learner will be able to:	
DJS23CCMD301.1	Analyze and minimize Boolean expressions
DJS23CCMD301.2	Design and analyze combinational circuits
DJS23CCMD301.3	Design and analyze sequential circuits

DJS23OCOE301 - Product Life Cycle Management

On completion of the course, the learner will be able to:	
DJS23OCOE301.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS23OCOE301.2	Illustrate various approaches and techniques for designing and developing products.
DJS23OCOE301.3	Acquire knowledge in applying virtual product development tools.
DJS23OCOE301.4	Acquire knowledge in implementation of Environmental aspects in PLM.

DJS23OCOE302 - Management Information System

On completion of the course, the learner will be able to:	
DJS23OCOE302.1	Explain the fundamental concepts of the management information systems used in business.
DJS23OCOE302.2	Describe IT infrastructure and its components and its current trends.
DJS23OCOE302.3	Use the tools and technologies for accessing information from databases to improve business performance and decision making
DJS23OCOE302.4	Identify and explain the security and ethical challenges in MIS along with the measures to be taken
DJS23OCOE302.5	Select a suitable social computing platform for the given requirements that integrates AI and IoT.
DJS23OCOE302.6	Explain the processes involved in the information system within the organization includes information acquisition and enterprise and global management technologies.



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DJS23OCOE303 - Operations Research

On completion of the course, the learner will be able to:	
DJS23OCOE303.1	Formulate the real-world optimisation problem into a Linear Programming Problem (LPP) and analyse the solution obtained using LPP optimisation models.
DJS23OCOE303.2	Solve Linear Programming Problems using transportation and assignment models.
DJS23OCOE303.3	Apply Decision Theory to determine the optimal course of action when a number of alternatives are available, and their consequences cannot be forecast with certainty and uncertainty.
DJS23OCOE303.4	Apply Game Theory for decision making under conflicting situations where there are one or more opponents (players).
DJS23OCOE303.5	To breaking down a large problem into smaller sub problems and solved recursively or iteratively using Dynamic Programming models.

DJS23OCOE304 - Personal Finance Management

On completion of the course, the learner will be able to:	
DJS23OCOE304.1	Understand the Indian financial system.
DJS23OCOE304.2	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJS23OCOE304.3	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJS23OCOE304.4	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJS23OCOE304.5	Understand how Microfinance can help in financial inclusion.

DJS23OCOE305 - Public Systems and Policies

On completion of the course, the learner will be able to:	
DJS23OCOE305.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJS23OCOE305.2	Analyse the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJS23OCOE305.3	Explain public policy and its operations with special focus on policy relating to Government finance.
DJS23OCOE305.4	Make policies and know about the happenings in the world, in the nation and those in their locality.



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DJS23OCOE305.5	Analyze and evaluate the impact of public policy on firms and the economy at large and work under various fields as policymakers.
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DJS23OCOE306 - Fundamentals of Biomedical Instruments

On completion of the course, the learner will be able to:	
DJS23OCOE306.1	Associate & describe the different physiological processes taking place within the human body.
DJS23OCOE306.2	Identify the use of biomaterials and apply principles of various transducers & sensors.
DJS23OCOE306.3	Demonstrate the working principle of various medical instruments.
DJS23OCOE306.4	Demonstrate principles used in imaging modalities and analysis.
DJS23OCOE306.5	Identify different processes used in telemetry and telemedicine.

DJS23OCOE307 - IPR & Patenting

On completion of the course, the learner will be able to:	
DJS23OCOE307.1	Map a given project/ idea to a suitable intellectual property rights.
DJS23OCOE307.2	Explain the fundamentals of the patents, copyrights, and design registrations.
DJS23OCOE307.3	Draft applications to protect various intellectual property rights.
DJS23OCOE307.4	Communicate with national and/or international intellectual property organisations.

DJS23OCOE308 - Entrepreneurship and Startup Ecosystem

On completion of the course, the learner will be able to:	
DJS23OCOE308.1	Effectively Navigate the Global Startup Landscape
DJS23OCOE308.2	Cultivate an Entrepreneurial Mindset.
DJS23OCOE308.3	Create Effective Business Models
DJS23OCOE308.4	Understand the significance of Intellectual Property rights
DJS23OCOE308.5	Master Fundraising Strategies



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DJS23ILHSX06 - Design Thinking Laboratory

On completion of the course, the learner will be able to:	
DJS23ILHSX06.1	Understand the importance of Human-Centric design approach for developing a solution.
DJS23ILHSX06.2	Generate innovative ideas to design sustainable solutions for real world problems.
DJS23ILHSX06.3	Apply design thinking principles to solve the real-world problems
DJS23ILHSX06.4	Collaborate creatively and effectively in interdisciplinary teams to apply design thinking principles to real world problems.

DJS23ICHSX08 & DJS23ITHSX08 - Universal Human Values & Universal Human Values Tutorial

On completion of the course, the learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.



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DJS23ILEL311 - Community Engagement Service

On completion of the course, the learner will be able to:	
DJS23ILEL311.1	Knowledge application: Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23ILEL311.2	Commitment for cause: Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23ILEL311.3	Diversity: Witness diversity in communities and cultures and demonstrate change in approach / attitude as, an evidence of unconditional acceptance.
DJS23ILEL311.4	Team: Recognise, experience and value, effectiveness of working in a team, demonstrating co-existence of the roles - sincere worker and effective leader.

DJS23IPSCX01 - Innovative Product Development I

On completion of the course, the learner will be able to:	
DJS23IPSCX01.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX01.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX01.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX01.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX01.5	Develop interpersonal skills, while working as a member of the team or as



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	the leader.
DJS23IPSCX01.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS23IPSCX01.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS23CCH1301 - Statistics for Data Science

On completion of the course, the learner will be able to:	
DJS23CCH1301.1	Describe and summarize data using appropriate statistical measures.
DJS23CCH1301.2	Apply correlation analysis and regression to real-world problems.
DJS23CCH1301.3	Apply regression techniques to model and forecast time series data.
DJS23CCH1301.4	Apply nonparametric test and draw appropriate conclusions for data analysis.



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DJS23CCPC401 & DJS23CLPC401 - Operating Systems & Operating Systems Laboratory

On completion of the course, the learner will be able to:	
DJS23CCPC401.1	Understand role of Operating System in terms of process, memory, file and I/O management.
DJS23CCPC401.2	Apply appropriate process scheduling, memory mapping and disk scheduling methods.
DJS23CCPC401.3	Identify the need of concurrency and apply appropriate method to solve the concurrency or deadlock problem.
DJS23CCPC401.4	Apply and analyse different techniques of file and I/O management

DJS23CCPC402 & DJS23CLPC402 - Analysis of Algorithms & Analysis of Algorithms Laboratory

On completion of the course, the learner will be able to:	
DJS23CCPC402.1	Analyze the performance of algorithms using asymptotic analysis.
DJS23CCPC402.2	Solve the problem using appropriate algorithmic design techniques.
DJS23CCPC402.3	Able to prove that certain problems are NP-Complete.

DJS23CLPC403 - Python Programming Laboratory

On completion of the course, the learner will be able to:	
DJS23CLPC403.1	Understand basic and object-oriented concepts, data structure implementation in python.
DJS23CLPC403.2	Apply file, directory handling and text processing concepts in python.
DJS23CLPC403.3	Apply database connectivity using python.
DJS23CLPC403.4	Develop python-based application using Tkinter.



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DJS23CCMD401 - Computer Networks with IoT Fundamentals

On successful completion of course, learner will be able to:	
DJS23CCMD401.1	Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model & TCP/IP model.
DJS23CCMD401.2	Understand the fundamental concepts of the Data Link Layer and analyze different MAC protocols.
DJS23CCMD401.3	Design IP addressing schemes and implement routing solutions.
DJS23CCMD401.4	Analyze various transport layer, application layer protocols.
DJS23CCMD401.5	Describe IoT systems, their components, and applications in various domains.

DJS23OCOE401 - Project Management

On successful completion of course, learner will be able to:	
DJS23OCOE401.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJS23OCOE401.2	Apply selection criteria and select an appropriate project from different options.
DJS23OCOE401.3	Create a work break down structure for a project and develop a schedule based on it. Manage project risk strategically.
DJS23OCOE401.4	Use Earned value technique and determine & predict status of the project. Capture lessons learned during project phases and document them for future reference.
DJS23OCOE401.5	Differentiate between traditional waterfall approach and agile scrum methodology for software development projects.

DJS23OCOE402 - Cyber Security, Policies and Laws

On successful completion of course, learner will be able to:	
DJS23OCOE402.1	Understand and describe the major types of cybercrime and navigate legal frameworks and regulations concerning digital personal and data protection.
DJS23OCOE402.2	Implement strategies for cybersecurity outlined in the National Cyber



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	Security Policy.
DJS23OCOE402.3	Apply appropriate law enforcement strategies to both, prevent and control cybercrime.
DJS23OCOE402.4	Comprehend regulations and strategies pertaining to AI (Artificial Intelligence) and large language models.

DJS23OCOE404 - Corporate Finance

On successful completion of course, learner will be able to:	
DJS23OCOE404.1	Understand Indian finance system.
DJS23OCOE404.2	Apply concepts of time value money and risk returns to product, services and business.
DJS23OCOE404.3	Understand corporate finance and working capital management.
DJS23OCOE404.4	Take Investment and finance decisions.
DJS23OCOE404.5	Take dividend decisions.

DJS23OCOE405 - Corporate Social Responsibility

On successful completion of course, learner will be able to:	
DJS23OCOE405.1	Upon completion of this course, students will be able to analyse and critique the ethical dimensions of Corporate Social Responsibility initiatives, demonstrating a comprehensive understanding of CSR principles and their ethical underpinnings.
DJS23OCOE405.2	Upon completion of this course, students will demonstrate an understanding of the legislative frameworks shaping Corporate Social Responsibility both in India and globally, alongside recognizing the key drivers fostering CSR practices within the Indian context.
DJS23OCOE405.3	Upon completion of this course, students will be able to identify and discuss the significance of social responsibility and community engagement initiatives, demonstrating an understanding of their impact on both businesses and society.



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DJS23OCOE406 – Bioinformatics

On successful completion of course, learner will be able to:	
DJS23OCOE406.1	Understand the structure and function of cells, organelles, and biomolecules.
DJS23OCOE406.2	Understand the types of data stored in bioinformatics databases and their relevance to biological research.
DJS23OCOE406.3	Explore genomic databases and understand the structure and content of protein databases.
DJS23OCOE406.4	Understand system biology concepts and molecular evolution.
DJS23OCOE406.5	Apply knowledge of cellular and molecular biology concepts to analyze a biological problem.

DJS23OCOE407 – Human Resource Management

On successful completion of course, learner will be able to:	
DJS23OCOE407.1	Understand the changing environment of the HRM and the role of the HR managers.
DJS23OCOE407.2	Understand the recruitment process and the application of the IT.
DJS23OCOE407.3	Understand the importance of the training and development.
DJS23OCOE407.4	Understand about the pay plans, performance appraisal and compensation.
DJS23OCOE407.5	Understand the importance of the labour relation, the employee security and collective bargaining.

DJS23OCOE408 – Digital Marketing Management

On successful completion of course, learner will be able to:	
DJS23OCOE408.1	Understand the digital marketing framework & model and consumer behaviour.
DJS23OCOE408.2	Develop digital marketing strategy roadmap.
DJS23OCOE408.3	Explain the terminology and concepts for developing web-specific media



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	plans.
DJS23OCOE408.4	Understand concepts related to digital campaign management and revenue generation models.
DJS23OCOE408.5	Get a perspective on global digital marketing technology/tools and future trends.

DJS23ITHSX05 - Professional and Business Communication Tutorial

On completion of the course, the learner will be able to:	
DJS23ITHSX05.1	Apply group discussion techniques in professional situations
DJS23ITHSX05.2	Use employability skills to optimize career opportunities
DJS23ITHSX05.3	Employ storytelling techniques for effective presentation
DJS23ITHSX05.4	Prepare technical documents using appropriate style, format, and language
DJS23ITHSX05.5	Analyze the concept of professional ethics
DJS23ITHSX05.6	Demonstrate interpersonal skills in professional and personal situations

DJS23ICHSX07 - Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences

DJS23IPSCX02 - Innovative Product Development-II

On completion of the course, the learner will be able to:	
DJS23IPSCX02.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX02.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.



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DJS23IPSCX02.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX02.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX02.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX02.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS23IPSCX02.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS23CCH1401 & DJS23CLH1401 - Visualization in Data Science & Visualization in Data Science Laboratory

On completion of the course, the learner will be able to:	
DJS23CCH1401.1	Understand the fundamental design principles and different types of data visualization.
DJS23CCH1401.2	Identify both positive and negative impacts of data-informed decision across a variety of domains.
DJS23CCH1401.3	Apply the fundamental concepts of data visualization to define a project in your field of study.
DJS23CCH1401.4	Practice the core principles using widely available tools (e.g. Tableau).
DJS23CCH1401.5	Demonstrate the best practice that presents your story in the process of creating data visualization including connecting to different data sources, assessing to the quality of the data, and converting raw data into data visualizations that provide actionable information.



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DJS22CEC501 & DJS22CEL501 - Data Warehousing and Mining & Data Warehousing and Mining Laboratory

On successful completion of course, learner will be able to:	
DJS22CEC501.1	Design data warehouse models using dimension-modeling techniques.
DJS22CEC501.2	Analyse the data by applying Online Analytical Processing (OLAP) operations for strategic decisions.
DJS22CEC501.3	Apply preprocessing techniques to the given raw data.
DJS22CEC501.4	Apply appropriate data mining techniques on data sets to retrieve relevant information.

DJS22CEC502 & DJS22CEL502 - Computer Network & Computer Network Laboratory

On successful completion of course, learner will be able to:	
DJS22CEC502.1	Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model & TCP/IP model.
DJS22CEC502.2	Understand the fundamental concepts of the Data Link Layer and analyze different MAC protocols.
DJS22CEC502.3	Design the network using IP addressing and subnetting / supernetting schemes.
DJS22CEC502.4	Analyze various transport layer, application layer protocols.

DJS22CEC503 & DJS22CEL503 - Artificial Intelligence & Artificial Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS22CEC503.1	Understand fundamentals of artificial intelligence systems.
DJS22CEC503.2	Apply various AI approaches to knowledge intensive problem solving, reasoning, planning and uncertainty.
DJS22CEC503.3	Develop the AI applications in real world scenarios.



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DJS22CEC504 - Formal Languages and Automata Theory

On completion of the course, learner will be able to:	
DJS22CEC504.1	Acquire a fundamental understanding of the core concepts in automata theory and formal languages.
DJS22CEC504.2	Design grammar and automata (recognizers) for different language classes.
DJS22CEC504.3	Determine the decidability and intractability of computational problems

DJS22CEC5011 & DJS22CEL5011 - Advanced Algorithms & Advanced Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS22CEC5011.1	Analyze the chosen algorithm.
DJS22CEC5011.2	Choose appropriate data structure and algorithm for given problem statement.
DJS22CEC5011.3	Design the algorithm.

DJS22CEC5012 & DJS22CEL5012 - Advanced Operating System & Advanced Operating System Lab

On completion of the course, learner will be able to:	
DJS22CEC5012.1	Understand different types of operating systems concepts to solve real life problems.
DJS22CEC5012.2	Analyze system performance by applying virtualization concepts.
DJS22CEC5012.3	Understand mobile operating systems concept.

DJS22CEC5013 & DJS22CEL5013 - Advanced Database Management System & Advanced Database Management System Laboratory

On completion of the course, learner will be able to:	
DJS22CEC5013.1	Discuss new developments in database technology, implement advanced data models for real life applications and secure them.
DJS22CEC5013.2	Optimize query execution and design distributed database for better resource management.
DJS22CEC5013.3	Demonstrate the understanding of the concepts related to document-oriented databases.



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DJS22CEC5014 & DJS22CEL5014 - Computer Graphics & Computer Graphics Laboratory

On completion of the course, learner will be able to:	
DJS22CEC5014.1	Explain the applications of computer Graphics. Apply and compare the algorithms for drawing 2D images also explain aliasing, anti-aliasing and half toning techniques.
DJS22CEC5014.2	Analyze and apply clipping algorithms and transformation on 2D images.
DJS22CEC5014.3	Explain basic shading, shadows, curves and surfaces and solve curve problems.

DJS22IHL - Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics

DJS22ILL1 - Innovative Product Development III

Learner will be able to:	
DJS22ILL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL1.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL1.5	Develop interpersonal skills, while working as a member of the team or as the



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	leader.
DJS22ILL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJ19CEHN1C1 – Nature Inspired Computing

On completion of the course, the learner will be able to:	
DJ19CEHN1C1.1	Understand the natural phenomena that inspire the algorithms
DJ19CEHN1C1.2	Apply nature-inspired algorithms to optimization
DJ19CEHN1C1.3	Select the appropriate strategy or optimal solution based on bio-inspired algorithms



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T.Y. B. Tech. Semester VI: Course Outcomes

DJS22CEC601 & DJS22CEL601 - Software Engineering and Project Management & Software Engineering and Project Management Laboratory

On completion of the course, learner will be able to:	
DJS22CEC601.1	Understand basic concepts of Software Engineering process and models.
DJS22CEC601.2	Identify requirements, analyse, design and develop the software projects.
DJS22CEC601.3	Create project plan and schedule and track the progress of the project using various software project management tools.
DJS22CEC601.4	Apply testing principles on software projects.

DJS22CEC602 & DJS22CEL602 - Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22CEC602.1	Gain knowledge about basic concepts of Machine Learning
DJS22CEC602.2	Identify machine learning techniques suitable for a given problem
DJS22CEC602.3	Apply various machine learning techniques.
DJS22CEC602.4	Design application using machine learning techniques

DJS22CEC603 & DJS22CEL603 - Information Security & Information Security Laboratory

On completion of the course, learner will be able to:	
DJS22CEC603.1	Understand system security goals and concepts, classical encryption techniques and acquire fundamental knowledge on the concepts of modular arithmetic and number theory.
DJS22CEC603.2	Understand the concept of symmetric and asymmetric cryptography and apply the different techniques to solve confidentiality and authentication.
DJS22CEC603.3	Apply different digital signature and hashing algorithms to achieve authentication and integrity to design secure applications.
DJS22CEC603.4	Understand network security basics, analyze different attacks on networks and systems, understand vulnerability and apply preventive measures.



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DJS22CEC6011 & DJS22CEL6011 - Advanced Network Design & Advanced Network Design Laboratory

On completion of the course, learner will be able to:	
DJS22CEC6011.1	Analyze the need for advanced networks and standards in various scenarios, evaluating specific design requirements for topology, cabling, and physical component placement.
DJS22CEC6011.2	Develop frameworks and standards for the implementation of network designs, incorporating best practices in configuration management. Also apply human factor concepts to enhance usability and troubleshoot network issues
DJS22CEC6011.3	Integrate IPv6 in network design, design and implement security systems, and analyze real-world examples of advanced network design. Also compare performance metrics in Internet routing and VoIP

DJS22CEC6012 & DJS22CEL6012 - High Performance Computing & High Performance Computing Laboratory

On completion of the course, learner will be able to:	
DJS22CEC6012.1	Describe parallel processing approaches and different parallel processing platforms involved in achieving High Performance Computing.
DJS22CEC6012.2	Discuss different design issues in parallel programming
DJS22CEC6012.3	Develop efficient and high-performance parallel programming
DJS22CEC6012.4	Understand parallel programming using message passing paradigm using open-source APIs.

DJS22CEC6013 & DJS22CEL6013 - Business Analytics & Business Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22CEC6013.1	Comprehend analytics, its types and techniques.
DJS22CEC6013.2	Apply Base SAS programming to diverse dataset for analysis.
DJS22CEC6013.3	Apply visual analytics for data analysis and report design.
DJS22CEC6013.4	Formulate business objectives, data selection/collection, preparation and design for various business applications.



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DJS22CEC6014 & DJS22CEL6014 - Compiler Design & Compiler Design Laboratory

On completion of the course, learner will be able to:	
DJS22CEC6014.1	Understand the basics of compilation steps.
DJS22CEC6014.2	Apply different parsing algorithms.
DJS22CEC6014.3	Ability to apply the knowledge of lex tool & yacc tool to develop a scanner & parser.
DJS22CEC6014.4	Implement code generation and apply code optimization techniques.

DJS22CEC6015 & DJS22CEL6015 - Virtual Reality & Virtual Reality Laboratory

On completion of the course, learner will be able to:	
DJS22CEC6015.1	To make students know the basic concept and understand the framework of virtual reality
DJS22CEC6015.2	To understand principles and multidisciplinary features of virtual reality and apply it in developing applications.
DJS22CEC6015.3	To know the technology for multimodal user interaction and perception VR, particularly the visual, audial and haptic interface and behaviour.
DJS22CEC6015.4	To understand an introduction to the AR system framework and apply AR tools in software development.

DJS22CEL604 - DevOps Laboratory

On completion of the course, learner will be able to:	
DJS22CEL604.1	Interpret and apply various principles, phases and activities of Agile methodology and DevOps principles to meet software development requirements.
DJS22CEL604.2	Understand and implement DevOps principles for CI/CD.
DJS22CEL604.3	Apply testing process for application development and configuration management tools.



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DJS22ILL2 - Innovative Product Development IV

Learner will be able to:	
DJS22ILL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL2.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL2.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJ19CEHN1C2 & DJ19CEHN1L1 – Ubiquitous Computing & Ubiquitous Computing Laboratory

On completion of the course, the learner will be able to:	
DJ19CEHN1C2.1	Describe the characteristics of Ubiquitous computing
DJ19CEHN1C2.2	Analyze the strength and limitations of the current tools, devices and communications
DJ19CEHN1C2.3	Identify human interaction behavior with systems in a ubiquitous environment
DJ19CEHN1C2.4	Explore the trends and problems of current ubiquitous computing systems.



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B. Tech. Semester VII: Course Outcomes

DJ19CEC701 & DJ19CEL701 - Digital Signal Processing and Applications & Digital Signal Processing and Applications Laboratory

On successful completion of course learner will be able to:	
DJ19CEC701.1	Understand concept of digital signal processing and applications
DJ19CEC701.2	Classify and analyze discrete time signals and systems
DJ19CEC701.3	Apply the efficient computing algorithms of DFT and FFT in finding the response of the system
DJ19CEC701.4	Use the enhancement techniques for digital Image Processing
DJ19CEC701.5	Apply digital image processing techniques for edge detection

DJ19CEC702 & DJ19CEL702 - Distributed Computing & Distributed Computing Laboratory

On successful completion of course learner will be able to:	
DJ19CEC702.1	Demonstrate knowledge of the basic elements and concepts related to distributed system technologies
DJ19CEC702.2	Illustrate the middleware technologies that support distributed applications such as RPC, RMI and Object based middleware.
DJ19CEC702.3	Analyse the various techniques used for clock synchronization and mutual exclusion
DJ19CEC702.4	Demonstrate the concepts of Resource and Process management and synchronization algorithms
DJ19CEC702.5	Demonstrate the concepts of Consistency and Replication Management
DJ19CEC702.6	Apply the knowledge of Distributed File System to analyse various file systems like NFS, AFS and the experience in building large-scale distributed applications.

DJ19CEEC7011 & DJ19CEEL7011 - Deep Learning & Deep Learning Laboratory

At the end of the course, students will be able to	
DJ19CEEC7011.1	Understand and Apply Hyper parameters Tuning
DJ19CEEC7011.2	Interpret working of deep learning models
DJ19CEEC7011.3	Create Deep learning Models for real-world problems
DJ19CEEC7011.4	Investigate suitable deep learning algorithms for various applications.



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DJ19CEEC7012 & DJ19CEEL7012 - Blockchain Technology & Blockchain Technology Laboratory

On completion of the course, learner will be able to:	
DJ19CEEC7012.1	Acquire basic knowledge of Blockchain technology and Analyze various algorithms used in Blockchain.
DJ19CEEC7012.2	Introduce about cryptocurrency and various regulations.
DJ19CEEC7012.3	Aware of privacy and security issues and applications in Blockchain
DJ19CEEC7012.4	Design and understand various applications using Blockchain and Distributed Foundation and case studies.

DJ19CEEC7013 & DJ19CEEL7013 - Predictive Modelling & Predictive Modelling Laboratory

On successful completion of course, learner will be able to:	
DJ19CEEC7013.1	Understand the process of formulating business objectives, data selection/collection, preparation and process to successfully design, build, evaluate and implement predictive models for a various business application
DJ19CEEC7013.2	Compare the underlying predictive modeling techniques. Compare the underlying predictive modeling techniques.
DJ19CEEC7013.3	Apply statistical analysis to wide range of problems such as decision tree
DJ19CEEC7013.4	Implement neural network and regression in predictive modeling

DJ19ILO7011 - Product Life Cycle Management

On completion of the course, learner will be able to:	
DJ19ILO7011.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation
DJ19ILO7011.2	Illustrate various approaches and techniques for designing and developing products.
DJ19ILO7011.3	Apply product engineering guidelines / thumb rules in designing products for moulding, machining, sheet metal working etc.
DJ19ILO7011.4	Acquire knowledge in applying virtual product development tools for components, machining and manufacturing plant



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DJ19ILO7012 - Management Information System

Learner will be able to...	
DJ19ILO7012.1	Explain how information systems Transform Business
DJ19ILO7012.2	Identify the impact information systems have on an organization
DJ19ILO7012.3	Describe IT infrastructure and its components and its current trends
DJ19ILO7012.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making
DJ19ILO7012.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses

DJ19ILO7013 - Operations Research

On completion of the course, learner will be able to:	
DJ19ILO7013.1	Convert a real-world problem in to a Linear Programming Problem and analyse the solution obtained using Simplex method or other algorithms.
DJ19ILO7013.2	Identify real-world problems as Transportation Problem and Assignment Problem and Solve the decision problem by choosing appropriate algorithm.
DJ19ILO7013.3	Identify the decision situations which vary with time and analyse them using principle of dynamic programming to real life situations.
DJ19ILO7013.4	Explain reasons of formation of queues, classify various queuing systems and apply parameters defined for various queuing systems for decision making in real life situations
DJ19ILO7013.5	Understand the concept of decision making in situation of competition and recommend strategies in case of two-person zero sum games
DJ19ILO7013.6	Describe concept of simulation and apply Monte Carlo Simulation technique to systems such as inventory, queuing and recommend solutions for them.
DJ19ILO7013.7	Understand need for right replacement policy and determine optimal replacement age

DJ19ILO7014 - Cyber Security and Laws

On completion of the course, learner will be able to:	
DJ19ILO7014.1	Understand the different types of cybercrime and security issues E Business.
DJ19ILO7014.2	Analyses different types of cyber threats and techniques for security management
DJ19ILO7014.3	Explore the legal requirements and standards for cyber security in various countries to regulate cyberspace.
DJ19ILO7014.4	Impart the knowledge of Information Technology Act and legal frame work of right to privacy, data security and data protection.



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DJ19ILO7015 - Personal Finance Management

On completion of the course, learner will be able to:	
DJ19ILO7015.1	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJ19ILO7015.2	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJ19ILO7015.3	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJ19ILO7015.4	Understand how Microfinance can help in financial inclusion.

DJ19ILO7016 - Energy Audit and Management

On completion of the course, learner will be able to:	
DJ19ILO7016.1	To identify and describe present state of energy security and its importance
DJ19ILO7016.2	To identify and describe the basic principles and methodologies adopted in energy audit of a utility.
DJ19ILO7016.3	To describe the energy performance evaluation of some common electrical installations and identify the energy saving opportunities.
DJ19ILO7016.4	To describe the energy performance evaluation of some common thermal installations and identify the energy saving opportunities.
DJ19ILO7016.5	To analyze the data collected during performance evaluation and recommend energy saving measures.

DJ19ILO7017 - Disaster Management and Mitigation Measures

On completion of the course, learner will be able to:	
DJ19ILO7017.1	Know natural as well as manmade disaster and their extent and possible effects on the economy
DJ19ILO7017.2	Know the institutional framework and organization structure in India for disaster management and get acquainted with government policies, acts and various emergency laws.
DJ19ILO7017.3	Get to know the simple dos and don'ts in such extreme events and build skills to respond accordingly
DJ19ILO7017.4	Understand the importance of disaster prevention and various mitigation measure with the exposure to disasters hotspots across the globe.



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DJ19ILO7018 - Science of Well-being

Upon completion of the course, the learner should be able to:	
DJ19ILO7018.1	Describe concepts of holistic health and well-being, differentiate between its true meaning and misconceptions and understand the benefits of well-being
DJ19ILO7018.2	Recognize meaning of happiness, practice gratitude and self-compassion and analyze incidents from one's own life.
DJ19ILO7018.3	Understand the causes and effects of stress, identify reasons for stress in one's own surrounding and self.
DJ19ILO7018.4	Recognize the importance of physical health and fitness, assess their life style and come up with limitations or effectiveness.
DJ19ILO7018.5	Inspect one's own coping mechanism, assess its effectiveness, develop and strategize for betterment and execute it.

DJ19ILO7019 - Research Methodology

After completing the course, student will be able to:	
DJ19ILO7019.1	Prepare a preliminary research design for projects in their subject matter areas
DJ19ILO7019.2	Accurately collect, analyze and report data
DJ19ILO7019.3	Present complex data or situations clearly
DJ19ILO7019.4	Review and analyze research findings
DJ19ILO7019.5	Write report about findings of research carried out

DJ19ILO7020 - Public Systems and Policies

On completion of the course, learner will be able to:	
DJ19ILO7020.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJ19ILO7020.2	Analyze the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJ19ILO7020.3	Explain public policy and its operations with special focus on policy relating to Government finance.
DJ19ILO7020.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJ19ILO7020.5	Analyze and evaluate the impact of the public policy on firms and economy at large and work under various fields as policymakers.



Shri Vile Parle Kelavani Mandal's

DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING

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DJ19CEHN1C3 & DJ19CEHN1L2 – Bayesian Computing & Bayesian Computing Laboratory

On completion of the course, learner will be able to:

DJ19CEHN1C3.1	Draw an inference from computing models and make use of posterior probability distribution over a set of hypotheses or models.
DJ19CEHN1C3.2	Provide new methodologies in the transmission of statistical ideas to assess robustness of inferences in particular applications.



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B. Tech. Sem VIII: Course Outcomes

DJ19CEC801 & DJ19CEL801 - Web Intelligence & Web Intelligence Laboratory

On successful completion of course, learner will be able to:	
DJ19CEC801.1	Interpret the terminologies and perspectives of Web Mining.
DJ19CEC801.2	Perform social network analysis to identify communities and network properties in social media sites.
DJ19CEC801.3	Extract and Integrate information from the web for real-world scenarios.
DJ19CEC801.4	Design new solutions to opinion extraction and sentiment classification problems
DJ19CEC801.5	Provide solutions to the emerging problems with social media using Recommendation systems

DJ19CEC802 & DJ19CEL802 - High Performance Computing & High Performance Computing Laboratory

On successful completion of course, learner will be able to:	
DJ19CEC802.1	Comprehend fundamental concepts parallel processing approaches
DJ19CEC802.2	Describe different parallel processing platforms involved in achieving High Performance Computing.
DJ19CEC802.3	Discuss different design issues in parallel programming
DJ19CEC802.4	Develop efficient and high-performance parallel programming.
DJ19CEC802.5	Learn parallel programming using message passing paradigm using open-source APIs and shared address space platforms.

DJ19CEEC8011 & DJ19CEEL8011- Natural Language Processing & Natural Language Processing Laboratory

On successful completion of course, learner will be able to:	
DJ19CEEC8011.1	Understand the principles and Process the Human Languages Such as English and other Indian Languages using computers
DJ19CEEC8011.2	Creating CORPUS linguistics based on digestive approach (Text Corpus method)
DJ19CEEC8011.3	Demonstrate understanding of state-of-the-art algorithms and techniques for text-based processing of natural language with respect to morphology.
DJ19CEEC8011.4	Perform POS tagging for a given natural language and select a suitable language modelling technique based on the structure of the language.
DJ19CEEC8011.5	Check the syntactic and semantic correctness of sentences using grammars and labelling.
DJ19CEEC8011.6	Develop Computational Methods for Real World Applications and explore deep learning based NLP



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DJ19CEEC8012 & DJ19CEEL8012 - Software Architecture & Software Architecture Laboratory

After completing the course, students will be able to:	
DJ19CEEC8012.1	Specify and evaluate software architectures.
DJ19CEEC8012.2	Select and use appropriate architectural styles.
DJ19CEEC8012.3	Select and use appropriate software design patterns.
DJ19CEEC8012.4	Understand and perform a design review with agile project architecture.

DJ19CEEC8013 & DJ19CEEL8013 - Software Testing and Quality Assurance & Software Testing and Quality Assurance Laboratory

On successful completion of course, learner will be able to:	
DJ19CEEC8013.1	Use various Software testing techniques to produce quality software.
DJ19CEEC8013.2	Identify Learn Life-cycle models for requirements.
DJ19CEEC8013.3	Design process models for units, integration, system, and acceptance testing
DJ19CEEC8013.4	Identify various Quality Models.

DJ19ILO8021 - Project Management

On completion of the course, learner will be able to:	
DJ19ILO8021.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJ19ILO8021.2	Apply selection criteria and select an appropriate project from different options.
DJ19ILO8021.3	Create a work break down structure for a project and develop a schedule based on it. Manage project risk strategically.
DJ19ILO8021.4	Use Earned value technique and determine & predict status of the project.
DJ19ILO8021.5	Capture lessons learned during project phases and document them for future reference.



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DJ19ILO8022 - Entrepreneurship Development and Management

On completion of the course, learner will be able to:	
DJ19ILO8022.1	Develop idea generation, creative and innovative skills
DJ19ILO8022.2	Prepare a Business Plan
DJ19ILO8022.3	Compare different entrepreneur supporting institutions
DJ19ILO8022.4	Correlate suitable MSME scheme for an entrepreneur
DJ19ILO8022.5	Interpret financial and legal aspect of a business.

DJ19ILO8023 - Corporate Social Responsibility

On completion of the course, learner will be able to:	
DJ19ILO8023.1	Understand the key characteristics of Corporate Social Responsibility (CSR) in the context of present-day management.
DJ19ILO8023.2	Apprise regarding business decision-making which is informed by ethical values and respect for people communities and the environment.
DJ19ILO8023.3	Become aware of creating a strategic plan that enables an organization to reach out to its internal and external stakeholders with consistent messages.
DJ19ILO8023.4	Understand critical issues of Corporate Social Responsibility (CSR) in a cross-cultural setting

DJ19ILO8024 - Human Resource Management

On completion of the course, learner will be able to:	
DJ19ILO8024.1	Understand the concepts, aspects, techniques and practices of the human resource management
DJ19ILO8024.2	Understand the Human resource management (HRM) processes, functions, changes and challenges in today's emerging organizational perspective.
DJ19ILO8024.3	Gain knowledge about the latest developments and trends in HRM.
DJ19ILO8024.4	Apply the knowledge of behavioral skills learnt and integrate it with in inter personal and intergroup environment emerging as future stable engineers and managers.

DJ19ILO8025 - Corporate Finance Management

On completion of the course, learner will be able to:	
DJ19ILO8025.1	Understand Indian finance system.
DJ19ILO8025.2	Apply concepts of time value money and risk returns to product, services and business.
DJ19ILO8025.3	Understand corporate finance; evaluate and compare performance of multiple firms.
DJ19ILO8024.4	Take Investment, finance as well as dividend decisions.



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DJ19ILO8026 - Logistic and Supply Chain Management

On completion of the course, learner will be able to:	
DJ19ILO8026.1	Demonstrate the functional strategy map of supply chain management.
DJ19ILO8026.2	Analyze the determinants of Supply Chain and Transportation networks design
DJ19ILO8026.3	Demonstrate the need of coordination and sourcing decisions in supply chain.
DJ19ILO8026.4	Understand pricing, revenue management and role of IT in supply chain.
DJ19ILO8026.5	Understand various sustainability aspects of a supply chain

DJ19ILO8027 - IPR and Patenting

On completion of the course, learner will be able to:	
DJ19ILO8027.1	Recognize the crucial role of IP for the purposes of product and technology development.
DJ19ILO8027.2	Understand how and when to file a patent
DJ19ILO8027.3	Apply the knowledge to understand the entire ecosystem
DJ19ILO8027.4	Derive value from IP and leverage its value in new product and service development

DJ19ILO8028 - Digital Marketing Management

On completion of the course, learner will be able to:	
DJ19ILO8028.1	Understand the digital marketing framework & model and consumer behaviour.
DJ19ILO8028.2	Develop digital marketing strategy roadmap.
DJ19ILO8028.3	Explain the terminology and concepts for developing web-specific media plans.
DJ19ILO8027.4	Understand concepts related to digital campaign management and revenue generation models.
DJ19ILO8028.5	Get a perspective on global digital marketing technology/tools and future trends

DJ19ILO8029 - Environmental Management

On completion of the course, learner will be able to:	
DJ19ILO8029.1	Identify Environmental issues and get familiarized to the concept of Ecosystem and environmental management.
DJ19ILO8029.2	Know policies and legal aspects and understand EM system standards.



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DJ19ILO8029.3	Understand Environment Impact assessment.
DJ19ILO8029.4	Understand Environment Auditing procedures.
DJ19ILO8029.5	Describe Environmental management Techniques

DJ19ILO8030 - Labour and Corporate Law

On completion of the course, learner will be able to:	
DJ19ILO8030.1	Illustrate the role of trade union in the industrial setup
DJ19ILO8030.2	Understand the important causes, impact of industrial disputes and settlement procedures.
DJ19ILO8030.3	To provide in-depth understanding of corporate social responsibility.
DJ19ILO8030.4	Apply concepts, principles and theories to understand simple business laws.
DJ19ILO8030.5	Analyse the principle of international business and strategies adopted by firms to expand globally

DJ19CEHN1C4 – Intelligent Security System

On completion of the course, learner will be able to:	
DJ19CEHN1C4.1	Gain the knowledge and skills at the intersection of computer security and artificial intelligence, machine learning, and data science domain.
DJ19CEHN1C4.2	Upgrade their skills and better understand intelligent techniques.
DJ19CEHN1C4.3	Apply their knowledge and skills in computer security domain.



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M. Tech. Semester I: Course Outcomes

DJS24PCCPC11 & DJS24PCLPC11 - Algorithm and Complexity & Algorithm and Complexity Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPC11.1	Analyze the correctness and running time of the algorithms that are implemented in several domains.
DJS24PCCPC11.2	Apply the algorithms and design techniques to formulate the optimized solution.
DJS24PCCPC11.3	Understand and apply various advanced data structures to solve computing problems.
DJS24PCCPC11.4	Introduce and practice advanced algorithms and programming techniques necessary for developing sophisticated computer application programs

DJS24PCCPC12 & DJS24PCLPC12 - Natural Language Processing & Natural Language Processing Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPC12.1	Design an innovative application using NLP components
DJS24PCCPC12.2	Implement probabilistic models for word level analysis of a language
DJS24PCCPC12.3	Perform Syntactic and Semantic level analysis of a language
DJS24PCCPC12.4	Use the embedding algorithms for NLP applications
DJS24PCCPC12.5	Compare and contrast the use of different statistical approaches for different types of NLP applications

DJS24PCCPE11 & DJS24PCLPE11 - Computer Network and Design & Computer Network and Design Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE11.1	Understand IPV6 Protocol and advantages over IPV4
DJS24PCCPE11.2	Understand IP multicasting protocols and various TCP techniques
DJS24PCCPE11.3	Analyze various congestion control and avoidance techniques.
DJS24PCCPE11.4	Understand Ethernet networking and design new networking model.



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DJS24PCCPE12 & DJS24PCLPE12 - Computer Vision & Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE12.1	Identify basic concepts, terminology, theories, models and methods in the field of computer vision.
DJS24PCCPE12.2	Describe basic methods of computer vision related to edge detection and detection of other primitives, stereo, motion and object recognition.
DJS24PCCPE12.3	Developed the practical skills necessary to build computer vision applications.
DJS24PCCPE12.4	To have gained exposure to feature based alignment.
DJS24PCCPE12.5	To understand the dense motion estimation.

DJS24PCCPE13 & DJS24PCLPE13 - Internet of Everything & Internet of Everything Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE13.1	Comprehend the Internet of Things concepts and investigate the challenges.
DJS24PCCPE13.2	Gain knowledge of sensors and Design WSN
DJS24PCCPE13.3	Develop IoT system prototype with enhanced IoT Technologies.
DJS24PCCPE13.4	Use IoT communication models and protocols.
DJS24PCCPE13.5	Implement best practices for IoT Security.
DJS24PCCPE13.6	Design and develop small IoT applications to create smart objects.

DJS24PCCPE14 & DJS24PCLPE14 - System Security and Digital Forensics & System Security and Digital Forensics Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE14.1	Understand cyber-attacks, apply access control policies, and control mechanisms.
DJS24PCCPE14.2	Identify malicious code and targeted malicious code.
DJS24PCCPE14.3	Detect and counter threats to web applications.
DJS24PCCPE14.4	Understand the vulnerabilities of Wi-Fi networks and explore different measures to secure wireless protocols, WLAN and VPN networks.
DJS24PCCPE14.5	Understand the ethical and legal issues associated with cybercrimes and be able to mitigate impact of crimes with suitable policies.
DJS24PCCPE14.6	Use different forensic tools to acquire and duplicate data from compromised systems and analyse the same.



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DJS24PCCPE15 & DJS24PCLPE15 - Web Technology & Web Technology Laboratory

On completion of the course, learner will be able to:

DJS24PCCPE15.1	Build simple websites making use of various Node.js features
DJS24PCCPE15.2	Build applications using React JS
DJS24PCCPE15.3	Design a dynamic web application enabled with database connectivity
DJS24PCCPE15.4	Deploy a full-fledged website

DJS24PCLVS11 - Mini Project-I

On completion of the course, the learner will be able to:

DJS24PCLVS11.1	Identify problem statement, design and develop project in predefined timeline.
DJS24PCLVS11.2	Provide problem solutions by learning/exploring various ideas from multi-disciplinary domains across different disciplines.
DJS24PCLVS11.3	Draw proper inferences through theoretical/ simulations/ experimental and analyze the impact of the proposed method towards design and development of the product.
DJS24PCLVS11.4	Develop and enhance skills associated with literature survey, hardware and software co-integrations, documentation, development and testing leading to innovative product or a paper publication in a reputed journal.

DJS24POCOE11 - Data Analytics

On completion of the course, learner will be able to:

DJS24POCOE11.1	Interpret data using descriptive statistics
DJS24POCOE11.2	Demonstrate sampling distributions and estimate statistical parameters
DJS24POCOE11.3	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS24POCOE11.4	Perform analysis of variance on data
DJS24POCOE11.5	Examine relations between data



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DJS24POCOE12 - Intellectual Property & Patenting

On completion of the course, learner will be able to:	
DJS24POCOE12.1	Recognize the crucial role of IP for the purposes of product and technology development.
DJS24POCOE12.2	Understand how and when to file a patent.
DJS24POCOE12.3	Apply the knowledge to understand the entire ecosystem.
DJS24POCOE12.4	Derive value from IP and leverage its value in new product and service development.

DJS24POCOE13 - Cyber Security and Laws

On completion of the course, learner will be able to:	
DJS24POCOE13.1	Understand the distinct types of cybercrime and security issues E Business.
DJS24POCOE13.2	Analyses distinct types of cyber threats and techniques for security management.
DJS24POCOE13.3	Explore the legal requirements and standards for cyber security in various countries to regulate cyberspace.
DJS24POCOE13.4	Impart the knowledge of Information Technology Act and legal framework of right to privacy, data security and data protection.

DJS24POCOE14 - Agile Frameworks

On completion of the course, learner will be able to:	
DJS24POCOE14.1	Understand and Demonstrate basic knowledge in Software Engineering
DJS24POCOE14.2	Summarize the concepts of agile practices and business objectives and phases of agile development framework.
DJS24POCOE14.3	Have an exposure on the scaling factors and models to be developed for agile projects.
DJS24POCOE14.4	Acquire knowledge on the agile performance measurement.
DJS24POCOE14.5	Develop the product based on agile factors with risk mitigation.
DJS24POCOE14.6	Describe the role of agile in enterprise management and incremental delivery.



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DJS24POCOE15 - Design of Experiments

On completion of the course, learner will be able to:	
DJS24POCOE15.1	Plan data collection, to turn data into information and to make decisions that lead to appropriate action.
DJS24POCOE15.2	Apply the methods taught to real life situations.
DJS24POCOE15.3	Plan, analyze, and interpret the results of experiments.

DJS24POCOE16 - Operations Research

On completion of the course, learner will be able to:	
DJS24POCOE16.1	Convert a real-world problem in to a Linear Programming Problem and Interpret the solution obtained using Simplex method or other algorithms.
DJS24POCOE16.2	Understand reasons of formation of queues, classify various queuing systems and Apply performance parameters defined for various queuing systems for decision making in real life situations.
DJS24POCOE16.3	Describe concept of simulation and Apply Monte Carlo Simulation technique to systems such as inventory, queuing and Develop solutions for them.
DJS24POCOE16.4	Explain the need for replacement of components or machines in most economical way and Infer optimal replacement age.
DJS24POCOE16.5	Identify the decision situations which vary with time and analyse them using principle of dynamic programming to real life situations.



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M. Tech. Semester II: Course Outcomes

DJS24PCCPC21 & DJS24PCLPC21 - Computational Intelligence & Computational Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPC21.1	Conceptually understand different intelligent algorithms.
DJS24PCCPC21.2	Understand nature inspired optimization techniques
DJS24PCCPC21.3	Design and implement various intelligent system.
DJS24PCCPC21.4	Choose appropriate CI methods to solve a problem

DJS24PCCPC22 & DJS24PCLPC22 - Computational Linguistics & Computational Linguistics Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPC22.1	Apply classification techniques on linguistic data.
DJS24PCCPC22.2	Apply machine Learning and deep learning techniques to build language model.
DJS24PCCPC22.3	Develop applications based on natural language processing.

DJS24PCCPE21 & DJS24PCLPE21 - Reinforcement Learning & Reinforcement Learning Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE21.1	Understand the basics of reinforcement learning paradigms
DJS24PCCPE21.2	Learn methods and algorithms for bandit problems
DJS24PCCPE21.3	Apply the concept of dynamic programming and temporal differences to RL algorithms.
DJS24PCCPE21.4	Understand and analyse advanced RL techniques like DQN, POMDPs etc.



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DJS24PCCPE22 & DJS24PCLPE22 - Data Storage Technology & Data Storage Technology Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE22.1	Acquire the basic knowledge of storage and Data center.
DJS24PCCPE22.2	Analyze various network and infrastructure used for data storage.
DJS24PCCPE22.3	Understand business continuity and various methods of data Back-ups.
DJS24PCCPE22.4	Introduce about storage management and virtualization and storage security.
DJS24PCCPE22.5	Differentiate cloud and network storage visualization.

DJS24PCCPE23 & DJS24PCLPE23 - Big Data Infrastructure & Big Data Infrastructure Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE23.1	Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop and Mapreduce in big data analytics.
DJS24PCCPE23.2	Develop Data management capabilities for large scale data processing by using various bigdata technologies and APIs
DJS24PCCPE23.3	To work and evaluate Data at scale-Working with Big Data
DJS24PCCPE23.4	Analysis of statistical data using various analytical tools.
DJS24PCCPE23.5	Visualise data using various tools

DJS24PCCPE24 & DJS24PCLPE24 - Computing Infrastructure & Computing Infrastructure Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE24.1	Understand the cloud computing fundamentals and its deployment models.
DJS24PCCPE24.2	Compare the various techniques and types of virtualization in distributed computing and how this has enabled the development of Cloud Computing.
DJS24PCCPE24.3	Describe how the distributed computing environments known as Grids can be built from lower level services.
DJS24PCCPE24.4	Explore frameworks and applications in fog computing.
DJS24PCCPE24.5	Explain the general principles of Ubiquitous Computing and the key technical and social factors driving the change towards post-desktop paradigms.
DJS24PCCPE24.6	Compare Openflow controllers and switches with other enterprise networks.



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DJS24PCCPE25 & DJS24PCLPE25 - Blockchain Technologies & Blockchain Technologies Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE25.1	Acquire the basic knowledge of Blockchain technology.
DJS24PCCPE25.2	Analyze various algorithms used in Blockchain.
DJS24PCCPE25.3	Introduce about cryptocurrency and various regulations.
DJS24PCCPE25.4	Aware about privacy and security issues in Blockchain.
DJS24PCCPE25.5	Design and understand various applications using Blockchain.

DJS24PCCPE26 & DJS24PCLPE26 - Secure Coding & Secure Coding Laboratory

On completion of the course, learner will be able to:	
DJS24PCCPE26.1	Write secure programs and identify various risk in the software.
DJS24PCCPE26.2	Design secure system by threats modeling.
DJS24PCCPE26.3	Determine appropriate secure access control mechanism and access privileges.
DJS24PCCPE26.4	Learn common mistake made while using cryptography and data protection.
DJS24PCCPE26.5	Design secure network program.

DJS24PCLVS21 - Mini Project-II

On completion of the course, the learner will be able to:	
DJS24PCLVS21.1	Incorporate project-based learning that allows students to identify and transfer existing ideas into new applications.
DJS24PCLVS21.2	Present their project work in a technical report improving their documentation skills.
DJS24PCLVS21.3	Integrate inter-disciplinary concepts, which help them to get internships, jobs, admissions for higher studies.
DJS24PCLVS21.4	The project will serve as a pre cursor to the student's M. Tech thesis dissertation topic.



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DJS24POCOE21 - Machine Learning

On completion of the course, learner will be able to:	
DJS24POCOE21.1	Analyze the applications, which can use Machine Learning Techniques.
DJS24POCOE21.2	Understand and Apply regression, classification and clustering methods to the database.
DJS24POCOE21.3	Interpret the difference between supervised and unsupervised learning methods.
DJS24POCOE21.4	Understand the working of Reinforcement learning.
DJS24POCOE21.5	Understand basic concepts of Genetic Algorithms

DJS24POCOE22 - Renewable Energy

On completion of the course, learner will be able to:	
DJS24POCOE22.1	Identify sustainable energy solutions for sustainable development
DJS24POCOE22.2	Analyze renewable energy resources availability and utilization
DJS24POCOE22.3	Demonstrate competency in renewable systems analysis independently

DJS24POCOE23 - Digital Marketing

On completion of the course, learner will be able to:	
DJS24POCOE23.1	Apply B2B and B2C contexts to plan content marketing.
DJS24POCOE23.2	Develop and measure impact of content that works well for your target audience.
DJS24POCOE23.3	Manage social media presence, and create effective content for each platform.
DJS24POCOE23.4	Optimize search engine presence through on-site and off-site activities, develop target keyword list, optimize website UX and design, and execute a link building campaign.
DJS24POCOE23.5	Create, execute, and optimize an effective Ad campaign. Display and set up advertising works.
DJS24POCOE23.6	Create an email marketing strategy, create and execute email campaigns, and measure the results.



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DJS24POCOE24 - Project Management

On completion of the course, learner will be able to:	
DJS24POCOE24.1	Assess a project by establishing a business case and accordingly prepare a project proposal.
DJS24POCOE24.2	Develop a project plan.
DJS24POCOE24.3	Identify task inter-dependencies, construct and analyze a network diagram
DJS24POCOE24.4	Monitor and control the performance of the project.
DJS24POCOE24.5	Demonstrate Team work and team spirit and resolve conflicts.

DJS24POCOE25 - Research Methodology

On completion of the course, learner will be able to:	
DJS24POCOE25.1	Prepare a preliminary research design for projects in their subject matter areas
DJS24POCOE25.2	Accurately collect, analyze and report data
DJS24POCOE25.3	Present complex data or situations clearly
DJS24POCOE25.4	Review and analyze research findings

DJS24POCOE26 - Product Life Cycle Management

On completion of the course, learner will be able to:	
DJS24POCOE26.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS24POCOE26.2	Illustrate various approaches and techniques for designing and developing products.
DJS24POCOE26.3	Understand the need for Product Life Cycle Assessment (LCA) and Life Cycle Cost Analysis.
DJS24POCOE26.4	Demonstrate the various PLM Applications, Modules, and virtual product development tools for components, machining and manufacturing plant.
DJS24POCOE26.5	Demonstrate the various PLM Applications, Modules, and virtual product development tools for components, machining and manufacturing plant.



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Semester III Course Outcomes

DJS23ECPC301 Mathematics for Telecommunication Engineering

On completion of the course, learner will be able to:	
DJS23ECPC301.1	Demonstrate an ability to use vector algebra and vector calculus and its assimilation into matrix theory.
DJS23ECPC301.2	Apply mathematical theories to follow Fourier series expansion of functions which satisfy Dirichlet conditions.
DJS23ECPC301.3	Apply the knowledge of analytic functions to obtain functions, conformal mapping, bilinear transformations.
DJS23ECPC301.4	Introducing Probability theory leading to concept of Random variable and its application to telecommunication engineering.

DJS23ECPC302 & DJS23ELPC302 Electronic Devices & Circuits & Electronic Devices & Circuits Laboratory

On completion of the course, learner will be able to:	
DJS23ECPC302.1	Understand the current voltage characteristics of semiconductor devices.
DJS23ECPC302.2	Analyze dc circuits and relate ac models of semiconductor devices with their physical Operation.
DJS23ECPC302.3	Design and analyze amplifier circuits.
DJS23ECPC302.4	Evaluate frequency response to understand behavior of Electronics circuits.

DJS23ECPC303 & DJS23ELPC303 Digital System Design & Digital System Design Laboratory

On completion of the course, learner will be able to:	
DJS23ECPC303.1	Understand working of logic families and implement functions using logic gates.
DJS23ECPC303.2	Minimize logic expressions using various reduction techniques.
DJS23ECPC303.3	Design combinational logic circuits using logic gates and implement the circuit by carrying out required investigations and debugging techniques.
DJS23ECPC303.4	Design flip-flops using logic gates and use them to realize different sequential circuits and implement the circuit by carrying out required investigations and debugging techniques.
DJS23ECPC303.5	Classify semiconductor memory and design combinational circuits using PLD.

DJS23ELMD304 Python Programming Laboratory

On completion of the course, learner will be able to:	
DJS23ELMD304.1	Describe the various data types, control statements, conditional statements and functions in Python.
DJS23ELMD304.2	Understand different File handling and exception handling operations using Python.
DJS23ELMD304.3	Apply Database techniques in python using MySQL with Python.
DJS23ELMD304.4	Design GUI, apply different database operations and array handling in Python.
DJS23ELMD304.5	Implement Visualization of dataset using Pandas Data frame and Matplotlib.



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DJS23OCOE301 Product Lifecycle Management

On completion of the course, learner will be able to:	
DJS23OCOE301.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS23OCOE301.2	Illustrate various approaches and techniques for designing and developing products.
DJS23OCOE301.3	Acquire knowledge in applying virtual product development tools.
DJS23OCOE301.4	Acquire knowledge in implementation of Environmental aspects in PLM.

DJS23OCOE302 Management Information System

On completion of the course, learner will be able to:	
DJS23OCOE302.1	Explain the fundamental concepts of the management information systems used in business.
DJS23OCOE302.2	Describe IT infrastructure and its components and its current trends.
DJS23OCOE302.3	Use the tools and technologies for accessing information from databases to improve business performance and decision making
DJS23OCOE302.4	Identify and explain the security and ethical challenges in MIS along with the measures to be taken
DJS23OCOE302.5	Select a suitable social computing platform for the given requirements that integrates AI and IoT.
DJS23OCOE302.6	Explain the processes involved in the information system within the organization includes information acquisition and enterprise and global management technologies.

DJS23OCOE303 Operations Research

On completion of the course, learner will be able to:	
DJS23OCOE303.1	Formulate the real-world optimisation problem into a Linear Programming Problem (LPP) and analyse the solution obtained using LPP optimisation models.
DJS23OCOE303.2	Solve Linear Programming Problems using transportation and assignment models.
DJS23OCOE303.3	Apply Decision Theory to determine the optimal course of action when a number of alternatives are available, and their consequences cannot be forecast with certainty and uncertainty.
DJS23OCOE303.4	Apply Game Theory for decision making under conflicting situations where there are one or more opponents (players).
DJS23OCOE303.5	To breaking down a large problem into smaller sub problems and solved recursively or iteratively using Dynamic Programming models.



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DJS23OCOE304 Personal Finance Management

On completion of the course, learner will be able to:	
DJS23OCOE304.1	Understand the Indian financial system.
DJS23OCOE304.2	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJS23OCOE304.3	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJS23OCOE304.4	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJS23OCOE304.5	Understand how Microfinance can help in financial inclusion.

DJS23OCOE305 Public Systems and Policies

On completion of the course, learner will be able to:	
DJS23OCOE305.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJS23OCOE305.2	Analyse the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJS23OCOE305.3	Explain public policy and its operations with special focus on policy relating to Government finance.
DJS23OCOE305.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJS23OCOE305.5	Analyze and evaluate the impact of public policy on firms and the economy at large and work under various fields as policymakers.

DJS23OCOE306 Fundamentals of Biomedical Instruments

On completion of the course, learner will be able to:	
DJS23OCOE306.1	Associate & describe the different physiological processes taking place within the human body.
DJS23OCOE306.2	Identify the use of biomaterials and apply principles of various transducers & sensors.
DJS23OCOE306.3	Demonstrate the working principle of various medical instruments.
DJS23OCOE306.4	Demonstrate principles used in imaging modalities and analysis.
DJS23OCOE306.5	Identify different processes used in telemetry and telemedicine.

DJS23OCOE307 IPR & Patenting

On completion of the course, learner will be able to:	
DJS23OCOE307.1	Map a given project/ idea to a suitable intellectual property rights.
DJS23OCOE307.2	Explain the fundamentals of the patents, copyrights, and design registrations.
DJS23OCOE307.3	Draft applications to protect various intellectual property rights.
DJS23OCOE307.4	Communicate with national and/or international intellectual property organisations.



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DJS23OCOE308 Entrepreneurship and Startup Ecosystem

On completion of the course, learner will be able to:	
DJS23OCOE308.1	Effectively Navigate the Global Startup Landscape:
DJS23OCOE308.2	Cultivate an Entrepreneurial Mindset.
DJS23OCOE308.3	Create Effective Business Models.
DJS23OCOE308.4	Understand the significance of Intellectual Property rights.
DJS23OCOE308.5	Master Fundraising Strategies

DJS23ELVS305 Innovative Product Development-I

On completion of the course, learner will be able to:	
DJS23ELVS305.1	Identify problem statement, design and develop product prototype in predefined timeline.
DJS23ELVS305.2	Provide problem solutions by learning/exploring various ideas from multi-disciplinary domains across different disciplines.
DJS23ELVS305.3	Carry out collaborative project work by interacting and dividing project work amongst the team members.
DJS23ELVS305.4	Draw proper inferences through theoretical/ simulations/ experimental and analyze the impact of the proposed method towards design and development of the product.
DJS23ELVS305.5	Develop and enhance skills associated with literature survey, market research, hardware and software co-integrations, documentation, product design, development and testing.

DJS23ITHS305 Professional and Business Communication Tutorial

On completion of the course, learner will be able to:	
DJS23ITHS305.1	Apply group discussion techniques in professional situations
DJS23ITHS305.2	Use employability skills to optimize career opportunities
DJS23ITHS305.3	Employ storytelling techniques for effective presentation
DJS23ITHS305.4	Prepare technical documents using appropriate style, format, and language
DJS23ITHS305.5	Analyze the concept of professional ethics
DJS23ITHS305.6	Demonstrate interpersonal skills in professional and personal situations

DJS23ICHSX07 Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences.



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DJS23ILELX11 Community Engagement Service

On completion of the course, learner will be able to:	
DJS23ILELX11.1	Knowledge application: Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23ILELX11.2	Commitment for cause: Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23ILELX11.3	Diversity: Witness diversity in communities and cultures and demonstrate change in approach / attitude as, an evidence of unconditional acceptance.
DJS23ILELX11.4	Team: Recognise, experience and value, effectiveness of working in a team, demonstrating co-existence of the roles - sincere worker and effective leader.

Semester III HONORS Course Outcomes

DJS23ECH1301 Mathematics for AIML

On completion of the course, learner will be able to:	
DJS23ECH1301.1	Recall the Basic Concepts of Linear Algebra Probability and Statistics
DJS23ECH1301.2	Understand linear algebra, probability, and statistical fundamentals.
DJS23ECH1301.3	Apply linear algebra, probability, and statistical concepts to solve problems.

DJS23ECH2301 & DJS23EH2201L Sensors & Actuators for IoT & Sensors & Actuators for IoT Laboratory

On completion of the course, learner will be able to:	
DJS23ECH2301.1	Describe applications in areas of IoT using sensors and actuators.
DJS23ECH2301.2	To understand the transduction principle of various sensors and actuators.
DJS23ECH2301.3	Apply knowledge of data acquisition and signal conditioning for interfacing of sensors.
DJS23ECH2301.4	Identify signal conditioning methods for applications.

DJS23ECH3301 Microelectronics

On completion of the course, learner will be able to:	
DJS23ECH3301.1	Understand the principles of semiconductor Physics
DJS23ECH3301.2	Analyze the mathematical models of semiconductor junctions
DJS23ECH3301.3	Apply the mathematical models of MOS transistors for circuits and systems
DJS23ECH3301.4	Analyze various processing steps in IC fabrication



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DJS23ECH4301 Sensors and Instrumentation

On completion of the course, learner will be able to:	
DJS23ECH4301.1	Familiar with various calibration techniques and signal types for sensors.
DJS23ECH4301.2	Apply the various sensors in the Automotive and Mechatronics applications
DJS23ECH4301.3	Describe the working principle and characteristics of force, magnetic and heading sensors.
DJS23ECH4301.4	Understand the basic principles of various pressure and temperature, smart sensors.
DJS23ECH4301.5	Ability to implement the DAQ systems with different sensors for real time applications.

Semester IV Course Outcomes

DJS23ECPC401 & DJS23ETPC401 Signals and Systems & Signals and Systems Tutorial

On completion of the course, learner will be able to:	
DJS23ECPC401.1	Perform mathematical operations on signals to construct complex signals using basic elementary signals.
DJS23ECPC401.2	Classify signals and systems on the basis of their properties and analyse the implications in the context of practical signals and systems
DJS23ECPC401.3	Represent signals in the time and frequency domain using multiple representations and analyse LTI systems using convolution in the frequency domain.
DJS23ECPC401.4	Compute different transforms for a set of well-defined signals from first principles and apply their appropriate properties for a broader class of signals.

DJS23ECPC402 & DJS23ELPC402 Integrated Circuits & Integrated Circuits Laboratory

On completion of the course, learner will be able to:	
DJS23ECPC402.1	Describe the physical operation of integrated circuits using Op-Amp's
DJS23ECPC402.2	Analyse linear and non-linear Op-Amp applications.
DJS23ECPC402.3	Design various applications using Op-Amps, Timers, and special IC's.
DJS23ECPC402.4	Implement different types of applications using various Analog IC's with proper justifications.

DJS23ECPC403 & DJS23ELPC403 Microcontroller & Applications & Microcontroller & Applications Laboratory

On completion of the course, learner will be able to:	
DJS23ECPC403.1	Identify the different components of Microcomputer.
DJS23ECPC403.2	Identify the functionality of different blocks of 8051 microcontroller.
DJS23ECPC403.3	Write assembly language programs for microcontroller-based systems using instruction set.
DJS23ECPC403.4	Interface different input/output devices with microcontroller for various applications.



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DJS23ECMD404 & DJS23ELMD404 Data Structures and Algorithms & Data Structures and Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS23ECMD404.1	Implement linear data structures using array and linked list.
DJS23ECMD404.2	Solve problems using non-linear data structures.
DJS23ECMD404.3	Analyze the performance of sorting and searching algorithms.

DJS23OCOE401 Project Management

On completion of the course, learner will be able to:	
DJS23OCOE401.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJS23OCOE401.2	Apply selection criteria and select an appropriate project from different options.
DJS23OCOE401.3	Create a work break down structure for a project and develop a schedule based on it. Manage project risk strategically.
DJS23OCOE401.4	Use Earned value technique and determine & predict status of the project. Capture lessons learned during project phases and document them for future reference.
DJS23OCOE401.5	Differentiate between traditional waterfall approach and agile scrum methodology for software development projects.

DJS23OCOE402 Cyber Security, Policies and Laws

On completion of the course, learner will be able to:	
DJS23OCOE402.1	Understand and describe the major types of cybercrime and navigate legal frameworks and regulations concerning digital personal and data protection.
DJS23OCOE402.2	Implement strategies for cybersecurity outlined in the National Cyber Security Policy.
DJS23OCOE402.3	Apply appropriate law enforcement strategies to both, prevent and control cybercrime.
DJS23OCOE402.4	Comprehend regulations and strategies pertaining to AI (Artificial Intelligence) and large language models.

DJS23OCOE403 Advanced Operations Research

On completion of the course, learner will be able to:	
DJS23OCOE303.1	Formulate the real-world optimisation problem into a Linear Programming Problem (LPP) and analyse the solution obtained using LPP optimisation models.
DJS23OCOE303.2	Solve Linear Programming Problems using transportation and assignment models.
DJS23OCOE303.3	Apply Decision Theory to determine the optimal course of action when a number of alternatives are available, and their consequences cannot be forecast with certainty and uncertainty.
DJS23OCOE303.4	Apply Game Theory for decision making under conflicting situations where there are one or more opponents (players).
DJS23OCOE303.5	To breaking down a large problem into smaller sub problems and solved recursively or iteratively using Dynamic Programming models.



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DJS23OCOE404 Corporate Finance Management

On completion of the course, learner will be able to:	
DJS23OCOE404.1	Understand Indian finance system.
DJS23OCOE404.2	Apply concepts of time value money and risk returns to product, services and business.
DJS23OCOE404.3	Understand corporate finance and working capital management.
DJS23OCOE404.4	Take Investment and finance decisions.
DJS23OCOE404.5	Take dividend decisions.

DJS23OCOE405 Corporate Social Responsibility

On completion of the course, learner will be able to:	
DJS23OCOE405.1	Upon completion of this course, students will be able to analyse and critique the ethical dimensions of Corporate Social Responsibility initiatives, demonstrating a comprehensive understanding of CSR principles and their ethical underpinnings.
DJS23OCOE405.2	Upon completion of this course, students will demonstrate an understanding of the legislative frameworks shaping Corporate Social Responsibility both in India and globally, alongside recognizing the key drivers fostering CSR practices within the Indian context.
DJS23OCOE405.3	Upon completion of this course, students will be able to identify and discuss the significance of social responsibility and community engagement initiatives, demonstrating an understanding of their impact on both businesses and society.

DJS23OCOE406 Bioinformatics

On completion of the course, learner will be able to:	
DJS23OCOE406.1	Understand the structure and function of cells, organelles, and biomolecules.
DJS23OCOE406.2	Understand the types of data stored in bioinformatics databases and their relevance to biological research.
DJS23OCOE406.3	Explore genomic databases and understand the structure and content of protein databases.
DJS23OCOE406.4	Understand system biology concepts and molecular evolution.
DJS23OCOE406.5	Apply knowledge of cellular and molecular biology concepts to analyze a biological problem.

DJS23OCOE407 Human Resource Management

On completion of the course, learner will be able to:	
DJS23OCOE407.1	Understand the changing environment of the HRM and the role of the HR managers.
DJS23OCOE407.2	Understand the recruitment process and the application of the IT.
DJS23OCOE407.3	Understand the importance of the training and development.
DJS23OCOE407.4	Understand about the pay plans, performance appraisal and compensation.
DJS23OCOE407.5	Understand the importance of the labour relation, the employee security and collective bargaining.



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DJS23OCOE408 Digital Marketing Management

On completion of the course, learner will be able to:	
DJS23OCOE408.1	Understand the digital marketing framework & model and consumer behaviour.
DJS23OCOE408.2	Develop digital marketing strategy roadmap.
DJS23OCOE408.3	Explain the terminology and concepts for developing web-specific media plans.
DJS23OCOE408.4	Understand concepts related to digital campaign management and revenue generation models.
DJS23OCOE408.5	Get a perspective on global digital marketing technology/tools and future trends.

DJS23OCOE409 Logistics & Supply Chain Management

On completion of the course, learner will be able to:	
DJS23OCOE409.1	Develop a sound understanding of the important role of supply chain management in today's business environment.
DJS23OCOE409.2	Develop criteria and standards to achieve improved business performance by integrating and optimizing the total logistics and supply-chain process.
DJS23OCOE409.3	Summarize the value of focusing on information business logistics systems which drives improved accuracy and decision-making at all levels of management.
DJS23OCOE409.4	Become familiar with current supply chain information technology management trends.
DJS23OCOE409.5	Use available technologies to enhance work performance and support supply chain functions, processes, transactions, and communications.

DJS23IPSCX02 Innovative Product Development-II

On completion of the course, learner will be able to:	
DJS23IPSCX02.1	Incorporate project-based learning that allows students to identify and transfer existing ideas into new applications/ products.
DJS23IPSCX02.2	Present their project work in a technical and optional business report, improving their documentation skills.
DJS23IPSCX02.3	Demonstrate the ability to work in a team and manage the execution of project/ conduct of research.
DJS23IPSCX02.4	Integrate inter-disciplinary concepts, which help them to get internships, jobs, admission for higher studies or begin a startup.

DJS23ILHSX06 Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJS23ILHSX06.1	Understand the importance of Human-Centric design approach for developing a solution.
DJS23ILHSX06.2	Generate innovative ideas to design sustainable solutions for real world problems.
DJS23ILHSX06.3	Apply design thinking principles to solve the real-world problems
DJS23ILHSX06.4	Collaborate creatively and effectively in interdisciplinary teams to apply design thinking principles to real world problems.



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DJS23ICHSX08 & DJS23ITHSX08 Universal Human Values & Universal Human Values Tutorial

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.

Semester IV HONORS Course Outcomes

DJS23ECH1401 Artificial Intelligence

On completion of the course, learner will be able to:	
DJS23ECH1401.1	Understand basic building blocks of AI present in intelligent agents.
DJS23ECH1401.2	Design appropriate problem-solving method for an agent to find a sequence of actions to reach goal state.
DJS23ECH1401.3	Analyze various AI approaches to knowledge– intensive problem solving, reasoning, and planning.
DJS23ECH1401.4	Understand applications of AI in different fields.

DJS23ECH2401 & DJS23ELH2401 IoT System Design & IoT System Design Laboratory

On completion of the course, learner will be able to:	
DJS23ECH2401.1	Understand the enabling technologies.
DJS23ECH2401.2	Select sensors suitable for required application.
DJS23ECH2401.3	Analyze protocols for IoT
DJS23ECH2401.4	Visualize the power of data from the IoT
DJS23ECH2401.5	Build the application with IoT

DJS23ECH3401 & DJS23ELH3401 Digital System Design using HDL & Digital System Design using HDL Laboratory

On completion of the course, learner will be able to:	
DJS23ECH3401.1	Model Combinational circuits using Verilog descriptions.
DJS23ECH3401.2	Model sequential circuits using Verilog descriptions.
DJS23ECH3401.3	Perform functional verification of digital designs using Test Benches.
DJS23ECH3401.4	Implement digital circuit using FPGA/CPLD board.



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DJS23ECH4401 Basics of Control Systems

On completion of the course, learner will be able to:	
DJS23ECH4401.1	Understand the basic concepts of control system.
DJS23ECH4401.2	Derive the mathematical model of different type of the systems.
DJS23ECH4401.3	Analysis of systems in time and frequency domain.
DJS23ECH4401.4	Understand & Find stability of given system using appropriate criteria.
DJS23ECH4401.5	Apply the control theory to design the conventional controllers widely used in industries.

Semester V Course Outcomes

DJS22EC501 & DJS22EL501 Analog Communication & Analog Communication Laboratory

On completion of the course, learner will be able to:	
DJS22EC501.1	To compare internal and external noise and its effect on communication system.
DJS22EC501.2	To examine analog modulation and demodulation techniques along with various analog receivers.
DJS22EC501.3	To make use of sampling theorem to analog and digital pulse modulation and demodulation techniques.
DJS22EC501.4	To compare Frequency division and time division multiplexing and de-multiplexing techniques for communication system.

DJS22EC502 & DJS22EL502 Radio Frequency Circuit Design & Radio Frequency Circuit Design Laboratory

On completion of the course, learner will be able to:	
DJS22EC502.1	Analyze the single and Multi-port network using parameters.
DJS22EC502.2	Apply their knowledge in analyzing inductor, capacitor and resistor at high frequency.
DJS22EC502.3	Calculate parameters of transmission line analytically and using Smith Chart.
DJS22EC502.4	Design matching network using Impedance matching techniques.
DJS22EC502.5	Design the filters for given specifications using insertion loss and image parameter method.

DJS22EC503 & DJS22EL503 Microcontroller & Applications-II & Microcontroller & Applications-II Laboratory

On completion of the course, learner will be able to:	
DJS22EC503.1	To compare internal and external noise and its effect on communication system.
DJS22EC503.2	To examine analog modulation and demodulation techniques along with various analog receivers.
DJS22EC503.3	To make use of sampling theorem to analog and digital pulse modulation and demodulation techniques.
DJS22EC503.4	To compare Frequency division and time division multiplexing and de-multiplexing techniques for communication system.



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DJS22EC504 & DJS22EL504 Digital Signal Processing & Digital Signal Processing Laboratory

On completion of the course, learner will be able to:	
DJS22EC504.1	Implement DFT and FFT algorithms in finding the response of the system.
DJS22EC504.2	Design different types of IIR filters.
DJS22EC504.3	Design different types of FIR filters.
DJS22EC504.4	Determine effects of Poles and Zeros in the frequency response of digital filters.

DJS22EC505 & DJS22EL505 Data Structures & Algorithms & Data Structures & Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS22EC505.1	Design and implement various data structures such as arrays, linked lists, stacks, queues and trees.
DJS22EC505.2	Understand the operations of data structures.
DJS22EC505.3	Determine and analyze the complexity of given Algorithms.

DJS22ILL1 Innovative Product Development-III

On completion of the course, learner will be able to:	
DJS22ILL1.1	Define problem statement, formulation and solution by reviewing relevant literature
DJS22ILL1.2	Identify alternate approaches to complete a project
DJS22ILL1.3	Apply project management skills by interacting and dividing project work among team members
DJS22ILL1.4	Develop technical, communication, and presentation skills

Semester V HONORS Course Outcomes

DJS22ECHN1C1 Mathematics and Statistics for Artificial Intelligence & Machine Learning

On completion of the course, learner will be able to:	
DJS22ECHN1C1.1	Apply linear algebra concepts to model, solve, and analyze real-world problems
DJS22ECHN1C1.2	Apply probability distributions and sampling distributions
DJS22ECHN1C1.3	Analyze various optimization techniques.
DJS22ECHN1C1.4	Describe Dimension Reduction Algorithms

DJS22CHHN2C1 Sensor and Actuator Technology for IoT

On completion of the course, learner will be able to:	
DJS22CHHN2C1.1	To understand the transduction principle of various sensors.
DJS22CHHN2C1.2	To select sensors suitable for required application.
DJS22CHHN2C1.3	To analyze wireless sensing technique.
DJS22CHHN2C1.4	To design data acquisition system.
DJS22CHHN2C1.5	Identify signal conditioning method for particular application.



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Semester V MINOR Course Outcomes (Common for All Programs except EXTC Engineering)

DJS22MN8C1 Sensor Technology

On completion of the course, learner will be able to:	
DJS22MN8C1.1	To understand the transduction principle of various sensors
DJS22MN8C1.2	To select sensors suitable for required application
DJS22MN8C1.3	To analyze wireless sensing technique
DJS22MN8C1.4	To design data acquisition system.
DJS22MN8C1.5	Identify signal conditioning method for particular application

Semester VI Course Outcomes

DJS22EC601 & DJS22EL601 Digital Communication & Digital Communication Laboratory

On completion of the course, learner will be able to:	
DJS22EC601.1	Apply the basics of information theory and coding techniques to determine the minimum number of bits per symbol required to represent the source and the maximum rate at which a reliable communication can take place over the channel.
DJS22EC601 .2	Describe and determine the performance of different waveform techniques for the generation of digital representation of signals.
DJS22EC601 .3	Determine methods to mitigate inter symbol interference in baseband transmission system.
DJS22EC601 .4	Describe and determine the performance of different error control coding schemes for the reliable transmission of digital representation of signals and information over the channel of Communication systems.

DJS22EC602 & DJS22EL602 Radiating Systems & Radiating Systems Laboratory

On completion of the course, learner will be able to:	
DJS22EC602.1	Explain and measure basic antenna parameters like radiation pattern, input impedance, gain and polarization.
DJS22EC602.2	Derive the field equations for the basic radiating elements like linear wire antenna and loop antenna.
DJS22EC602.3	Design of uniform linear and planar antenna arrays using isotropic and directional Sources.
DJS22EC602.4	Design regular shape microstrip antennas and aperture antennas.



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DJS22EC603 & DJS22EL603 Computer Networks & Computer Networks Laboratory

On completion of the course, learner will be able to:	
DJS22EC603.1	Compare OSI layered architecture with TCP/IP protocol suite and differentiate functions of each layer.
DJS22EC603.2	Define characteristics of physical media and differentiate among multiplexing techniques.
DJS22EC603.3	Understand responsibilities of the data link layer and explain the datalink layer protocols.
DJS22EC603.4	Design network and subnetwork and list the commands required to carry out investigations and troubleshooting.
DJS22EC603.5	Distinguish transport layer protocols based on application.

DJS22ECC604 & DJS22ECL604 Fundamentals of Digital Image Processing & Fundamentals of Digital Image Processing Laboratory

On completion of the course, learner will be able to:	
DJS22EC604.1	Interpret the fundamental concepts of a digital image processing system.
DJS22EC604.2	Analyze images in the frequency domain using various transforms.
DJS22EC604.3	Evaluate, compare and contrast the techniques for image enhancement and image restoration.
DJS22EC604.4	Interpret and apply image segmentation and representation techniques for object recognition.

DJS22EC6011 & DJS22EL6011 Basic VLSI & Basic VLSI Laboratory

On completion of the course, learner will be able to:	
DJS22EC6011.1	Interpret the fundamental concepts of a digital image processing system.
DJS22EC6011.2	Analyze images in the frequency domain using various transforms.
DJS22EC6011.3	Evaluate, compare and contrast the techniques for image enhancement and image restoration.
DJS22EC6011.4	Interpret and apply image segmentation and representation techniques for object recognition.

DJS22EC6012 & DJS22EL6012 Control Systems & Control Systems Laboratory

On completion of the course, learner will be able to:	
DJS22EC6012.1	Understand the basic concepts of control system.
DJS22EC6012.2	Derive the mathematical model of different type of the systems.
DJS22EC6012.3	Analysis of systems in time and frequency domain.
DJS22EC6012.4	Understand & Find stability of given system using appropriate criteria.
DJS22EC6012.5	Apply the control theory to design the conventional controllers widely used in the industries.



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DJS22EC6013 & DJS22EL6013 Neural Networks and Fuzzy Logic & Neural Networks and Fuzzy Logic Laboratory

On completion of the course, learner will be able to:	
DJS22EC6013.1	Explain training of Neural Networks using various training rules with consideration of different parameters like overfitting, under fitting,
DJS22EC6013.2	Calculate and update the weights of the neural networks to Specify the working and applications of different types of neural networks.
DJS22EC6013.3	Design fuzzy sets for various applications and solve fuzzy set theory problems.
DJS22EC6013.4	Design various engineering application using Neural Networks/ Fuzzy Logic.

DJS22EC6014 & DJS22EL6014 Operating Systems & Operating Systems Laboratory

On completion of the course, learner will be able to:	
DJS22EC6014.1	Understand the fundamental concepts of OS.
DJS22EC6014.2	Analyze the management policies adopted by processes, memory, File handling and I/O operations.
DJS22EC6014.3	Apply the algorithms used for memory management, CPU scheduling and disk scheduling.
DJS22EC6014.4	Apply concepts related to deadlock to solve the problems.
DJS22EC6014.5	Analyze the functionalities of OS like Unix, Linux and Real Time Operating System.

DJS22EC6015 & DJS22EL6015 Big Data Analytics & Big Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22EC6015.1	Understand the key issues in big data management and its associated applications for business decisions and strategy.
DJS22EC6015.2	Understand and Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop and NoSQL in big data analytics.
DJS22EC6015.3	Evaluate Big Data processing by using Map Reduce.
DJS22EC6015.4	Interpret business models and scientific computing paradigms and apply software tools for big data analytics.
DJS22EC6015.5	Exploring the capabilities of big data using Apache Spark.

DJS22EC6016 & DJS22EL6016 Radar Engineering & Radar Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22EC6016.1	Understand generalized concept of RADAR & its applications.
DJS22EC6016.2	Solve problems using radar equations.
DJS22EC6016.3	Describe different types of radar for specific application.
DJS22EC6016.4	Explain concept of tracking radar.
DJS22EC6016.5	Evaluate the design constraints for transmitter and receiver.



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DJS22EC6017 & DJS22EL6017 Linear Algebra & Linear Algebra Laboratory

On completion of the course, learner will be able to:	
DJS22EC6017.1	Explain the abstract concepts of matrices and system of linear equations using decomposition Methods.
DJS22EC6017.2	Demonstrate the basic notion of vector spaces and subspaces.
DJS22EC6017.3	Apply the concept of vector spaces using linear transforms and inner product spaces applications in cryptography.

DJS22IHL Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics

DJS22ILL2 Innovative Product Development-IV

On completion of the course, learner will be able to:	
DJS22ILL2.1	Apply engineering knowledge to produce solution of a problem considering cultural, social, environmental, and economic factors using appropriate tools and methods.
DJS22ILL2.2	Demonstrate the idea of project based learning by Integrating and synthesizing different perspectives of a project from relevant disciplines.
DJS22ILL2.3	Develop an ability to work in teams and manage the conduct of the research study.

Semester VI HONORS Course Outcomes

DJS22ECHN1C2 & DJS22ECHN1L1 Concepts and Algorithms of Artificial Intelligence & Machine Learning & Concepts and Algorithms of Artificial Intelligence & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22ECHN1C2.1	Understand basic building blocks of AI present in intelligent agents.
DJS22ECHN1C2.2	Apply an appropriate problem-solving method and knowledge representation technique.
DJS22ECHN1C2.3	Understand fundamental knowledge of developing machine learning models.
DJS22ECHN1C2.4	Design and evaluate an appropriate machine learning model.



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DJS22ECHN2C2 & DJS22ECHN2L1 IoT System Design & Real Time System Design Laboratory

On completion of the course, learner will be able to:	
DJS22ECHN2C2.1	To understand the enabling technologies.
DJS22ECHN2C2.2	To select sensors suitable for required application.
DJS22ECHN2C2.3	To analyze protocols for IoT.
DJS22ECHN2C2.4	To Visualize the power of data from the IoT
DJS22ECHN2C2.5	To build the application with IoT

Semester VI MINOR Course Outcomes (Common for All Programs except EXTC Engineering)

DJS22MN8C2 IoT System Design

On completion of the course, learner will be able to:	
DJS22MN8C2.1	To understand the enabling technologies.
DJS22MN8C2.2	To select sensors suitable for required application.
DJS22MN8C2.3	To analyze protocols for IoT.
DJS22MN8C2.4	To Visualize the power of data from the IoT
DJS22MN8C2.5	To build the application with IoT

Semester VII Course Outcomes

DJ19ECC701 & DJ19ECL701 Mobile Communication System & Mobile Communication System Laboratory

On completion of the course, learner will be able to:	
DJ19ECC 701.1	Classify different types of propagation models. Also analyze various propagation models using Simulink.
DJ19ECC701.2	Explain the cellular fundamentals and estimate the coverage and capacity of cellular systems. Also manipulate, simulate a user interface and debugging through MATLAB/Scilab/Python for the cellular concept system design fundamentals
DJ19ECC701.3	Illustrate the fundamentals and system architecture of GSM, 2.5G, IS-95 and UMTS.
DJ19ECC701.4	Elaborate on the concepts and principles of 4G network deployment and optimization.
DJ19ECC701.5	Identify the emerging technologies for upcoming mobile communication systems



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DJ19ECC702 & DJ19ECL702 Microwave Engineering & Microwave Engineering Laboratory

On completion of the course, learner will be able to:	
DJ19ECC702.1	Analyze the signal propagation through guiding media and Microwave Components.
DJ19ECC702.2	Perform mathematical analysis of microwave tubes (Amplifiers and Oscillators) based on its operation/working principle.
DJ19ECC702.3	Analyze the Microwave Semiconductor devices
DJ19ECC702.4	Understand the Microwave communication systems.
DJ19ECC702.5	Demonstrate Microwave bench set-up for measurements and carry out simulations.

DJ19ECSBL5 Industrial Automation- Laboratory

On completion of the course, learner will be able to:	
DJ19ECSBL5.1	Identify basic components of an Industrial automation system.
DJ19ECSBL5.2	Interface the given input/output devices with appropriate PLC module.
DJ19ECSBL5.3	Prepare PLC ladder program for the given application
DJ19ECSBL5.4	Prepare SCADA programming for various Industrial applications.
DJ19ECSBL5.5	Explain distributed control system used in industry for automation.

DJ19ECEC7011 & DJ19ECEL7011 Radar Engineering & Radar Engineering Laboratory

On completion of the course, learner will be able to:	
DJ19ECEL7011.1	Understand generalized concept of Radar & its applications.
DJ19ECEL7011.2	Analyze Radar range equation in real time atmospheric condition.
DJ19ECEL7011.3	Identify pulse radar, continuous wave radar and tracking radar for specific application.
DJ19ECEL7011.4	Evaluate the design constraints for transmitter and receiver like atmospheric condition and unwanted objects clutters.
DJ19ECEL7011.5	Understand the basics of mixer, limiter, displays and servomechanism used in transmitter/receiver of RADAR.



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DJ19ECEC7012 & DJ19ECCEL7012 Big Data Analytics & Big Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJ19ECEC7012. 1	Understand the key issues in big data management and its associated applications for business decisions and strategy
DJ19ECEC7012. 2	Understand and Develop problem solving and critical thinking skills in fundamental enabling techniques like Hadoop and NoSQL in big data analytics
DJ19ECEC7012. 3	Evaluate Big Data processing by using MapReduce
DJ19ECEC7012. 4	Interpret business models and scientific computing paradigms and apply software tools for big data analytics
DJ19ECEC7012. 5	Exploring the capabilities of big data using Apache Spark

DJ19ECSBL4 IoT and Sensor Network Laboratory

On completion of the course, learner will be able to:	
ECSBL4.1	Identify different components of an IoT and Sensor network system.
ECSBL4.2	Designing and affordability of IoT devices.
ECSBL4.3	To explore the Industrial IoT, Industry 4.0, Connected Car applications.
ECSBL4.4	Use Internet of Things for real time applications

DJ19ECP701: Project Stage –I

On completion of the course, learner will be able to:	
ECP701.1	Apply the technical knowledge gained from previous courses, Identify problems and design solutions to solve real-life problems
ECP701.2	Apply project management skills (scheduling work, procuring parts, documenting technical and non-technical details and working within the confined deadline).
ECP701.3	Create technical reports, research paper and present the same to the evaluation authorities



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Semester VIII Course Outcomes

DJ19ECC801 & DJ19ECL801 Wireless Network & Wireless Network Laboratory

On completion of the course, learner will be able to:	
DJ19ECC801.1	Explain the fundamentals, architecture, design issues and standards and spectrum of various wireless network and compare them.
DJ19ECC801.2	Compute different parameters of wireless networks.
DJ19ECC801.3	Evaluate various wireless systems and deduce some conclusion
DJ19ECC801.4	Simulate various wireless systems using different simulation softwares.
DJ19ECC801.5	Gain ability to work in teams to solve complex problems and communicate effectively with technical reports/ writeups.

DJ19ECC802 & DJ19ECL802 Optical Communication & Optical Communication Laboratory

On completion of the course, learner will be able to:	
DJ19ECC802.1	Describe the propagation of light in optical fibers for the ray theory and electromagnetic mode theory.
DJ19ECC802.2	Analyze transmission characteristics (attenuation /dispersion/Nonlinearity) of an optical fiber using different techniques.
DJ19ECC802.3	Compare and contrast working principle of optical sources, detectors and components
DJ19ECC802.4	Design optimal optical links by using Link budget and rise time budget and understand basic concepts of optical networks.

DJ19ECEC8012 & DJ19ECEL8012 Internet Engineering & Network Security & Internet Engineering & Network Security Laboratory

On completion of the course, learner will be able to:	
DJ19ECEC8012.1	Use various application layer protocols.
DJ19ECEC8012.2	Understand services of network layer provided by advanced protocols and design networks as per requirements.
DJ19ECEC8012.3	Summarise voice over IP in the context of real-time interactive audio/video service
DJ19ECEC8012.4	Summarise various techniques to implement security mechanisms for network security and security implications on organizations.



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DJ19ECEC8016 & DJ19ECCL8016 Machine Learning for Signal Processing & Machine Learning for Signal Processing Laboratory

On completion of the course, learner will be able to:	
DJ19ECEC8016.1	Apply fundamentals of machine learning (ML) techniques useful for various signal processing applications.
DJ19ECEC8016.2	Understand various mathematical methods involved in ML for Signal Processing.
DJ19ECEC8016.3	Design models for Speech Recognition and Audio Classification.
DJ19ECEC8016.4	Design efficient models for Image Processing.

DJ19ECP801 Project Stage – II

On completion of the course, learner will be able to:	
DJ19ECP801.1	Apply the technical knowledge gained from previous courses, Identify problems and design solutions to solve real-life problems
DJ19ECP801.2	Demonstrate technical skills required in an electronics industry for designing, building, testing electronic circuitry using modern software and hardware tools.
DJ19ECP801.3	Apply project management skills (scheduling work, procuring parts, documenting technical and non-technical details and working within the confined deadline).
DJ19ECP801.4	Develop and demonstrate troubleshooting ability in electronic circuits and systems (including software and hardware part of the systems).
DJ19ECP801.5	Create technical reports, research paper and present the same to the evaluation authorities.

M. Tech: Semester I Course Outcomes

DJS24PECPC11 & DJS24PELPC11 Statistical Signal Processing & Statistical Signal Processing Laboratory

On completion of the course, learner will be able to:	
DJS24PECPC11.1	Understand basics of linear algebra in communication engineering.
DJS24PECPC11.2	Study and apply the concepts of random processes in telecommunication engineering.
DJS24PECPC11.3	Develop and evaluate different signal detection and estimation techniques in diverse telecommunication systems.



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DJS24PECPC11.4	Compare optimal filtering, linear estimation, and Wiener/Kalman filtering.
DJS24PECPC11.5	Construct Wiener and Kalman filters (time discrete) and state space models.

DJS24PECPC12 & DJS24PELPC12 Microstrip Antenna Design & Microstrip Antenna Design Laboratory

On completion of the course, learner will be able to:	
DJS24PECPC12.1	Design and investigate Microstrip Antennas.
DJS24PECPC12.2	Associate the elementary design of Microstrip Antennas to advanced communication applications.
DJS24PECPC12.3	To understand the concept of next generation antennas.

DJS24PECPE11 & DJS24PELPE11 Advanced VLSI Design & Advanced VLSI Design Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE11.1	Design CMOS circuits using different logic styles.
DJS24PECPE11.2	Analyse and design Low power VLSI circuits.
DJS24PECPE11.3	Design circuits using Hardware descriptive language.
DJS24PECPE11.4	Design logic circuits using programmable logic devices.

DJS24PECPE12 & DJS24PELPE12 Error Correcting Codes & Error Correcting Codes Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE12.1	Design channel codes for the physical layer and storage applications.
DJS24PECPE12.2	Design and analyse channel codes for wired/wireless communication systems.

DJS24PECPE13 & DJS24PELPE13 Next Generation Networks & Next Generation Networks Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE13.1	Describe technical features and design considerations of the next-generation networks.
DJS24PECPE13.2	Apply the concept of convergence of network services.
DJS24PECPE13.3	Understand the transition of IP networks to NGN.
DJS24PECPE13.4	Demonstrate technologies for next-generation network.



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DJS24PECPE14 & DJS24PELPE14 Advanced Image & Video Processing & Advanced Image & Video Processing Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE14.1	Illustrate fundamental concepts related to multidimensional signal processing, feature extraction, pattern analysis.
DJS24PECPE14.2	Recognize geometrical mapping between 2D and 3D world.

DJS24PECPE15 & DJS24PELPE15 Embedded Systems & Embedded Systems Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE15.1	Describe the design procedures involved in product development process
DJS24PECPE15.2	Understand various advanced architectures and programming models
DJS24PECPE15.3	Design Software and Hardware partition for a given application
DJS24PECPE15.4	Understand and design communication protocols in Embedded Systems

DJS24PECPE16 & DJS24PELPE16 Optical Networks & Optical Networks Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE16.1	Interpret functions of various optical network components.
DJS24PECPE16.2	Compare different multiplexing techniques and optical network architectures.
DJS24PECPE16.3	Understand components and designing aspects of WDM networks.
DJS24PECPE16.4	Explain photonic packet switching concepts and access networks.
DJS24PECPE16.5	Analyze different network management functions.

DJS24PELVS11 Mini Project I

On completion of the course, learner will be able to:	
DJS24PELVS11.1	Identify problem statement, design and develop project in predefined timeline.
DJS24PELVS11.2	Provide problem solutions by learning/exploring various ideas from multi-disciplinary domains across different disciplines.
DJS24PELVS11.3	Draw proper inferences through theoretical/ simulations/ experimental and analyze the impact of the proposed method towards design and development of the product.
DJS24PELVS11.4	Develop and enhance skills associated with literature survey, hardware and software co-integrations, documentation, development and testing leading to innovative product or a paper publication in a reputed journal.

DJS24POCOE11 Data Analytics

On completion of the course, learner will be able to:	
DJS24POCOE11.1	Interpret data using descriptive statistics.
DJS24POCOE11.2	Demonstrate sampling distributions and estimate statistical parameters.
DJS24POCOE11.3	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS24POCOE11.4	Perform analysis of variance on data.
DJS24POCOE11.5	Examine relations between data.



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DJS24POCOE12 Intellectual Property & Patenting

On completion of the course, learner will be able to:	
DJS24POCOE12.1	Recognize the crucial role of IP for the purposes of product and technology development.
DJS24POCOE12.2	Understand how and when to file a patent.
DJS24POCOE12.3	Apply the knowledge to understand the entire ecosystem.
DJS24POCOE12.4	Derive value from IP and leverage its value in new product and service development.

DJS24POCOE13 Cyber Security and Laws

On completion of the course, learner will be able to:	
DJS24POCOE13.1	Understand the distinct types of cybercrime and security issues E Business.
DJS24POCOE13.2	Analyses distinct types of cyber threats and techniques for security management.
DJS24POCOE13.3	Explore the legal requirements and standards for cyber security in various countries to regulate cyberspace.
DJS24POCOE13.4	Impart the knowledge of Information Technology Act and legal framework of right to privacy, data security and data protection.

DJS24POCOE14 Agile Frameworks

On completion of the course, learner will be able to:	
DJS24POCOE14.1	Summarize the concepts of agile practices and business objectives.
DJS24POCOE14.2	Gain knowledge on the phases of agile development framework.
DJS24POCOE14.3	Have an exposure on the scaling factors and models to be developed for agile projects.
DJS24POCOE14.4	Acquire knowledge on the agile performance measurement.
DJS24POCOE14.5	Develop the product based on agile factors with risk mitigation.
DJS24POCOE14.6	Describe the role of agile in enterprise management and incremental delivery.

DJS24POCOE15 Design of Experiments

On completion of the course, learner will be able to:	
DJS24POCOE15.1	Plan data collection, to turn data into information and to make decisions that lead to appropriate action.
DJS24POCOE15.2	Apply the methods taught to real life situations.
DJS24POCOE15.3	Plan, analyze, and interpret the results of experiments.



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DJS24POCOE16 Operations Research

On completion of the course, learner will be able to:	
DJS24POCOE16.1	Convert a real-world problem in to a Linear Programming Problem and Interpret the solution obtained using Simplex method or other algorithms.
DJS24POCOE16.2	Understand reasons of formation of queues, Classify various queuing systems and Apply performance parameters defined for various queuing systems for decision making in real life situations.
DJS24POCOE16.3	Describe concept of simulation and Apply Monte Carlo Simulation technique to systems such as inventory, queuing and Develop solutions for them.
DJS24POCOE16.4	Solve the Game and explore the optimal strategies.
DJS24POCOE16.5	Identify the decision situations which vary with time and Analyze them using principle of dynamic programming to real life situations.

M. Tech: Semester II Course Outcomes

DJS24PECPC21 & DJS24PELPC21 RF and Microwave Engineering & RF and Microwave Engineering Laboratory

On completion of the course, learner will be able to:	
DJS24PECPC21.1	Characterize devices at higher frequencies.
DJS24PECPC21.2	Design and analyze RF circuits and components.
DJS24PECPC21.3	Design and analyze amplifiers, oscillators and mixers at microwave frequencies.
DJS24PECPC21.4	Design and analyze power dividers, couplers at microwave frequencies.
DJS24PECPC21.5	Analyze EMI and EMC in RF circuit.

DJS24PECPC22 & DJS24PELPC22 Advanced Wireless Communication Networks & Advanced Wireless Communication Networks Laboratory

On completion of the course, learner will be able to:	
DJS24PECPC22.1	To evaluate multichannel characteristics.
DJS24PECPC22.2	To outline the emerging technologies for upcoming Wireless Communication.
DJS24PECPC22.3	To assess network architecture of 5G.
DJS24PECPC22.4	To identify the need for Software Defined Networks.

DJS24PECPE21 & DJS24PELPE21 Wavelets & Wavelets Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE21.1	Implement adaptive filters for a given application; study and apply the techniques of power spectrum estimation and wavelet theory for various applications.
DJS24PECPE21.2	Apply Signal Processing tools to biomedical signal processing and musical sound processing.



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DJS24PECPE22 & DJS24PELPE22 IoT & Sensor Networks & IoT & Sensor Networks Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE22.1	Identify the IoT networking components with respect to OSI layer.
DJS24PECPE22.2	Design and develop IoT based sensor systems.
DJS24PECPE22.3	Select IoT protocols and software.
DJS24PECPE22.4	Evaluate the wireless technologies for IoT.
DJS24PECPE22.5	Design architecture of IoT for various applications.
DJS24PECPE22.6	Appreciate the need for IoT Trust and variants of IoT

DJS24PECPE23 & DJS24PELPE23 Network and Cyber Security & Network and Cyber Security Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE23.1	Describe security threats and apply security techniques using cryptosystems.
DJS24PECPE23.2	Describe different network security mechanisms.
DJS24PECPE23.3	Define cybercrime, cybercriminals, and Intellectual property and discuss security implications on organizations.
DJS24PECPE23.4	Incorporate approaches for incident analysis and response, for risk management and digital evidence collection and evidentiary reporting in forensic acquisition.

DJS24PECPE24 & DJS24PELPE24 Advanced Signal Analysis and Processing & Advanced Signal Analysis and Processing Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE24.1	Implement adaptive filters for a given application; study and apply the techniques of power spectrum estimation and wavelet theory for various applications.
DJS24PECPE24.2	Apply Signal Processing tools to biomedical signal processing and musical sound processing.

DJS24PECPE25 & DJS24PELPE25 Millimeter Wave Communication & Millimeter Wave Communication Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE25.1	Explain design constraint in communication systems at microwave and millimeter wave frequencies
DJS24PECPE25.2	Explain design consideration in Millimeter wave communication components and antennas
DJS24PECPE25.3	Understand diversity over MIMO channels



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DJS24PECPE26 & DJS24PELPE26 Remote Sensing Concepts & Remote Sensing Concepts Laboratory

On completion of the course, learner will be able to:	
DJS24PECPE26.1	Explain physical principles and sensing process in remote sensing
DJS24PECPE26.2	Describe preprocessing requirements and discuss various Digital Image Processing techniques.
DJS24PECPE26.3	Identify the earth surface features from satellite images
DJS24PECPE26.4	Apply the concepts of remote sensing for ecological applications

DJS24PELVS21 Mini Project -II

On completion of the course, learner will be able to:	
DJS24PELVS21.1	Incorporate project-based learning that allows students to identify and transfer existing ideas into new applications.
DJS24PELVS21.2	Present their project work in a technical report improving their documentation skills.
DJS24PELVS21.3	Integrate inter-disciplinary concepts, which help them to get internships, jobs, admission for higher studies.
DJS24PELVS21.4	The project will serve as a pre cursor to his/her M. Tech thesis dissertation topic.

DJS24POCOE21 Machine Learning

On completion of the course, learner will be able to:	
DJS24POCOE21.1	Analyze the applications, which can use Machine Learning Techniques.
DJS24POCOE21.2	Understand and Apply regression, classification and clustering methods to the database.
DJS24POCOE21.3	Interpret the difference between supervised and unsupervised learning methods.
DJS24POCOE21.4	Understand the working of Reinforcement learning.
DJS24POCOE21.5	Understand basic concepts of Genetic Algorithms.

DJS24EPGC115 & DJS24EPGL115 Renewable Energy & Renewable Energy Laboratory

On completion of the course, learner will be able to:	
DJS24EPGC115.1	Identify sustainable energy solutions for sustainable development
DJS24EPGC115.2	Analyze renewable energy resources availability and utilization
DJS24EPGC115.3	Demonstrate competency in renewable systems analysis independently.



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DJS24POCOE23 Digital Marketing

On completion of the course, learner will be able to:	
DJS24POCOE23.1	Apply B2B and B2C contexts to plan content marketing.
DJS24POCOE23.2	Develop and measure impact of content that works well for your target audience.
DJS24POCOE23.3	Manage social media presence, and create effective content for each platform.
DJS24POCOE23.4	Optimize search engine presence through on-site and off-site activities, develop target keyword list, optimize website UX and design, and execute a link building campaign.
DJS24POCOE23.5	Create, execute, and optimize an effective Ad campaign. Display and set up advertising works.
DJS24POCOE23.6	Create an email marketing strategy, create and execute email campaigns, and measure the results.

DJS24POCOE24 Project Management

On completion of the course, learner will be able to:	
DJS24POCOE24.1	Assess a project by establishing a business case and accordingly prepare a project proposal.
DJS24POCOE24.2	Develop a project plan.
DJS24POCOE24.3	Identify task inter-dependencies, construct and analyze a network diagram
DJS24POCOE24.4	Monitor and control the performance of the project.
DJS24POCOE24.5	Demonstrate Team work and team spirit and resolve conflicts.

DJS24POCOE25 Research Methodology

On completion of the course, learner will be able to:	
DJS24POCOE25.1	Understand research concepts, types, significance and importance of research profile.
DJS24POCOE25.2	Prepare a preliminary research design for projects in their subject matter areas.
DJS24POCOE25.3	Accurately collect, analyze and report data.
DJS24POCOE25.4	Review and analyze research findings.
DJS24POCOE25.5	Prepare the research report.

DJS24POCOE26 Product Life Cycle Management

On completion of the course, learner will be able to:	
DJS24POCOE26.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS24POCOE26.2	Illustrate various approaches and techniques for designing and developing products.
DJS24POCOE26.3	Understand the need for Product Life Cycle Assessment (LCA) and Life Cycle Cost Analysis.
DJS24POCOE26.4	Demonstrate the various PLM Applications, Modules, and virtual product development tools for components, machining and manufacturing plant.
DJS24POCOE26.5	Appreciate the significant effect of effective marketing strategies and integration of PLM with other business modules.



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M.Tech: Semester III & IV Courses

DJS22EPGC301 NPTEL Credit Course

DJS22EPGS302 Special Topic Seminar

DJS22EPGD303 Dissertation Phase I

DJS22EPGD401 Dissertation Phase II



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Semester III Course Outcomes

DJS23ICPC301 & DJS23ILPC301 Data Structures & Data Structures Laboratory

On completion of the course, learner will be able to:	
DJS23ICPC301.1	Analyze the algorithms based on time and space complexity.
DJS23ICPC301.2	Solve the problem using appropriate data structure.
DJS23ICPC301.3	Implement appropriate searching algorithm for a given problem.
DJS23ICPC301.4	Implement appropriate sorting algorithm for a given problem.

DJS23ICPC302 & DJS23ILPC302 Database Management Systems & Database Management Systems Laboratory

On completion of the course, learner will be able to:	
DJS23ICPC302.1	Design an optimized database.
DJS23ICPC302.2	Construct SQL queries to perform operations on the database.
DJS23ICPC302.3	Apply appropriate transaction management technique.
DJS23ICPC302.4	Use appropriate indexing technique.

DJS23ILPC303 Web Programming Laboratory

On completion of the course, learner will be able to:	
DJS23ILPC303.1	Develop full-stack web application using the MERN stack.
DJS23ILPC303.2	Work effectively as a member of a team.

DJS23ICMD301 Operating Systems

On completion of the course, learner will be able to:	
DJS23ICMD301.1	Explore operating system types and functions.
DJS23ICMD301.2	Apply appropriate schemes for memory and I/O management.
DJS23ICMD301.3	Apply appropriate techniques for concurrency control and process synchronization.
DJS23ICMD301.4	Analyze the performance of different process and disk scheduling algorithms.
DJS23ICMD301.5	Handle the deadlock

DJS23ILHSX06 Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJS23ILHSX06.1	To instil an innovative mindset in students to solve the digital-age business, societal and wicked type of problems using design thinking methods and tools, and its application.
DJS23ILHSX06.2	To equip students with techniques to empathize with users, ideate innovative and sustainable solutions for real world problems through iterative approach to design.



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DJS23ICHSX08 & DJ22IHT1 Universal Human Values

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.

DJS23IPSCX01 Innovative Product Development-I

On completion of the course, learner will be able to:	
DJ22A1.1	Identify the requirement for a product based on societal/research needs.
DJ22A1.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJ22A1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJ22A1.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJ22A1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJ22A1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJ22A1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication

DJS23ILELX11 Community Engagement Service

On completion of the course, learner will be able to:	
DJS23ILELX11.1	Fundamentals of core branch
DJS23ILELX11.2	Communication Skills



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Semester IV Course Outcomes

DJS23ICPC401 & DJS23ITP401 Applied Mathematics and Applied Mathematics Tutorial

On completion of the course, learner will be able to:	
DJS23ICPC401.1	Reduce the matrices using various techniques.
DJS23ICPC401.2	Relate the role of number theory in the domain of information technology.
DJS23ICPC401.3	Model various processes using appropriate probability distribution.
DJS23ICPC401.4	Use the appropriate simplex method to solve linear programming models.

DJS23ICPC402 & DJS23ILPC402 Design and Analysis of Algorithms and Design and Analysis of Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS23ICPC402.1	Analyze the performance of algorithms asymptotically.
DJS23ICPC402.2	Solve the problem using appropriate algorithmic design techniques.
DJS23ICPC402.3	Prove that certain problems are NP-Complete.

DJS23ILPC403 Python Laboratory

On completion of the course, learner will be able to:	
DJS23ILPC403.1	Develop python programs to solve real-world problems.
DJS23ILPC403.2	Apply different visualizations on a given dataset.
DJS23ILPC403.3	Create GUI applications using Flask.
DJS23ILPC403.4	Work effectively as a member of a team.

DJS23ILPC404 Object Oriented Design Laboratory

On completion of the course, learner will be able to:	
DJS23ILPC404.1	Analyze real-world problems using object-oriented design principles.
DJS23ILPC404.2	Design UML diagrams for a real-world systems.

DJS23ICMD401 & DJS23ITMD401 Formal Languages and Automata Theory & Formal Languages and Automata Theory Tutorial

On completion of the course, learner will be able to:	
DJS23ICMD401.1	Design formal grammar.
DJS23ICMD401.2	Design computational model.
DJS23ICMD401.3	Apply rigorously formal mathematical methods to prove properties of formal languages.
DJS23ICMD401.4	Prove that the certain languages are undecidable.



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Semester V Course Outcomes

DJS22ITC501 & DJS22ITC501 Artificial Intelligence & Artificial Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS22ITC501.1	Understand the fundamentals of artificial intelligence systems.
DJS22ITC501.2	Apply various AI approaches to knowledge intensive problem solving, reasoning, planning and uncertainty.
DJS22ITC501.3	Develop the AI applications in real world scenarios.

DJS22ITC502 & DJS22ITC502 Advanced Data Structures & Advanced Data Structures Laboratory

On completion of the course, learner will be able to:	
DJS22ITC502.1	Carry out amortized Analysis of algorithms.
DJS22ITC502.2	Solve a problem using appropriate data structure.

DJS22ITC503 & DJS22ITC503 Data Warehousing and Mining & Data Warehousing and Mining Laboratory

On completion of the course, learner will be able to:	
DJS22ITC503.1	Design data warehouse models using dimension-modeling techniques.
DJS22ITC503.2	Analyze the data by applying Online Analytical Processing (OLAP) operations for strategic decisions.
DJS22ITC503.3	Apply preprocessing techniques for the given raw data.
DJS22ITC503.4	Apply appropriate data mining techniques on data sets to retrieve relevant information.

DJS22ITC504 & DJS22ITC504 Cryptography and Network Security & Cryptography and Network Security Laboratory

On completion of the course, learner will be able to:	
DJS22ITC504.1	Design secure system using appropriate security mechanism.

DJS22ITC5011 & DJS22ITC5011 Microcontrollers and Embedded Systems & Microcontrollers and Embedded Systems Laboratory

On completion of the course, learner will be able to:	
DJS22ITC5011.1	Describe the architecture of 8051 and ARM 7 microcontrollers, write assembly program and design interfacing for 8051 microcontrollers.
DJS22ITC5011.2	Prioritize tasks in a real-time system using various scheduling algorithms.
DJS22ITC5011.3	Identify the requirements for real world problems and develop solutions using embedded boards like Arduino, Raspberry Pi, ARM Cortex, Intel Galileo etc.



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DJS22ITC5012 & DJS22ITC5012 Computer Graphics & Computer Graphics Laboratory

On completion of the course, learner will be able to:	
DJS22ITC5012.1	Implement various algorithms to generate lines, circles, curves, fractals, polygons and color them.
DJS22ITC5012.2	Apply 2D and 3D Transformations, viewing and projections on a given object.
DJS22ITC5012.3	Understand the concept of color models, lighting, shading and hidden surface elimination.
DJS22ITC5012.4	Design an animation sequence.

DJS22ITC5013 & DJS22ITC5013 Statistical Analysis & Statistical Analysis Laboratory

On completion of the course, learner will be able to:	
DJS22ITC5013.1	Interpret data using Descriptive Statistics.
DJS22ITC5013.2	Perform Test of Hypothesis for independence and appropriateness of distribution using various statistical techniques.

DJS22IHL Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language.
DJS22IHL.2	Use employability skills to optimize career opportunities.
DJS22IHL.3	Employ storytelling techniques in corporate situations.
DJS22IHL.4	Conduct effective meetings and document the process.
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations.
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics.

DJS22ILL1 Innovative Product Development III

On completion of the course, learner will be able to:	
DJS22ILL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL1.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS22ILL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL1.4	Draw proper inferences through theoretical/experimental/simulations and analyses the impact of the proposed method of design and development of the product.
DJS22ILL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.



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Semester VI Course Outcomes

DJS22ITC601 & DJS22ITL601 Software Engineering & Software Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22ITC601.1	Select suitable software development lifecycle model(s) for software development.
DJS22ITC601.2	Analyze real world problems using software engineering principles.

DJS22ITC602 & DJS22L602 Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22ITC602.1	To introduce students to the basic concepts and techniques of Machine Learning.
DJS22ITC602.2	To become familiar with regression, classification and clustering tasks.
DJS22ITC602.3	To become familiar with Dimensionality Reduction Techniques.

DJS22ITC603 & DJS22ITL603 Image Processing and Computer Vision & Image Processing and Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS22ITC603.1	Understand the fundamentals of image processing.
DJS22ITC603.2	Apply Image Enhancement Techniques.
DJS22ITC603.3	Apply Image Segmentation Techniques.
DJS22ITC603.4	Apply Image Compression Techniques.
DJS22ITC603.5	Apply motion analysis on real time problem

DJS22ITL604 Full Stack Web Development Lab

On completion of the course, learner will be able to:	
DJS22ITL604.1	Develop a full stack web application.
DJS22ITL604.2	Work effectively as a member of a team

DJS22ITC6011 & DJS22ITL6011 Infrastructure Security & Infrastructure Security Laboratory

On completion of the course, learner will be able to:	
DJS22ITC6011.1	Gain comprehensive knowledge of access control policies, multilevel security, and AAA models.
DJS22ITC6011.2	Proficient in identifying and addressing software vulnerabilities, operating system security, and database security
DJS22ITC6011.3	Apply cloud data security strategies, encryption practices, key management, and compliance with industry or regulatory requirements



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DJS22ITC6012 & DJS22ITC6012 Internet of Things and Internet of Things Laboratory

On completion of the course, learner will be able to:	
DJS22ITC6012.1	Identify suitable enabler technologies for designing IoT based applications.
DJS22ITC6012.2	Analyze cloud data for IoT applications.

DJS22ITC6013 & DJS22ITC6013 Augmented Reality and Virtual Reality and Augmented Reality and Virtual Reality Laboratory

On completion of the course, learner will be able to:	
DJS22ITC6013.1	Develop Virtual Reality applications.
DJS22ITC6013.2	Develop Augmented Reality applications.
DJS22ITC6013.3	Work effectively as a member of a team.

DJS22ITC6014 & DJS22ITC6014 Big Data Analytics and Big Data Analytics and IT Governance Laboratory

On completion of the course, learner will be able to:	
DJS22ITC6014.1	Identify big data applications using its characteristics.
DJS22ITC6014.2	Explore Hadoop Ecosystem with their roles to solve Big Data problems.
DJS22ITC6014.3	Apply advanced data mining algorithm for big data analytics.

DJS22ITC6015 & DJS22ITC6015 Information Systems and IT Governance & Information Systems and IT Governance Laboratory

On completion of the course, learner will be able to:	
DJS22ITC6015.1	Describe the types of support that an information system can provide to each functional area of the organization.
DJS22ITC6015.2	Align IT investment decisions with the goals and strategies of the organization.

DJS22ILL2 Innovative Product Development IV

On completion of the course, learner will be able to:	
DJS22ILL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL2.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS22ILL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL2.4	Draw proper inferences through theoretical/experimental/simulations and analyses the impact of the proposed method of design and development of the product.
DJS22ILL2.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.



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Semester VII Course Structure

DJ19ITC701& DJ19ITC701 Service Oriented Architecture & Service Oriented Architecture Laboratory

On completion of the course, learner will be able to:	
DJ19ITC701.1	Create web services using development tools.
DJ19ITC701.2	Build SOA-based solutions for intra-enterprise and inter-enterprise applications.

DJ19ITC702 & DJ19ITL702 Design Thinking & Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJ19ITC702.1	Develop a holistic application using Design Thinking Principles.
DJ19ITC702.2	Work efficiently as a team member.

DJ19ITEC7011 & DJ19ITEL7011Wireless Sensor Network & Wireless Sensor Network Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC7011.1	Specify the requirements for the hardware and software solutions for energy-efficient sensor network,
DJ19ITEC7011.2	Analyze various critical parameters in deploying a WSN.
DJ19ITEC7011.3	Apply appropriate algorithms to improve existing or to develop new WSN applications
DJ19ITEC7011.4	Design a WSN for given sensor data using microcontroller, transceiver, middleware and operating system.
DJ19ITEC7011.5	Work effectively as a member of a team.

DJ19ITEC7012 & DJ19ITEL7012 Augmented and Virtual Reality & Augmented and Virtual Reality Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC7012.1	Develop Virtual Reality applications.
DJ19ITEC7012.2	Develop Augmented Reality applications
DJ19ITEC7012.3	Work effectively as a member of a team.

DJ19ITEC7013 & DJ19ITEL7013 Business Analytics & Business Analytics Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC7013.1	Apply business intelligence methods to various situations.
DJ19ITEC7013.2	Interpret the results.
DJ19ITEC7013.3	Identify a problem or an opportunity by taking appropriate courses of action for a given managerial situation.



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DJ19ITEC7014 & DJ19ITEL7014 Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC7014.1	Solve real-world problems using suitable machine learning techniques.

DJ19ITEC7015 & DJ19ITEL7015 Blockchain Technology & Blockchain Technology Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC7015.1	Survey different blockchain platforms, their architectures and applications.
DJ19ITEC7015.2	Develop smart contracts on Ethereum framework using solidity language.
DJ19ITEC7015.3	Analyze the real-world problems that can be solved using blockchain technology.

DJ19ITP704 Project-I

On completion of the course, learner will be able to:	
DJ19ITP803.1	Develop the proposed solution using appropriate techniques.
DJ19ITP803.2	Test the developed system for its correctness using appropriate techniques.
DJ19ITP803.3	Work effectively as a member of the team
DJ19ITP803.4	Students will evaluate text processing techniques and operations in information retrievals system.
DJ19ITP803.5	Students will demonstrate and evaluate various indexing and searching techniques.
DJ19ITP803.6	Student will design the user interface for an information retrieval system.

Semester VIII Course Outcomes

DJ19ITC801 & DJ19ITL801 Semantic Web Technology & Semantic Web Technology Laboratory

On completion of the course, learner will be able to:	
DJ19ITC801.1	Model ontologies using Resource Description Framework (RDF) and Web Ontology Language (OWL).
DJ19ITC801.2	Query ontologies using SPARQL.
DJ19ITC801.3	Apply Semantic web technologies to real world applications

DJ19ITC802 & DJ19ITL802 Design Patterns & Design Patterns Laboratory

On completion of the course, learner will be able to:	
DJ19ITC802.1	Identify and apply the most suitable design pattern to address a given application design problem



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DJ19ITEC8011 & DJ19ITEC8011 Industrial Internet of Things & Industrial Internet of Things Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8011.1	Explore Industry 4.0 and IIoT technologies, architectures, standards, and protocols
DJ19ITEC8011.2	Examine the technological developments that will shape the industrial landscape in the future.
DJ19ITEC8011.3	Work effectively as a member of team.

DJ19ITEC8012 & DJ19ITEL8012 Game Design & Gamification & Game Design & Gamification Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8012.1	Design games using gamification principles.
DJ19ITEC8012.2	Work effectively as a member of a team.

DJ19ITEC8013 & DJ19ITEL8013 Predictive Analytics & Predictive Analytics Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8013.1	Apply prediction modeling techniques to turn data into actionable insights.
DJ19ITEC8013.2	Select a suitable model to carry out the prediction.

DJ19ITEC8014 & DJ19ITEC8014 Advanced Machine Learning & Advances Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8014.1	Develop an appropriate machine learning model.
DJ19ITEC8014.2	Apply optimization techniques to real world problems.
DJ19ITEC8014.3	Work efficiently as a part of a team.

DJ19ITEC8015 & DJ19ITEL8015 Advanced Security & Advanced Security Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8015.1	Perform appropriate surveillance of IT infrastructure for vulnerabilities.
DJ19ITEC8015.2	Describe how Security Operations Centers (SOC) work as a valuable resource for security incident detection.
DJ19ITEC8015.3	Analyze cybersecurity incidents.
DJ19ITEC8015.4	Reconstruct the series of events using suitable Incident Response (IR) process.



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DJ19ITEC8016 & DJ19ITEL8016 Quantum Computing & Quantum Computing Laboratory

On completion of the course, learner will be able to:	
DJ19ITEC8016.1	Design quantum circuits.
DJ19ITEC8016.2	Implement quantum algorithms.

DJ19ITP803 Course: Project-II

On completion of the course, learner will be able to:	
DJ19ITP803.1	Develop the proposed solution using appropriate techniques.
DJ19ITP803.2	Test the developed system for its correctness using appropriate techniques.
DJ19ITP803.3	Work effectively as a member of the team
DJ19ITP803.4	Students will evaluate text processing techniques and operations in information retrievals system.
DJ19ITP803.5	Students will demonstrate and evaluate various indexing and searching techniques.
DJ19ITP803.6	Student will design the user interface for an information retrieval system.

HONOURS Course Structure

Semester III Course Structure

DJS23IH1201 Development Frameworks

On completion of the course, learner will be able to:	
DJS23IH1201.1	Select appropriate frameworks for application development.
DJS23IH1201.2	Apply software engineering principles for application development.

Semester IV Course Structure

DJS23IH1251L Advanced Java Laboratory

On completion of the course, learner will be able to:	
DJS23IH1251L.1	Develop reusable codes using generics
DJS23IH1251L.2	Use various APIs in Java for efficient application development.
DJS23IH1251L.3	Use appropriate design patterns.

Semester IV Course Structure

DJ19ITHN1C2 & DJ19ITHN1L1 DevOps & DevOps Laboratory

On completion of the course, learner will be able to:	
DJ19ITHN1C3.1	Apply DevOps principles to meet software development requirements.



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Semester IV Course Structure

DJ19ITHN1C1 Development Frameworks

On completion of the course, learner will be able to:	
DJ19ITHN1C1.1	Explore various frameworks for application development.
DJ19ITHN1C1.2	Apply software engineering principles for application development.

Semester VII Course Structure

DJ19ITHN1C3 & DJ19ITHN1L3 MLOps & MLOps Laboratory

On completion of the course, learner will be able to:	
DJ19ITHN1C3.1	Automate the deployment of ML models into the core software system or as a service component.

Semester VIII Course Structure

DJ19ITHN1C4 Cloud Engineering

On completion of the course, learner will be able to:	
DJ19ITHN1C4.1	Identify the architecture, infrastructure and delivery models of cloud engineering.
DJ19ITHN1C4.2	Apply suitable virtualization concepts and address the core issues of cloud engineering such as security, privacy and interoperability.



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Semester III Course Outcomes

(DJS23MCPC301) Mathematics for Mechanical Engineering & (DJS23MTPC301) Mathematics for Mechanical Engineering Tutorial

On completion of the course, learner will be able to:	
DJS23MCPC301.1	Evaluate functions of square matrices using eigenvalues and eigenvectors.
DJS23MCPC301.2	Use Laplace and Inverse Laplace to solve Ordinary Differential Equations.
DJS23MCPC301.3	Expand periodic functions into infinite Fourier series and represent them as Fourier integrals.
DJS23MCPC301.4	Fourier transform and inverse Fourier transform.

DJS23MCPC302 Applied Thermodynamics

On completion of the course, learner will be able to:	
DJS23MCPC302.1	Demonstrate application of the first law of thermodynamics to flow and non-flow system
DJS23MCPC302.2	Analyze thermodynamic cycles including vapour power cycles, refrigeration cycles, and heat pump.
DJS23MCPC302.3	Use thermodynamic relations in the evaluation of thermodynamic properties.
DJS23MCPC302.4	Use steam table and Mollier chart to compute thermodynamics interactions
DJS23MCPC302.5	Evaluate the performance of air standard cycles.
DJS23MCPC302.6	Demonstrate application of the first law of thermodynamics to air conditioning processes

DJS23MCPC303 Engineering Materials & DJS23MLPC303 Engineering Materials Laboratory

On completion of the course, learner will be able to:	
DJS23MCPC303.1	Acquire knowledge on materials classification and selection, structure-property correlation, imperfections and deformation mechanism in crystalline material and demonstrate the sample preparation for various microscopy and microstructural information obtained by it.
DJS23MCPC303.2	Identify and comprehend failure modes of engineering materials and related issues.
DJS23MCPC303.3	Interpret phase diagram, describe iron-iron carbide system and understand the microstructural development and property changes in steels and cast irons.
DJS23MCPC303.4	Select and justify proper industrial heat treatment process for steel in order to obtain desirable properties to suit application requirements
DJS23MCPC303.5	Analyze the effect alloying elements in steel and learn alloy steels.
DJS23MCPC303.6	Classify nonferrous and non metallic materials and recognize their need to cater the engineering demand.



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DJS23MCPC304 Manufacturing Processes

On completion of the course, learner will be able to:	
DJS23MCPC304.1	Identify various metal casting and metal joining processes, analyze various defects, their probable causes and remedial measures.
DJS23MCPC304.2	Identify various metal forming processes, analyze various defects, their probable causes and remedial measures.
DJS23MCPC304.3	Describe types of machine tools, illustrate machine tools capabilities, limitations of machining operations to generate cylindrical, and planar components.
DJS23MCPC304.4	Understand the working principle and applications of CNC machines to execute various operations using canned cycles and subroutine.
DJS23MCPC304.5	Determine the operation planning sequences by analyzing the part prints for estimating the manufacturing time, to cater to the manufacturing requirements.

DJS23MCPC304 Manufacturing Processes

On completion of the course, learner will be able to:	
DJS23MCPC304.1	Identify various metal casting and metal joining processes, analyze various defects, their probable causes and remedial measures.
DJS23MCPC304.2	Identify various metal forming processes, analyze various defects, their probable causes and remedial measures.
DJS23MCPC304.3	Describe types of machine tools, illustrate machine tools capabilities, limitations of machining operations to generate cylindrical, and planar components.
DJS23MCPC304.4	Understand the working principle and applications of CNC machines to execute various operations using canned cycles and subroutine.
DJS23MCPC304.5	Determine the operation planning sequences by analyzing the part prints for estimating the manufacturing time, to cater to the manufacturing requirements.

DJS23ICHSX07 Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes.
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences.



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DJS23MLMD301 Python for Mechanical Engineering Laboratory

On completion of the course, learner will be able to:	
DJS23MLMD301.1	Understand the coding environment of Python software.
DJS23MLMD301.2	Understand the basics of Python
DJS23MLMD301.3	To read, analyse and visualize data.
DJS23MLMD301.4	To apply the python skills for Mechanical problems.

DJS23MLSC301 Manufacturing Process Laboratory

On completion of the course, learner will be able to:	
DJS23MLSC301.1	Demonstrate precautions and safety norms followed in Machine Shop and exhibit interpersonal skills towards working in a team.
DJS23MLSC301.2	Read working drawings, understand operational symbols, select cutting parameter and tooling, and execute machining operations.
DJS23MLSC301.3	Understand the construction, working and operation of various conventional machine tools, and various accessories and attachments used.
DJS23MLSC301.4	Perform a wide range of machining operations including turning, threading, shaping, keyway cutting, indexing, and gear cutting while estimating cutting times, as well as emphasizing the significance of grinding and super finishing operations in machining processes
DJS23MLSC301.5	Prepare programs, demonstrate, simulate, and operate CNC machines for various machining operations.

DJS23IPSCX01 Innovative Product Development I

On completion of the course, learner will be able to:	
DJS23IPSCX01.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX01.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX01.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product
DJS23IPSCX01.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed design and development of the product.
DJS23IPSCX01.5	Develop product/project management skills, interpersonal skills, self-learning and effective communication eventually preparing them to be successful entrepreneurs.



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DJS23ILELX11 Community Engagement Service

On completion of the course, learner will be able to:	
DJS23ILELX11.1	Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23ILELX11.2	Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23ILELX11.3	Witness diversity in communities and cultures and demonstrate change in approach / attitude as, an evidence of unconditional acceptance
DJS23ILELX11.4	Recognise, experience and value, effectiveness of working in a team, demonstrating co-existence of the roles - sincere worker and effective leader.

Semester IV Course Outcomes

DJS23MCPC401 Numerical and Statistical Techniques & DJS23MLPC401 Numerical and Statistical Techniques Laboratory

On completion of the course, learner will be able to:	
DJS23MCPC401.1	Analyze the statistical data using the concepts of correlation and regression
DJS23MCPC401.2	Solve partial differential equations by applying numerical methods
DJS23MCPC401.3	Apply the theoretical discrete and continuous probability distributions in the relevant application areas.
DJS23MCPC401.4	Examine data using different hypothesis tests and make conclusions about acceptance and rejections of sample data.
DJS23MCPC401.5	Apply the Chi-Square test to assess relationships between variables and interpret the significance of the results in real-world contexts. Analyze the variances of multiple variables simultaneously

DJS23MCPC402 Mechanics of Materials & DJS23MLPC402 Mechanics of Materials Laboratory

On completion of the course, learner will be able to:	
DJS23MCPC402.1	Evaluate stresses, strains, deformation and properties of materials in mechanical components/ structures.
DJS23MCPC402.2	Draw SFD and BMD for different types of loads and support conditions for a beam.
DJS23MCPC402.3	Compute and plot direct, bending and shear stresses across sections of given beam.
DJS23MCPC402.4	Compute torsional shear stresses and strain energy in mechanical components.
DJS23MCPC402.5	Compute deflections and slopes in beams and analyse buckling phenomenon in columns and struts



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DJS23MCPC403 Advanced Manufacturing Processes

On completion of the course, learner will be able to:	
DJS23MCPC403.1	Illustrate the fundamentals of various non-conventional machining processes, highlighting their capabilities and areas of application
DJS23MCPC403.2	Understand the operation of MEMS micro devices and microsystems, including their applications and manufacturing processes, such as bulk and surface micromachining techniques.
DJS23MCPC403.3	Gain insights into micro machining techniques as well as the challenges and methods involved in MEMS packaging.
DJS23MCPC403.4	Understand the principles of various nano-finishing techniques essential for enhancing surface quality and achieving ultra-smooth surfaces at the nanoscale level.
DJS23MCPC403.5	Review the differences between traditional and additive manufacturing techniques, while understanding the fundamental principles of various additive manufacturing (AM) technologies, including solid-based, liquid-based, and powder-based techniques.

DJS23ICHSX08 Universal Human Values

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Coexistence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society
DJS23ICHSX08.4	Understand the harmony in nature and existence, and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices, and start working out the strategy to actualize a harmonious environment wherever they work.

DJS23MLSC401 Computer Aided Machine Drawing Laboratory

On completion of the course, learner will be able to:	
DJS23MLSC401.1	Visualize and interpret the machine components from the given assembly/detail drawing.
DJS23MLSC401.2	Using CAD software, prepare 3D models of the machine components from the given assembly/detail drawing.
DJS23MLSC401.3	Conversion of detailed drawings to assembly drawings and assembly drawings to detailed drawings.



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DJS23MLSC402 Advanced Manufacturing Process Laboratory

On completion of the course, learner will be able to:	
DJS23MLSC402.1	Demonstrate lifelong learning with a commitment to professional, safety, environmental, and social responsibilities for career excellence.
DJS23MLSC402.2	Fabricate and assemble mechanical components using diverse manufacturing techniques.
DJS23MLSC402.3	Assess the effects of process parameters on MRR, TWR in EDM of mild steel, and DOP, HOC in ECDM of glass.
DJS23MLSC402.4	Apply engineering expertise in additive manufacturing for the creation of functional 3D printed models.
DJS23MLSC402.5	Exhibit CNC control systems, compute technological parameters, and develop, simulate, and execute CNC programs for various machining operations.



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Semester V Course Outcomes

DJS22MEC501 Automotive Prime Movers & DJS22MEL501 Automotive Prime Movers Laboratory

On completion of the course, learner will be able to:	
DJS22MEC501.1	Explain the construction and working of internal combustion engines.
DJS22MEC501.2	Demonstrate the working systems of spark ignition & compression ignition engines.
DJS22MEC501.3	Demonstrate the engine cooling, lubrication and super-charging systems.
DJS22MEC501.4	Analyze various engine performance parameters.
DJS22MEC501.5	Describe the different hybrid and electric powertrain systems.

DJS22MEC502 Heat Transfer & DJS22MEL502 Heat Transfer Laboratory

On completion of the course, learner will be able to:	
DJS22MEC502.1	Apply the principles of heat transfer to solve problems related to steady state conduction.
DJS22MEC502.2	Analyse and solve problems involving heat transfer from extended surfaces and unsteady state conduction.
DJS22MEC502.3	Apply the principles of convection to solve heat transfer problems.
DJS22MEC502.4	Design and analyse heat exchangers for various applications.
DJS22MEC502.5	Apply the principles of radiation to solve heat transfer problems.
DJS22MEC502.6	Apply various numerical methods to solve heat transfer problems.

DJS22MEC503 Dynamics of Machinery & DJS22MEL503 Dynamics of Machinery Laboratory

On completion of the course, learner will be able to:	
DJS22MEC503.1	Analyse the effect of gyroscopic couple on various applications
DJS22MEC503.2	Analyse forces and torques that act on mechanisms
DJS22MEC503.3	Determine vibration response of free undamped systems
DJS22MEC503.4	Determine vibration response of free damped systems
DJS22MEC503.5	Determine vibration response of systems subjected to forced vibrations
DJS22MEC503.6	Apply the principles of force and couple balancing to solve engineering problems

DJS22MEC504 Industrial Electronics & DJS22MEL504 Industrial Electronics Laboratory

On completion of the course, learner will be able to:	
DJS22MEC504.1	Illustrate construction, working principles and applications of power electronic switches.
DJS22MEC504.2	Identify rectifiers and inverters for DC and AC motor speed control.
DJS22MEC504.3	Identify digital circuits for industrial applications.
DJS22MEC504.4	Develop circuits using OPAMP and timer IC555.
DJS22MEC504.5	Analyze and suggest application-specific sensors and motors.



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DJS22MEL505 Database Management System Laboratory

On completion of the course, learner will be able to:	
DJS22MEL505.1	Design an optimized database.
DJS22MEL505.2	Construct SQL queries to perform operations on the database.
DJS22MEL505.3	Demonstrate the concept of transaction, concurrency and recovery.

DJS22MEC5012 Automobile Engineering & DJS22MEL5012 Automobile Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22MEC5012.1	Illustrate construction, working principles and applications of power electronic switches.
DJS22MEC5012.2	Identify rectifiers and inverters for DC and AC motor speed control.
DJS22MEC5012.3	Identify digital circuits for industrial applications.
DJS22MEC5012.4	Develop circuits using OPAMP and timer IC555.
DJS22MEC5012.5	Analyze and suggest application-specific sensors and motors.

DJS22MEC5014 Power Engineering & DJS22MEL5014 Power Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22MEC5014.1	Illustrate construction, working principles and applications of power electronic switches.
DJS22MEC5014.2	Identify rectifiers and inverters for DC and AC motor speed control.
DJS22MEC5014.3	Identify digital circuits for industrial applications.
DJS22MEC5014.4	Develop circuits using OPAMP and timer IC555.
DJS22MEC5014.5	Analyze and suggest application-specific sensors and motors.

DJS22MEC5015 Data Analytics & DJS22MEL5015 Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22MEC5015.1	Explain the fundamentals of data analytics and select a suitable approach for data analytics
DJS22MEC5015.2	Apply descriptive analytics to describe and analyze the data.
DJS22MEC5015.3	Apply descriptive, diagnostic, predictive, and prescriptive analytics techniques to withdraw useful conclusions from the acquired data set.
DJS22MEC5015.4	Use inferential analytics to draw critical inferences from the given data.
DJS22MEC5015.5	Select suitable plots for the given data and draw practical interpretations
DJS22MEC5015.6	Apply data science concepts and methods to solve problems in a real-world context



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DJS22MEC5016 Data Analytics & DJS22MEL5016 Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22MEC5016.1	Understand and navigate the global startup ecosystem, recognizing the role of incubators.
DJS22MEC5016.2	Develop creative problem-solving skills applicable to diverse challenges.
DJS22MEC5016.3	Develop versatile business plans, applying lean startup methodologies and addressing customer needs.
DJS22MEC5016.4	Understand the intersection of technology and entrepreneurship, including the protection of intellectual property.
DJS22MEC5016.5	Evaluate diverse fundraising avenues and impress potential investors with innovative ideas.
DJS22MEC5016.6	Apply skills for effective startup execution and explore strategies for sustained growth.

DJS22ILL1 Innovative Product Development III

On completion of the course, learner will be able to:	
DJS22ILL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL1.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS22ILL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication



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Semester VI Course Outcomes

DJS22MEC601 Design of Machine Elements & DJS22MEL601 Design of Machine Elements Laboratory

On completion of the course, learner will be able to:	
DJS22MEC601.1	Use design data books in designing various components and other considerations in design of machine components.
DJS22MEC601.2	Illustrate basic principles of machine design.
DJS22MEC601.3	Demonstrate understanding of various design considerations, theories of failures, Standards/Codes.
DJS22MEC601.4	Design machine elements for static as well as dynamic loading.
DJS22MEC601.5	Design machine elements based on strength/ rigidity concepts.
DJS22MEC601.6	Design of clutches and flexible drives.

DJS22MEC602 Finite Element Analysis & DJS22MEL602 Finite Element Analysis Laboratory

On completion of the course, learner will be able to:	
DJS22MEC602.1	Summarize the finite element method and develop algorithms for the analysis of mechanical systems.
DJS22MEC602.2	Evaluate differential equations using weak and Non-weak form methods.
DJS22MEC602.3	Apply the basic finite element formulation techniques to solve one dimensional engineering problems using bar, beam and link element.
DJS22MEC602.4	Apply the basic finite element formulation techniques to solve two dimensional engineering problems using triangular and quadrilateral elements.
DJS22MEC602.5	Apply the finite element methods to find the natural frequency of dynamic systems.
DJS22MEC602.6	Use modern FEA software/tools to find field variables.

DJS22MEC603 Control Systems & DJS22MEL603 Control Systems Laboratory

On completion of the course, learner will be able to:	
DJS22MEC603.1	Represent the systems in Blocks and apply the reduction technique to simplify the system.
DJS22MEC603.2	Design a mathematical model of the system/process for standard input responses.
DJS22MEC603.3	Analyse error and differentiate various types of control systems.
DJS22MEC603.4	Analyse for stability of the given system using different approaches.
DJS22MEC603.5	Apply the basics of Ladder Programming for given control system.

DJS22MEC6013 Mechanical Vibrations & DJS22MEL6013 Mechanical Vibrations Laboratory

On completion of the course, learner will be able to:	
DJS22MEC6013.1	Analyze systems with multi degree of freedom system
DJS22MEC6013.2	Evaluate response of undamped systems under support excitation, rotary unbalance and reciprocating unbalance



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DJS22MEC6013.3	Create a vibration and shock isolations system for systems with vibrating base
DJS22MEC6013.4	Analyze various aspects of machine-condition monitoring
DJS22MEC6013.5	Develop systems with undamped and damped vibration absorbers to control vibrations in machines and structures.

DJS22MEC6014 Refrigeration and Air-Conditioning & DJS22MEL6014 Refrigeration and Air-Conditioning Laboratory

On completion of the course, learner will be able to:	
DJS22MEC6014.1	Apply the fundamentals of refrigeration cycles and calculate the coefficient of performance of air refrigeration systems.
DJS22MEC6014.2	Describe the working of vapour compression refrigeration systems and analyse their performance.
DJS22MEC6014.3	Apply the principles of psychrometric properties and processes to air-conditioning systems.
DJS22MEC6014.4	Design air-conditioning systems using cooling load calculations and duct design principles.
DJS22MEC6014.5	Examine the role of sensors & controls techniques used in modern HVAC systems.

DJS22IHL Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics

DJS22MEL604 CAD CAM Laboratory

On completion of the course, learner will be able to:	
DJS22MEL604.1	Understand software configuration of graphic packages.
DJS22MEL604.2	Understand use of Computer graphics in design.
DJS22MEL604.3	Understand Modelling of simple machine parts and assemblies from the part drawings using standard CAD packages.
DJS22MEL604.4	Understand to Generate CNC Turning and Milling codes for different operations using standard CAM packages and write manual part programming using ISO codes for turning and milling operations.



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DJS22ILLL2 Innovative Product Development IV

On completion of the course, learner will be able to:	
DJS22ILLL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILLL2.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS22ILLL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILLL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILLL2.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILLL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILLL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication



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Semester VII Course Outcomes

DJ19MEC701 Machine Design -II & DJ19MEL701 Machine Design -II Laboratory

On completion of the course, learner will be able to:	
DJ19MEC701.1	Select appropriate gears for power transmission on the basis of given power and speed.
DJ19MEC701.2	Design gears based on the given conditions.
DJ19MEC701.3	Select bearings for a given application from the manufacturer's catalogue.
DJ19MEC701.4	Design the flywheel for given applications.
DJ19MEC701.5	Design cam and follower mechanisms.
DJ19MEC701.6	Design clutches and brakes

DJ19MEC702 Production Planning and Control & DJ19MEL702 Production Planning and Control Laboratory

On completion of the course, learner will be able to:	
DJ19MEC702.1	Illustrate production planning functions and manage manufacturing functions in a better way.
DJ19MEC702.2	Forecast the demand of the product and prepare an aggregate plan.
DJ19MEC702.3	Develop the skills of Inventory Management and Control.
DJ19MEC702.4	Develop competency in scheduling and sequencing of manufacturing operations.
DJ19MEC702.5	Understand the significance of implementation of ERP.

DJ19MEC703 Finite Element Analysis & DJ19MEL703 Finite Element Analysis Laboratory

On completion of the course, learner will be able to:	
DJ19MEC703.1	Summarize the basics of finite element analysis.
DJ19MEC703.2	Evaluate differential equations using weak and Non-weak form methods.
DJ19MEC703.3	Implement the basic finite element formulation techniques to solve one dimensional engineering problems using elements such as bar/beam/link element.
DJ19MEC703.4	Implement the basic finite element formulation techniques to solve two dimensional engineering problems using elements such as triangular and quadrilateral elements.
DJ19MEC703.5	Implement the basic finite element formulation techniques to find natural frequency of dynamic system.
DJ19MEC703.6	Use commercial FEA software, to solve problems related to mechanical engineering.

DJ19MEC7011 Additive Manufacturing

On completion of the course, learner will be able to:	
DJ19MEC7011.1	Understand importance of Rapid Prototyping in product development.
DJ19MEC7011.2	Apply basic knowledge of additive manufacturing to decide type of additive manufacturing process and material according components design requirement.



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DJ19MEC7011.3	To calculate and justify the cost of a typical additive manufacturing operation including labour costs, overhead costs, and consumable costs.
DJ19MEC7011.4	Evaluate the different post processing techniques used on AM parts, including those required for removal of support structures, improvement of surface characteristics and structural integrity.
DJ19MEC7011.5	Conduct research work and research writing in the field of additive manufacturing.

DJ19MEC7014 Big Data Analytics

On completion of the course, learner will be able to:	
DJ19MEC7014.1	Understand the key issues in big data management.
DJ19MEC7014.2	Acquire fundamental enabling techniques using tools in big data analytics.
DJ19MEC7014.3	Achieve adequate perspectives of big data analytics in various applications like sensor, recommender systems, social media applications etc.

DJ19MEC7017 Automobile Engineering

On completion of the course, learner will be able to:	
DJ19MEC7017.1	Describe the types and working of clutch and transmission system.
DJ19MEC7017.2	Illustrate the working of steering and braking systems.
DJ19MEC7017.3	Describe the role of vehicle suspension systems and vehicle body.
DJ19MEC7017.4	Describe the different automotive electrical systems.
DJ19MEC7017.5	Acquaint with recent developments in automobiles.

DJ19MEP704 Project - I

On completion of the course, learner will be able to:	
DJ19MEP704.1	Apply basic engineering fundamentals in the domain of practical applications.
DJ19MEP704.2	Identify the engineering problems based on literature review.
DJ19MEP704.3	Attempt a problem solution with systematic approach and ethics.
DJ19MEP704.4	Develop the habit of working in a team, and communicate efficiently with engineering community and society.
DJ19MEP704.5	Apply the principles of project management and financial aspects in multidisciplinary environments.
DJ19MEP704.6	Recognize the need for lifelong learning activities to cope up with technological changes.



Department of Mechanical Engineering (A.Y. 2024-25)

Semester VIII Course Outcomes

DJ19MEC801 Design of Mechanical Systems & DJ19MEL801 Design of Mechanical Systems Laboratory

On completion of the course, learner will be able to:	
DJ19MEC801.1	Design gear boxes for a given machine tool application.
DJ19MEC801.2	Design hoisting mechanism of an Electric overhead traveling crane.
DJ19MEC801.3	Design belt conveyor systems.
DJ19MEC801.4	Design engine components such as cylinder, piston, connecting rod and crankshaft.
DJ19MEC801.5	Design pumps for a given application.

DJ19MEC802 Industrial Engineering

On completion of the course, learner will be able to:	
DJ19MEC802.1	Illustrate the need for optimization of resources and its significance.
DJ19MEC802.2	Develop ability in integrating knowledge of design along with other aspects of value addition in the conceptualization and manufacturing stage of various products.
DJ19MEC802.3	Demonstrate the concept of value analysis and its relevance.
DJ19MEC802.4	Manage and implement different concepts involved in method study and understanding of work content in different situations.
DJ19MEC802.5	Describe different aspects of work system design and facilities design pertinent to manufacturing industries.
DJ19MEC802.6	Illustrate concepts of Agile manufacturing, Lean manufacturing and Flexible manufacturing.

DJ19MEC803 CAD/CAM/CIM & DJ19MEL801 CAD/CAM/CIM Laboratory

On completion of the course, learner will be able to:	
DJ19MEC803.1	Understand basics of computer graphics and computer modelling technique
DJ19MEC803.2	Transform, manipulate objects and computer assisted generation of tool path
DJ19MEC803.3	Apply Artificial Intelligence concept to Design and manufacturing
DJ19MEC803.4	Apply and replace conventional manufacturing process by additive manufacturing process
DJ19MEC803.5	Apply computer integrated machining for product design and manufacturing

DJ19MEC8011 Smart Industries

On completion of the course, learner will be able to:	
DJ19MEC8011.1	Understand the basic principles behind smart industry.
DJ19MEC8011.2	Identify smart industry key levers and drivers
DJ19MEC8011.3	Understand the supporting technologies for Smart factories
DJ19MEC8011.4	Learn from leading industries and develop smart factory roadmaps.



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DJ19MEC8013 Industrial Waste Management

On completion of the course, learner will be able to:	
DJ19MEC8013.1	Know the sources of pollution from industries
DJ19MEC8013.2	Understand the characteristics of pollution
DJ19MEC8013.3	Analyze the effects and hazardless of the industrial pollution.
DJ19MEC8013.4	Plan to minimize of industrial wastes
DJ19MEC8013.5	Design facilities for the processing and reclamation of industrial waste water.

DJ19MEC8014 Business Analytics

On completion of the course, learner will be able to:	
DJ19MEC8014.1	Apply Base SAS programming.
DJ19MEC8014.2	Understand and demonstrate visual analytics.
DJ19MEC8014.3	Design the report using reporter
DJ19MEC8014.4	View various reports using different media devices.

DJ19MEP804 Project - II

On completion of the course, learner will be able to:	
DJ19MEP804.1	Apply basic engineering fundamentals in the domain of practical applications.
DJ19MEP804.2	Identify the engineering problems based on literature review.
DJ19MEP804.3	Attempt a problem solution with systematic approach and ethics.
DJ19MEP804.4	Develop the habit of working in a team, and communicate efficiently with engineering community and society.
DJ19MEP804.5	Apply the principles of project management and financial aspects in multidisciplinary environments.
DJ19MEP804.6	Recognize the need for lifelong learning activities to cope up with technological changes.



Department of Mechanical Engineering
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Semester III Course Outcomes

DJS23MCH2301 Introduction to Robotics and Its Applications

On completion of the course, learner will be able to:	
DJS23MCH2301.1	Remember the basic structure of robots with their mathematical interpretations in the 3 dimensional analysis.
DJS23MCH2301.2	Understand the kinematic analysis while doing the PNPO.
DJS23MCH2301.3	Apply the knowledge of mathematics in developing all possible solutions to the inverse kinematic analysis while doing the PNPO.
DJS23MCH2301.4	Analyze the area in which the robot can do the effective PNPO with a well-defined optimized shortest path trajectory.
DJS23MCH2301.5	Evaluate the performance of difference learning schemes used for solving a typical robotic application using AI concepts.
DJS23MCH2301.6	Create a typical robotic application to solve any type of automated works without human intervention.

DJS23MCH1301 Fundamentals of Electric Vehicles

On completion of the course, learner will be able to:	
DJS23MCH1301.1	To explain the fundamentals of electric vehicles and their major parts.
DJS23MCH1301.2	Classify the chassis used in electric vehicles and select a suitable body type for the given requirements.
DJS23MCH1301.3	Apply vehicle dynamics and stability principles to analyze and optimize vehicle performance, including maximum speed, gradability, and acceleration.
DJS23MCH1301.4	Differentiate between different types of transmission systems, including manual, automatic, AMT, and CVT, and select a suitable transmission system for a vehicle to be designed.
DJS23MCH1301.5	Evaluate different types of batteries based on their electrochemical properties and determine their suitability for specific applications.
DJS23MCH1301.6	Evaluate vehicle requirements, and motor criteria, and interpret performance characteristics to effectively select and size electric motors for various applications.



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Semester IV Course Outcomes

DJS23MLH1401 Electric Vehicle Laboratory I

On completion of the course, learner will be able to:	
DJS23MLH1401.1	Explain the architecture and working principles of various types of electric vehicles.
DJS23MLH1401.2	Identify and describe the key components and subsystems of an EV, understand their roles in the overall system, and evaluate their impact on vehicle performance.
DJS23MLH1401.3	Analyze and choose the appropriate electric motor and energy storage system for a given EV application based on technical specifications and requirements.
DJS23MLH1401.4	Demonstrate proficiency in using simulation tools like Python, MATLAB, and Simulink to model, simulate, and analyze various EV subsystems, such as batteries, motors, and powertrains, under different conditions.
DJS23MLH1401.5	Develop problem-solving skills by conducting numerical analysis and optimization of EV components, such as charging time estimation, battery life prediction, motor sizing, and energy consumption analysis.
DJS23MLH1401.6	Investigate the performance of EV components such as motor, CVT, etc. by testing them under various conditions.

DJS23MLH2401 Robotics Laboratory I

On completion of the course, learner will be able to:	
DJS23MLH2401.1	Simulate and analyze the kinematic behavior of various robotic arm configurations (Planar Articulated, Cylindrical, Rectangular, Polar, SCARA) in both 2D and 3D views.
DJS23MLH2401.2	Gain the ability to graphically and numerically determine the workspace of different robotic arms, enhancing their understanding of reach and motion capabilities.
DJS23MLH2401.3	Develop proficiency in simulating robotic control systems using Simulink, enabling them to observe and evaluate the dynamic response of robots to control inputs.
DJS23MLH2401.4	Acquire practical skills in programming and executing pick-and-place operations with Planar Articulated and SCARA robotic arms, demonstrating their application in real-world scenarios.
DJS23MLH2401.5	Learn to implement screw transformations, threading, and unthreading operations, deepening their comprehension of complex robotic motions and transformations.
DJS23MLH2401.6	Gain hands-on experience with graphical simulation software, reinforcing theoretical concepts through practical applications and enhancing their problem-solving skills in robotics.



Department of Mechanical Engineering
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Semester V Course Outcomes

DJS22MEHN1C1 Fundamentals of Electric Vehicles

On completion of the course, learner will be able to:	
DJS22MEHN1C1.1	To explain the fundamentals of electric vehicles and their major parts.
DJS22MEHN1C1.2	Classify the chassis used in electric vehicles and select a suitable body type for the given requirements.
DJS22MEHN1C1.3	Apply vehicle dynamics and stability principles to analyze and optimize vehicle performance, including maximum speed, gradability, and acceleration.
DJS22MEHN1C1.4	Differentiate between different types of transmission systems, including manual, automatic, AMT, and CVT, and select a suitable transmission system for a vehicle to be designed.
DJS22MEHN1C1.5	Evaluate different types of batteries based on their electrochemical properties and determine their suitability for specific applications.
DJS22MEHN1C1.6	Evaluate vehicle requirements, and motor criteria, and interpret performance characteristics to effectively select and size electric motors for various applications.

DJS22MEHN2C1 Introduction to Robotics

On completion of the course, learner will be able to:	
DJS22MEHN2C1.1	Develop a thorough understanding of the fundamentals of robotics, including automation principles, historical evolution, and the definition of robots.
DJS22MEHN2C1.2	Describe the components of robot anatomy, including drive systems, actuators, and power transmission systems.
DJS22MEHN2C1.3	Explain sensor technology and its applications in robotics, including touch sensors, proximity sensors, and encoders.
DJS22MEHN2C1.4	Select mechanical systems in robotics, including materials used in design, transmission devices, and end effectors.
DJS22MEHN2C1.5	Develop robot control, simulation, and industrial applications, using various programming languages and techniques.
DJS22MEHN2C1.6	Identify applications of robotics in different industries.



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Semester VI Course Outcomes

DJS22MEHN1C2 Electric Drives and Controls

On completion of the course, learner will be able to:	
DJS22MEHN1C2.1	Explain the power devices, voltage source and current source inverters, and power conversion techniques applicable to electric vehicles.
DJS22MEHN1C2.2	Select and implement appropriate sensors, observers, and modulation schemes to optimize electric drive performance.
DJS22MEHN1C2.3	Design and control DC motors, utilizing different control strategies to achieve desired performance and understand four-quadrant operations.
DJS22MEHN1C2.4	Apply the knowledge of AC motor control methods such as Variable-Voltage Variable-Frequency Control (VVVF), Field-Oriented Control (FOC), and Direct Torque Control (DTC).
DJS22MEHN1C2.5	Develop proficiency in controlling advanced motor drive topologies like SRM and BLDC motors, focusing on reducing torque ripple and improving motor efficiency.
DJS22MEHN1C2.6	Select and size appropriate motors for different EV applications, evaluate motor performance characteristics, and understand their suitability for various types of electric vehicles.

DJS22MEHN2C2 Modelling and Design of Robotics

On completion of the course, learner will be able to:	
DJS22MEHN2C2.1	Demonstrate a clear understanding of the fundamental concepts of robotics, including the ability to mathematically interpret robotic motions in three-dimensional space.
DJS22MEHN2C2.2	Develop direct kinematic models and analyze them to describe the motion of robotic systems accurately.
DJS22MEHN2C2.3	Design and implement inverse kinematic models to achieve successful robotic manipulation for tasks such as pick-and-place (PNP) operations.
DJS22MEHN2C2.4	Evaluate and compare various robotic structures and configurations to optimize their performance within specified workspaces.
DJS22MEHN2C2.5	Design and implement robotic systems capable of following well-defined trajectories from source to destination during manipulation tasks.
DJS22MEHN2C2.6	Apply foundational and advanced principles, including state-of-the-art modelling and design techniques, to solve real-world problems in robotic dynamics and control.



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Semester VII Course Outcomes

DJ19MEHN1C3 Energy Source Management & DJ19MEHN1L2 Electric Vehicle Laboratory 2

On completion of the course, learner will be able to:	
DJ19MEHN1C3.1	To describe battery basics and its different types.
DJ19MEHN1C3.2	To describe battery charging and swapping infrastructure.
DJ19MEHN1C3.3	Illustrate the various types and working principle of fuel cells.
DJ19MEHN1C3.4	To explain energy management strategies with optimization techniques used in hybrid and electric vehicles.
DJ19MEHN1C3.5	To explore technique for energy storage, distribution and grid modernization.

DJ19MEHN2C3 Introduction to Robotics & Robotics Laboratory 2

On completion of the course, learner will be able to:	
DJ19MEHN2C3.1	Develop a strategy to solve a given PNP operation in a workspace of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.2	Develop the analysis how to do the direct & inverse kinematics of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.3	Develop the ideas how to generate a path & trajectory in the 2D/3D workspace of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.4	Develop ideas how to avoid the obstacles in the path of motion of the robot arm.



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Semester VIII Course Outcomes

DJ19MEHN2C4 AI and ML for Robotics

On completion of the course, learner will be able to:	
DJ19MEHN2C4.1	Remember the basic concepts of AI & its types.
DJ19MEHN2C4.2	Understand the concepts of ML for different robotic applications.
DJ19MEHN2C4.3	Apply the knowledge of heuristics & search techniques for performing different robot tasks.
DJ19MEHN2C4.4	Analyze the work space area for solving a typical robotic task planning.
DJ19MEHN2C4.5	Evaluate the performance of the captured object in the image for different parameters.
DJ19MEHN2C4.6	Create a noise free image of the object for automatic robotic manipulation using robot vision



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Semester III Course Outcomes

DJS23MCH2301 Introduction to Robotics and Its Applications

On completion of the course, learner will be able to:	
DJS23MCH2301.1	Remember the basic structure of robots with their mathematical interpretations in the 3 dimensional analysis.
DJS23MCH2301.2	Understand the kinematic analysis while doing the PNPO.
DJS23MCH2301.3	Apply the knowledge of mathematics in developing all possible solutions to the inverse kinematic analysis while doing the PNPO.
DJS23MCH2301.4	Analyze the area in which the robot can do the effective PNPO with a well-defined optimized shortest path trajectory.
DJS23MCH2301.5	Evaluate the performance of difference learning schemes used for solving a typical robotic application using AI concepts.
DJS23MCH2301.6	Create a typical robotic application to solve any type of automated works without human intervention.

DJS23MCH1301 Fundamentals of Electric Vehicles

On completion of the course, learner will be able to:	
DJS23MCH1301.1	To explain the fundamentals of electric vehicles and their major parts.
DJS23MCH1301.2	Classify the chassis used in electric vehicles and select a suitable body type for the given requirements.
DJS23MCH1301.3	Apply vehicle dynamics and stability principles to analyze and optimize vehicle performance, including maximum speed, gradability, and acceleration.
DJS23MCH1301.4	Differentiate between different types of transmission systems, including manual, automatic, AMT, and CVT, and select a suitable transmission system for a vehicle to be designed.
DJS23MCH1301.5	Evaluate different types of batteries based on their electrochemical properties and determine their suitability for specific applications.
DJS23MCH1301.6	Evaluate vehicle requirements, and motor criteria, and interpret performance characteristics to effectively select and size electric motors for various applications.



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Semester IV Course Outcomes

DJS23MLH1401 Electric Vehicle Laboratory I

On completion of the course, learner will be able to:	
DJS23MLH1401.1	Explain the architecture and working principles of various types of electric vehicles.
DJS23MLH1401.2	Identify and describe the key components and subsystems of an EV, understand their roles in the overall system, and evaluate their impact on vehicle performance.
DJS23MLH1401.3	Analyze and choose the appropriate electric motor and energy storage system for a given EV application based on technical specifications and requirements.
DJS23MLH1401.4	Demonstrate proficiency in using simulation tools like Python, MATLAB, and Simulink to model, simulate, and analyze various EV subsystems, such as batteries, motors, and powertrains, under different conditions.
DJS23MLH1401.5	Develop problem-solving skills by conducting numerical analysis and optimization of EV components, such as charging time estimation, battery life prediction, motor sizing, and energy consumption analysis.
DJS23MLH1401.6	Investigate the performance of EV components such as motor, CVT, etc. by testing them under various conditions.

DJS23MLH2401 Robotics Laboratory I

On completion of the course, learner will be able to:	
DJS23MLH2401.1	Simulate and analyze the kinematic behavior of various robotic arm configurations (Planar Articulated, Cylindrical, Rectangular, Polar, SCARA) in both 2D and 3D views.
DJS23MLH2401.2	Gain the ability to graphically and numerically determine the workspace of different robotic arms, enhancing their understanding of reach and motion capabilities.
DJS23MLH2401.3	Develop proficiency in simulating robotic control systems using Simulink, enabling them to observe and evaluate the dynamic response of robots to control inputs.
DJS23MLH2401.4	Acquire practical skills in programming and executing pick-and-place operations with Planar Articulated and SCARA robotic arms, demonstrating their application in real-world scenarios.
DJS23MLH2401.5	Learn to implement screw transformations, threading, and unthreading operations, deepening their comprehension of complex robotic motions and transformations.
DJS23MLH2401.6	Gain hands-on experience with graphical simulation software, reinforcing theoretical concepts through practical applications and enhancing their problem-solving skills in robotics.



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Semester V Course Outcomes

DJS22MEHN1C1 Fundamentals of Electric Vehicles

On completion of the course, learner will be able to:	
DJS22MEHN1C1.1	To explain the fundamentals of electric vehicles and their major parts.
DJS22MEHN1C1.2	Classify the chassis used in electric vehicles and select a suitable body type for the given requirements.
DJS22MEHN1C1.3	Apply vehicle dynamics and stability principles to analyze and optimize vehicle performance, including maximum speed, gradability, and acceleration.
DJS22MEHN1C1.4	Differentiate between different types of transmission systems, including manual, automatic, AMT, and CVT, and select a suitable transmission system for a vehicle to be designed.
DJS22MEHN1C1.5	Evaluate different types of batteries based on their electrochemical properties and determine their suitability for specific applications.
DJS22MEHN1C1.6	Evaluate vehicle requirements, and motor criteria, and interpret performance characteristics to effectively select and size electric motors for various applications.

DJS22MEHN2C1 Introduction to Robotics

On completion of the course, learner will be able to:	
DJS22MEHN2C1.1	Develop a thorough understanding of the fundamentals of robotics, including automation principles, historical evolution, and the definition of robots.
DJS22MEHN2C1.2	Describe the components of robot anatomy, including drive systems, actuators, and power transmission systems.
DJS22MEHN2C1.3	Explain sensor technology and its applications in robotics, including touch sensors, proximity sensors, and encoders.
DJS22MEHN2C1.4	Select mechanical systems in robotics, including materials used in design, transmission devices, and end effectors.
DJS22MEHN2C1.5	Develop robot control, simulation, and industrial applications, using various programming languages and techniques.
DJS22MEHN2C1.6	Identify applications of robotics in different industries.



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Semester VI Course Outcomes

DJS22MEHN1C2 Electric Drives and Controls

On completion of the course, learner will be able to:	
DJS22MEHN1C2.1	Explain the power devices, voltage source and current source inverters, and power conversion techniques applicable to electric vehicles.
DJS22MEHN1C2.2	Select and implement appropriate sensors, observers, and modulation schemes to optimize electric drive performance.
DJS22MEHN1C2.3	Design and control DC motors, utilizing different control strategies to achieve desired performance and understand four-quadrant operations.
DJS22MEHN1C2.4	Apply the knowledge of AC motor control methods such as Variable-Voltage Variable-Frequency Control (VVVF), Field-Oriented Control (FOC), and Direct Torque Control (DTC).
DJS22MEHN1C2.5	Develop proficiency in controlling advanced motor drive topologies like SRM and BLDC motors, focusing on reducing torque ripple and improving motor efficiency.
DJS22MEHN1C2.6	Select and size appropriate motors for different EV applications, evaluate motor performance characteristics, and understand their suitability for various types of electric vehicles.

DJS22MEHN2C2 Modelling and Design of Robotics

On completion of the course, learner will be able to:	
DJS22MEHN2C2.1	Demonstrate a clear understanding of the fundamental concepts of robotics, including the ability to mathematically interpret robotic motions in three-dimensional space.
DJS22MEHN2C2.2	Develop direct kinematic models and analyze them to describe the motion of robotic systems accurately.
DJS22MEHN2C2.3	Design and implement inverse kinematic models to achieve successful robotic manipulation for tasks such as pick-and-place (PNP) operations.
DJS22MEHN2C2.4	Evaluate and compare various robotic structures and configurations to optimize their performance within specified workspaces.
DJS22MEHN2C2.5	Design and implement robotic systems capable of following well-defined trajectories from source to destination during manipulation tasks.
DJS22MEHN2C2.6	Apply foundational and advanced principles, including state-of-the-art modelling and design techniques, to solve real-world problems in robotic dynamics and control.



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Semester VII Course Outcomes

DJ19MEHN1C3 Energy Source Management & DJ19MEHN1L2 Electric Vehicle Laboratory 2

On completion of the course, learner will be able to:	
DJ19MEHN1C3.1	To describe battery basics and its different types.
DJ19MEHN1C3.2	To describe battery charging and swapping infrastructure.
DJ19MEHN1C3.3	Illustrate the various types and working principle of fuel cells.
DJ19MEHN1C3.4	To explain energy management strategies with optimization techniques used in hybrid and electric vehicles.
DJ19MEHN1C3.5	To explore technique for energy storage, distribution and grid modernization.

DJ19MEHN2C3 Introduction to Robotics & Robotics Laboratory 2

On completion of the course, learner will be able to:	
DJ19MEHN2C3.1	Develop a strategy to solve a given PNP operation in a workspace of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.2	Develop the analysis how to do the direct & inverse kinematics of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.3	Develop the ideas how to generate a path & trajectory in the 2D/3D workspace of the robot arm, whether it is a stationary robot or a mobile robot.
DJ19MEHN2C3.4	Develop ideas how to avoid the obstacles in the path of motion of the robot arm.



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Semester VIII Course Outcomes

DJ19MEHN2C4 AI and ML for Robotics

On completion of the course, learner will be able to:	
DJ19MEHN2C4.1	Remember the basic concepts of AI & its types.
DJ19MEHN2C4.2	Understand the concepts of ML for different robotic applications.
DJ19MEHN2C4.3	Apply the knowledge of heuristics & search techniques for performing different robot tasks.
DJ19MEHN2C4.4	Analyze the work space area for solving a typical robotic task planning.
DJ19MEHN2C4.5	Evaluate the performance of the captured object in the image for different parameters.
DJ19MEHN2C4.6	Create a noise free image of the object for automatic robotic manipulation using robot vision



Department of Computer Science and Engineering (Data Science)
(A.Y. 2024-25)

SY Semester III Course Outcomes

DJS23DPC201 & DJS23DPC201L - Computer System Fundamentals and Computer System Fundamentals Laboratory

Learners will be able to:	
DJS23DPC201.1	Describe the fundamental organization of a computer system.
DJS23DPC201.2	Apply appropriate memory mapping, process scheduling and disk scheduling methods.
DJS23DPC201.3	Identify the need of concurrency and apply appropriate method to solve the concurrency or deadlock problem
DJS23DPC201.4	Differentiate between various processor architecture.

DJS23DPC202 & DJS23DPC202L - Database Systems and Database Systems Laboratory

Learners will be able to:	
DJS23DPC202.1	Understand different types of database systems
DJS23DPC202.2	Construct SQL queries to perform operations on the database
DJS23DPC202. 3	Apply suitable data management techniques for efficient data retrieval.

DJS23DPC203L - Data Science Laboratory (Python)

Learners will be able to:	
DJS23DPC203.1	Implement python programs to solve real world problems.
DJS23DPC203 .2	Perform Data Manipulation and Analysis.

DJS23DMD201 - Mathematics for Intelligent Systems

Learners will be able to:	
DJS23DMD201.1	Analyze probability of random variable and probability distributions.
DJS23DMD201.2	Demonstrate knowledge of linear algebra.
DJS23DMD201.3	Apply concepts of matrix theory.
DJS23DMD201.4	Demonstrate concepts of calculus
DJS23DMD201.5	Analyze different optimization techniques.



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DJS23XSC201P - Innovative Product Development I

Learners will be able to:	
DJS23XSC201P.1	Identify the requirement for a product based on societal/research needs.
DJS23XSC201P.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team
DJS23XSC201P.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23XSC201P.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23XSC201P.5	Develop interpersonal skills, while working as a member of the team or as the leader
DJS23XSC201P.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare them to be successful entrepreneurs
DJS23XSC201P.7	Demonstrate product/project management principles during the design and development work and excel in written (Technical paper preparation) as well as oral communication.

DJS23XHS231L Design Thinking Laboratory

Learners will be able to:	
DJS23XHS231L.1	Understand the importance of Human-Centric design approach for developing a solution
DJS23XHS231L.2	Generate innovative ideas to design sustainable solutions for real world problems.
DJS23XHS231L.3	Apply design thinking principles to solve the real-world problems.

DJS23XHS232 & DJS23XHS232T - Universal Human Values and Universal Human Values Tutorial

Learners will be able to:	
DJS23XHS232.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23XHS232.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Coexistence of Self and Body.
DJS23XHS232.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society



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DJS23XHS232.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23XHS232.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.

DJS23XEL201L - Community Engagement Service

Learners will be able to:	
DJS23XEL201L.1	Knowledge application: Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23XEL201L.2	Commitment for cause: Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23XEL201L.3	Diversity: Witness diversity in communities and cultures and demonstrate change in approach / attitude as an evidence of unconditional acceptance.
DJS23XEL201L.4	Team: Recognise, experience and value effectiveness of working in a team, demonstrating co-existence of the roles - sincere worker and effective leader.

DJS23XOE211 - Product Life Cycle Management

Learners will be able to:	
DJS23XOE211.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS23XOE211.2	Illustrate various approaches and techniques for designing and developing products.
DJS23XOE211.3	Acquire knowledge in applying virtual product development tools.
DJS23XOE211.4	Acquire knowledge in implementation of Environmental aspects in PLM.

DJS23XOE212 - Management Information System

Learners will be able to:	
DJS23XOE212.1	Explain the fundamental concepts of the management information systems used in business.
DJS23XOE212.2	Describe IT infrastructure and its components and its current trends.



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DJS23XOE212.3	Use the tools and technologies for accessing information from databases to improve business performance and decision making.
DJS23XOE212.4	Identify and explain the security and ethical challenges in MIS along with the measures to be taken.
DJS23XOE212.5	Select a suitable social computing platform for the given requirements that integrates AI and IoT.
DJS23XOE212.6	Explain the processes involved in the information system within the organization includes information acquisition and enterprise and global management technologies.

DJS23XOE213 - Operations Research

Learners will be able to:	
DJS23XOE213.1	Formulate the real-world optimisation problem into a Linear Programming Problem (LPP) and analyse the solution obtained using LPP optimisation models.
DJS23XOE213.2	Solve Linear Programming Problems using transportation and assignment models.
DJS23XOE213.3	Apply Decision Theory to determine the optimal course of action when a number of alternatives are available, and their consequences cannot be forecast with certainty and uncertainty.
DJS23XOE213.4	Apply Game Theory for decision making under conflicting situations where there are one or more opponents (players).
DJS23XOE213.5	To breaking down a large problem into smaller sub problems and solved recursively or iteratively using Dynamic Programming models.

DJS23XOE214 - Personal Finance Management

Learners will be able to:	
DJS23XOE214.1	Understand the Indian financial system.
DJS23XOE214.2	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJS23XOE214.3	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJS23XOE214.4	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJS23XOE214.5	Understand how Microfinance can help in financial inclusion.



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DJS23XOE215 - Public Systems and Policies

Learners will be able to:	
DJS23XOE215.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJS23XOE215.2	Analyse the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJS23XOE215.3	Explain public policy and its operations with special focus on policy relating to Government finance.
DJS23XOE215.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJS23XOE215.5	Analyze and evaluate the impact of public policy on firms and the economy at large and work under various fields as policymakers.

DJS23XOE216 - Fundamentals of Biomedical Instruments

Learners will be able to:	
DJS23XOE216.1	Explain the different physiological processes taking place within the human body.
DJS23XOE216.2	Explain the use of biomaterials and apply principles of various transducers & sensors.
DJS23XOE216.3	Describe the working principle of various medical instruments.
DJS23XOE216.4	Describe principles used in imaging modalities and analysis.
DJS23XOE216.5	Explain different processes used in telemetry and telemedicine.

DJS23XOE217 - IPR & Patenting

Learners will be able to:	
DJS23XOE217.1	Map a given project/ idea to a suitable intellectual property rights.
DJS23XOE217.2	Explain the fundamentals of the patents, copyrights, and design registrations.
DJS23XOE217.3	Draft applications to protect various intellectual property rights.
DJS23XOE217.4	Communicate with national and/or international intellectual property organisations.



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DJS23XOE218 - Entrepreneurship and Startup Ecosystem

Learners will be able to:	
DJS23XOE218.1	Effectively Navigate the Global Startup Landscape.
DJS23XOE218.2	Cultivate an Entrepreneurial Mindset.
DJS23XOE218.3	Create Effective Business Models.
DJS23XOE218.4	Understand the significance of Intellectual Property rights.
DJS23XOE218.5	Master Fundraising Strategies.

DJS23DH1201-Financial Market and Risk Analysis (Honors)

Learners will be able to:	
DJS23DH1201.1	Understand the structures, functions, and operations of financial institutions and markets.
DJS23DH1201.2	Identify and evaluate various financial instruments and assess the risks associated with them.
DJS23DH1201.3	Assess the risk in money markets, capital markets and forex markets.

SY Semester IV Course Outcome

DJS23DCPC401 & DJS23DLPC401 - Data Structures and Data Structures Laboratory

Learners will be able to:	
DJS23DCPC401 .1	Classify the various linear and non-linear data structures.
DJS23DCPC401 .2	Solve the problem using appropriate data structure.
DJS23DCPC401 .3	Analyze the problem and use suitable data structure for it.

DJS23DCPC402 & DJS23DLPC402 - Machine Learning – I and Machine Learning - I Laboratory

Learners will be able to:	
DJS22DSC402 .1	Classify given problems into classification, clustering and regression problems
DJS22DSC402 .2	Apply machine learning techniques for a given problem
DJS22DSC402 .3	Examine the dataset, choose appropriate algorithm and evaluate the results.
DJS22DSC402 .4	Design applications using machine learning algorithms



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DJS23DCPC403 & DJS23DLPC403 - Statistics for Data Science and Statistics for Data Science Laboratory

Learners will be able to:	
DJS23DCPC403.1	Examine relations between data.
DJS23DCPC403.2	Demonstrate sampling distributions and estimate statistical parameters.
DJS23DCPC403.3	Classify data using LDA and evaluate model performance with metrics.
DJS23DCPC403.4	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS23DCPC403.5	Perform analysis of variance on data.

DJS23DLMD401 - Web Engineering Laboratory

Learners will be able to:	
DJS23DLMD401.1	Develop a website as per the requirements.
DJS23DLMD401.2	Apply the concepts of cloud computing to improve the efficiency of web development.
DJS23DLMD401.3	Evaluate the requirement of the problem and select appropriate method of web development.

DJS23IPSCX02 - Innovative Product Development-II

Learners will be able to:	
DJS23IPSCX02.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX02.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX02.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX02.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX02.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX02.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS23IPSCX02.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.



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DJS23ICHSX07 - Economics and Financial Management

Learners will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences.

DJS23ITHSX05 - Professional and Business Communication Tutorial

Learners will be able to:	
DJS23ITHSX05.1	Apply group discussion techniques in professional situations
DJS23ITHSX05.2	Apply group Use employability skills to optimize career opportunities
DJS23ITHSX05.3	Employ storytelling techniques for effective presentation.
DJS23ITHSX05.4	Prepare technical documents using appropriate style, format, and language.
DJS23ITHSX05.5	Analyze the concept of professional ethics.
DJS23ITHSX05.6	Demonstrate interpersonal skills in professional and personal situations.

DJS23OCOE401 - Project Management

Learners will be able to:	
DJS23OCOE401.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJS23OCOE401.2	Apply selection criteria and select an appropriate project from different options.
DJS23OCOE401.3	Create a work break down structure for a project and develop a schedule based on it. Manage project risk strategically.
DJS23OCOE401.4	Use Earned value technique and determine & predict status of the project. Capture lessons learned during project phases and document them for future reference.
DJS23OCOE401.5	Differentiate between traditional waterfall approach and agile scrum methodology for software development projects.



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DJS23OCOE402-Cyber Security, Policies and Laws

Learners will be able to:	
DJS23OCOE402.1	Understand and describe the major types of cybercrime and navigate legal frameworks and regulations concerning digital personal and data protection.
DJS23OCOE402.2	Implement strategies for cybersecurity outlined in the National Cyber Security Policy.
DJS23OCOE402.3	Apply appropriate law enforcement strategies to both, prevent and control cybercrime.
DJS23OCOE402.4	Comprehend regulations and strategies pertaining to AI (Artificial Intelligence) and large language models.

DJS23OCOE403 - Advanced Operations Research

Learners will be able to:	
DJS23OCOE403.1	Apply Duality theory to solve linear programming problem and analyse optimum solution.
DJS23OCOE403.2	Construct linear integer programming models and apply the O.R. algorithms and techniques to solve linear integer programming problems.
DJS23OCOE403.3	Determine best satisfying solution under a varying quantity of resources and priorities of the goals.
DJS23OCOE403.4	Set up decision models and solve nonlinear programming- unconstrained optimization problems.
DJS23OCOE403.5	Set up decision models and solve nonlinear programming- constrained optimization problems.

DJS23OCOE404 - Corporate Finance

Learners will be able to:	
DJS23OCOE404.1	Understand Indian finance system.
DJS23OCOE404.2	Apply concepts of time value money and risk returns to product, services and business.
DJS23OCOE404.3	Understand corporate finance and working capital management.
DJS23OCOE404.4	Take Investment and finance decisions.
DJS23OCOE404.5	Take dividend decisions.



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DJS23OCOE405 - Corporate Social Responsibility

Learners will be able to:	
DJS23OCOE405.1	Upon completion of this course, students will be able to analyse and critique the ethical dimensions of Corporate Social Responsibility initiatives, demonstrating a comprehensive understanding of CSR principles and their ethical underpinnings.
DJS23OCOE405.2	Upon completion of this course, students will demonstrate an understanding of the legislative frameworks shaping Corporate Social Responsibility both in India and globally, alongside recognizing the key drivers fostering CSR practices within the Indian context.
DJS23OCOE405.3	Upon completion of this course, students will be able to identify and discuss the significance of social responsibility and community engagement initiatives, demonstrating an understanding of their impact on both businesses and society.

DJS23OCOE406 - Bioinformatics

Learners will be able to:	
DJS23OCOE406.1	Understand the structure and function of cells, organelles, and biomolecules.
DJS23OCOE406.2	Understand the types of data stored in bioinformatics databases and their relevance to biological research.
DJS23OCOE406.3	Explore genomic databases and understand the structure and content of protein databases.
DJS23OCOE406.4	Understand system biology concepts and molecular evolution.
DJS23OCOE406.5	Apply knowledge of cellular and molecular biology concepts to analyze a biological problem.

DJS23OCOE407 - Human Resource Management

Learners will be able to:	
DJS23OCOE407.1	Understand and distinguish the changing environment of the HRM and the role of the HR managers.
DJS23OCOE407.2	Understand and analyse the recruitment process and the application of the IT.
DJS23OCOE407.3	Understand and examine the importance of the training and development.
DJS23OCOE407.4	Understand and determine the pay plans, performance appraisal and compensation.
DJS23OCOE407.5	Understand and explain the importance of the labour relation, the employee security and collective bargaining.



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DJS23OCOE408 - Digital Marketing Management

Learners will be able to:	
DJS23OCOE408.1	Understand the digital marketing framework & model and consumer behaviour.
DJS23OCOE408.2	Develop digital marketing strategy roadmap.
DJS23OCOE408.3	Explain the terminology and concepts for developing web-specific media plans.
DJS23OCOE408.4	Understand concepts related to digital campaign management and revenue generation models.
DJS23OCOE408.5	Get a perspective on global digital marketing technology/tools and future trends.

DJS23OCOE409 - Logistics & Supply Chain Management

Learners will be able to:	
DJS23OCOE409.1	Develop a sound understanding of the important role of supply chain management in today's business environment.
DJS23OCOE409.2	Develop criteria and standards to achieve improved business performance by integrating and optimizing the total logistics and supply-chain process.
DJS23OCOE409.3	Summarize the value of focusing on information business logistics systems which drives improved accuracy and decision-making at all levels of management.
DJS23OCOE409.4	Become familiar with current supply chain information technology management trends.
DJS23OCOE409.5	Use available technologies to enhance work performance and support supply chain functions, processes, transactions, and communications.

DJS23DCH1401 & DJS23DLH1401 - Computational Methods and Pricing Models and Computational Methods and Pricing Models Laboratory (Honors)

Learners will be able to:	
DJS23DCH1401.1	Explain the principles of financial instrument pricing and numerical methods for option pricing.
DJS23DCH1401.2	Make use of various option strategies and cash flow models for financial decision-making.
DJS23DCH1401.3	Apply risk management strategies and alternative investment options for portfolio optimization.



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T.Y. Semester V Course Outcome

DJS22DSC501 & DJS22DSL501 - Machine Learning - II (Deep Learning) and Machine Learning - II Laboratory

Learners will be able to:	
DJS22DSC501.1	Analyze different neural network architectures and their learning algorithms.
DJS22DSC501.2	Implement deep network training and design concepts.
DJS22DSC501.3	Build solution using appropriate neural network models.

DJS22DSC502 & DJS22DSL502 - Intelligent Systems and Intelligent Systems Laboratory

Learners will be able to:	
DJS22DSC502.1	Apply appropriate search-based method for a given problem.
DJS22DSC502.2	Analyze various IS approaches to knowledge - problem solving, reasoning, and intelligent planning
DJS22DSC502.3	Apply the knowledge of reasoning and intelligent planning to solve a problem.

DJS22DSC503 & DJS22DSL503 - Image Processing and Computer Vision - I and Image Processing and Computer Vision - I Laboratory

Learners will be able to:	
DJS22DSC503.1	Identify the need of different image and video pre-processing.
DJS22DSC503.2	Apply different image and video corrections.
DJS22DSC503.3	Compare different image and video processing methods.

DJS22DSL504 - Big Data Engineering Laboratory

Learners will be able to:	
DJS22DSL504.1	Relate to the need of different types of data preprocessing tools/methods
DJS22DSL504.2	Use appropriate tool/method for a specific Data Engineering task



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DJS22DSC5011 & DJS22DSL5011 - Distributed Computing and Distributed Computing Laboratory

Learners will be able to:	
DJS22DSC5011.1	Demonstrate Interprocess Communication and Synchronization in a Distributed System.
DJS22DSC5011.2	Apply appropriate Resource, Process management, File and Memory technique in a given Distributed Environment for efficient processing
DJS22DSC5011.3	Apply suitable methods to improve data availability in a system.

DJS22DSC5012 & DJS22DSL5012 - Time Series Analysis & Time Series Analysis Laboratory

Learners will be able to:	
DJS22DSC5012.1	Interpret a correlogram and a sample spectrum.
DJS22DSC5012.2	Apply appropriate model for a time series dataset.
DJS22DSC5012.3	Compute forecasts for a variety of linear and non-linear methods and models.

DJS22DSC5013 & DJS22DSL5013 - Digital System Design & Digital System Design Laboratory

Learners will be able to:	
DJS22DSC5013.1	Explain different digital codes and their conversions.
DJS22DSC5013.2	Minimize logic expressions using various reduction techniques
DJS22DSC5013.3	Analyze and design combinational logic circuits
DJS22DSC5013.4	Design flip-flops using logic gates and use them to realize different sequential circuits.
DJS22DSC5013.5	Classify different programmable logic devices

DJS22DSC5014 & DJS22DSL5014 - Probabilistic Graph Models & Probabilistic Graph Models Laboratory

Learners will be able to:	
DJS22DSC5014.1	Explain the basic fundamentals of probabilistic graphical models.
DJS22DSC5014.2	Illustrate various principles of representation methods, learning and inference algorithms
DJS22DSC5014.3	Integrate theoretical knowledge of graphical models to solve problems.



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DJS22IHL - Professional and Business Communication Laboratory

Learners will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language.
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics.

DJS22ILLL1 - Innovative Product Development - III

Learners will be able to:	
DJS22ILLL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILLL1.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team
DJS22ILLL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product
DJS22ILLL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS22ILLL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILLL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJS22ILLL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.



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DJS22DSHN1C1 - Econometric Modelling (Honors)

Learners will be able to:	
DJS22DSHN1C1.1	demonstrate an understanding of the challenges of empirical modelling in economics and business
DJS22DSHN1C1.2	demonstrate an understanding of the shortcomings of the standard linear regression model and Multiple Regression.
DJS22DSHN1C1.3	apply important extensions to the linear regression model
DJS22DSHN1C1.4	express new econometric methods mathematically to understand time series data.
DJS22DSHN1C1.5	demonstrate clarity of thought regarding the relationship between data, model and estimation in econometrics.

TY Semester VI Course Outcome

DJS22DSC601 & DJS22DSL601 - Machine Learning – III (Reinforcement Learning) and Machine Learning – III Laboratory

Learners will be able to:	
DJS22DSC601.1	Explain basic and advanced Reinforcement Learning techniques.
DJS22DSC601.2	Identify suitable learning tasks to which Reinforcement learning and Deep Reinforcement Learning techniques can be applied.
DJS22DSC601.3	Apply appropriate Reinforcement Learning method to solve a given problem.

DJS22DSC602 & DJS22DSL602 - Natural Language Text Processing and Natural Language Text Processing Laboratory

Learners will be able to:	
DJS22DSC602.1	Understand the pre-processing required for linguistic data types.
DJS22DSC602.2	Apply appropriate pre-processing technique on linguistic data.
DJS22DSC602.3	Analyze different Machine Learning and deep learning algorithms to develop applications based on natural language processing.



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DJS22DSC603 & DJS22DSL603 - Image Processing and Computer Vision – II and Image Processing and Computer Vision - II Laboratory

Learners will be able to:	
DJS22DSC603.1	Understand various data capturing methods.
DJS22DSC603.2	Apply appropriate object detection and object segmentation methods.
DJS22DSC603.3	Apply suitable method to analyze complex vision data
DJS22DSC603.4	Develop suitable vision model for prediction

DJS22DSL604 - Programming Laboratory

Learners will be able to:	
DJS22DSL604.1	Apply advanced object-oriented concepts and design patterns in Java to develop scalable and maintainable solutions for real-world problems.
DJS22DSL604.2	Optimize data processing and performance using the Java Collections Framework, Streams API, and generics.
DJS22DSL604.3	Build secure, database-driven web applications using Spring and Spring Boot, with an understanding of microservices and RESTful web services.

DJS22DSC6011 & DJS22DSL6011 - Cloud Computing and Cloud Computing Laboratory

Learners will be able to:	
DJS22DSC6011.1	Demonstrate the ability to differentiate between parallel and distributed computing and understand the role of virtualization in cloud environments.
DJS22DSC6011.2	Apply knowledge of cloud architecture to select appropriate cloud service models and types, and perform effective cloud migrations
DJS22DSC6011.3	Configure and manage VPCs, EC2 instances, and understand best practices for cloud networking and instance management.
DJS22DSC6011.4	Implement cloud storage solutions, leverage DBaaS, and ensure robust cloud security using industry-standard practices and AWS security services



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DJS22DSC6012 & DJS22DSL6012 - Recommender System and Recommender System Laboratory

Learners will be able to:	
DJS22DSC6012.1	Compare different types of Recommender Systems.
DJS22DSC6012.2	Understand various issues related to recommender system development.
DJS22DSC6012.3	Design a recommender system for a given problem.
DJS22DSC6012.4	Relate data collected from a recommender system to understand user preferences and/or behavior

DJS22DSC6013 & DJS22DSL6013 - Embedded Systems & RTOS and Embedded Systems & RTOS Laboratory

Learners will be able to:	
DJS22DSC6013.1	Identify and describe various characteristic features and applications of embedded systems.
DJS22DSC6013.2	Analyze and identify hardware for embedded system implementations
DJS22DSC6013.3	Analyze and identify various software issues involved in embedded systems for real time requirements
DJS22DSC6013.4	Analyze and explain the design life-cycle for embedded system implementation.

DJS22DSC6014 & DJS22DSL6014 -Computational Neuroscience and Computational Neuroscience Laboratory

Learners will be able to:	
DJS22DSC6014.1	Understand the computational neural structure.
DJS22DSC6014.2	Illustrate coding and decoding models.
DJS22DSC6014.3	Describe neural circuit and network models.
DJS22DSC6014.4	Apply information theory concepts on Brain mapping



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DJS22ILL2 - Innovative Product Development-IV

Learners will be able to:	
DJS22ILL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL2.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team
DJS22ILL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product
DJS22ILL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL2.5	Develop interpersonal skills, while working as a member of the team or as the leader
DJS22ILL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJS22ILL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS22DSHN1C2 & DJS22DSHN1L1 - Financial Market and Computing and Financial Market and Computing Laboratory (Honors)

Learners will be able to:	
DJS22DSHN1C2.1	Identify various financial instruments and risk associated with them.
DJS22DSHN1C2.2	Analyse applied risk and risk exposure.
DJS22DSHN1C2.3	Solve the measurement of money market, capital market and forex market risk.

B.Tech. Semester VII Course Outcomes

DJ19DSC701 & DJ19DSL701 - Machine Learning - IV and Machine Learning - IV Laboratory

Learners will be able to:	
DJ19DSC701.1	Evaluate the need of MapReduce framework.
DJ19DSC701.2	Apply appropriate method to handle big data.
DJ19DSC701.3	Apply suitable analysis method to draw conclusions from given big data.



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DJ19DSC702 & DJ19DSL702 - Image Processing and Computer Vision – II and

Image Processing and Computer Vision – II Laboratory

Learners will be able to:	
DJ19DSC702.1	Understand various data capturing methods.
DJ19DSC702.2	Apply appropriate object detection and object segmentation methods.
DJ19DSC702.3	Apply suitable method to analyze complex vision data.
DJ19DSC702.4	Develop suitable vision model for prediction.

DJ19DSL703 - Applied Data Science Laboratory

Learners will be able to:	
DJ19DSL703.1	Relate to production systems available in the industry.
DJ19DSL703.2	Debug various problems occurred in a data science production system.

DJ19DSC7011 & DJ19DSL7011 - Parallel Computing and Parallel Computing Laboratory

Learners will be able to:	
DJ19DSC7011.1	Understand different structures of Parallel Computers.
DJ19DSC7011.2	Apply parallel algorithms in problem solving.

DJ19DSC7012 & DJ19DSL7012 - Advanced Computational Linguistics and

Advanced Computational Linguistics Laboratory

Learners will be able to:	
DJ19DSC7012.1	Apply classification techniques on linguistic data.
DJ19DSC7012.2	Apply machine Learning and deep learning techniques to build language model.
DJ19DSC7012.3	Develop applications based on natural language processing.



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DJ19DSC7013 & DJ19DSL7013 - IoT Network Enterprise and IoT Network Enterprise Laboratory

Learners will be able to:	
DJ19DSC7013.1	Outline application & link layer services for wired and wireless applications.
DJ19DSC7013.2	Design & optimize – sensors, power modules and actuation for constrained environment applications.
DJ19DSC7013.3	Comprehend and evaluate the mechanism needed for network security of application environment.
DJ19DSC7013.4	Demonstrate the use of SaaS, PaaS and IaaS services.

**DJ19DSC7014 & DJ19DSL7014 - Adversarial Machine Learning and
Adversarial Machine Learning Laboratory**

Learners will be able to:	
DJ19DSC7014.1	Outline the different categories of adversarial attacks and defenses against conventional machine learning models and deep learning models.
DJ19DSC7014.2	Identify the unique characteristics of adversarial machine learning attacks in the cybersecurity domain.
DJ19DSC7014.3	Understand the basics of adversarial privacy attacks and privacy-preserving defense methods.

DJ19ILO7011 - Product Life Cycle Management

Learners will be able to:	
DJ19ILO7011.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJ19ILO7011.2	Illustrate various approaches and techniques for designing and developing products.
DJ19ILO7011.3	Apply product engineering guidelines / thumb rules in designing products for moulding, machining, sheet metal working etc.
DJ19ILO7011.4	Acquire knowledge in applying virtual product development tools for components, machining and manufacturing plant.



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DJ19ILO7012 - Management Information System

Learners will be able to:	
DJ19ILO7012 .1	Explain how information systems Transform Business.
DJ19ILO7012 .2	Identify the impact information systems have on an organization.
DJ19ILO7012 .3	Describe IT infrastructure and its components and its current trends.
DJ19ILO7012 .4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision making.
DJ19ILO7012 .5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses.

DJ19ILO7013 - Operations Research

Learners will be able to:	
DJ19ILO7013.1	Convert a real-world problem in to a Linear Programming Problem and analyse the solution obtained using Simplex method or other algorithms.
DJ19ILO7013.2	Identify real-world problems as Transportation Problem and Assignment Problem and Solve the decision problem by choosing appropriate algorithm.
DJ19ILO7013.3	Identify the decision situations which vary with time and analyse them using principle of dynamic programming to real life situations.
DJ19ILO7013.4	Explain reasons of formation of queues, classify various queuing systems and apply parameters defined for various queuing systems for decision making in real life situations.
DJ19ILO7013.5	Understand the concept of decision making in situation of competition and recommend strategies in case of two-person zero sum games.
DJ19ILO7013.6	Describe concept of simulation and apply Monte Carlo Simulation technique to systems such as inventory, queuing and recommend solutions for them
DJ19ILO7013.7	Understand need for right replacement policy and determine optimal replacement age.



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DJ19ILO7014 - Cyber Security and Laws

Learners will be able to:	
DJ19ILO7014.1	Understand the different types of cybercrime and security issues E Business.
DJ19ILO7014.2	Analyse different types of cyber threats and techniques for security management.
DJ19ILO7014.3	Describe IT infra Explore the legal requirements and standards for cyber security in various countries to regulate cyberspace.
DJ19ILO7014.4	Impart the knowledge of Information Technology Act and legal framework of right to privacy, data security and data protection.
DJ19ILO7014.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses.

DJ19ILO7015 - Personal Finance Management

Learners will be able to:	
DJ19ILO7015.1	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJ19ILO7015.2	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJ19ILO7015.3	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJ19ILO7015.4	Understand how Microfinance can help in financial inclusion.

DJ19ILO7016 - Energy Audit and Management

Learners will be able to:	
DJ19ILO7016.1	To identify and describe present state of energy security and its importance.
DJ19ILO7016.2	To identify and describe the basic principles and methodologies adopted in energy audit of a utility.
DJ19ILO7016.3	To describe the energy performance evaluation of some common electrical installations and identify the energy saving opportunities.
DJ19ILO7016.4	To describe the energy performance evaluation of some common thermal installations and identify the energy saving opportunities.
DJ19ILO7016.5	To analyze the data collected during performance evaluation and recommend energy saving measures.



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DJ19ILO7017 - Disaster Management and Mitigation Measures

Learners will be able to:	
DJ19ILO7017.1	Know natural as well as manmade disaster and their extent and possible effects on the economy.
DJ19ILO7017.2	Know the institutional framework and organization structure in India for disaster management and get acquainted with government policies, acts and various emergency laws.
DJ19ILO7017.3	Get to know the simple dos and don'ts in such extreme events and build skills to respond accordingly.
DJ19ILO7017.4	Understand the importance of disaster prevention and various mitigation measure with the exposure to disasters hotspots across the globe

DJ19ILO7018 - Science of Well-being

Learners will be able to:	
DJ19ILO7018.1	Describe concepts of holistic health and well-being, differentiate between its true meaning and misconceptions and understand the benefits of well-being.
DJ19ILO7018.2	Recognize meaning of happiness, practice gratitude and self-compassion and analyze incidents from one's own life
DJ19ILO7018.3	Understand the causes and effects of stress, identify reasons for stress in one's own surrounding and self.
DJ19ILO7018.4	Recognize the importance of physical health and fitness, assess their life style and come up with limitations or effectiveness.
DJ19ILO7018.5	Inspect one's own coping mechanism, assess its effectiveness, develop and strategize for betterment and execute it.

DJ19ILO7019 - Research Methodology

Learners will be able to:	
DJ19ILO7019.1	Prepare a preliminary research design for projects in their subject matter areas.
DJ19ILO7019.2	Accurately collect, analyze and report data.
DJ19ILO7019.3	Present complex data or situations clearly



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DJ19ILO7019.4	Review and analyze research findings
DJ19ILO7019.5	Write report about findings of research carried out

DJ19ILO7020 - Public Systems and Policies

Learners will be able to:	
DJ19ILO7020.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJ19ILO7020.2	Analyze the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJ19ILO7020.3	Explain public policy and its operations with special focus on policy relating to Government finance
DJ19ILO7020.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJ19ILO7020.5	Analyze and evaluate the impact of the public policy on firms and economy at large and work under various fields as policymakers.

DJ19DSP704 - Project Stage - I

Learners will be able to:	
DJ19DSP704.1	Discover potential research areas in the field of IT.
DJ19DSP704.2	Survey several available literatures in the related field of study.
DJ19DSP704.3	Compare the several existing solutions for research challenges.
DJ19DSP704.4	Design the solution for the research plan.
DJ19DSP704.5	Summarize the findings of the study conducted.
DJ19DSP704.6	Work effectively as a member of the team.



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DJ19DSHN1C3 - Quantitative Portfolio Management (Honors)

Learners will be able to:	
DJ19DSHN1C3.1	Analyze the measures of risk and return based on the characteristics of different financial assets and value assets such as stocks and bonds for investment.
DJ19DSHN1C3.2	Analyse risk and returns of fixed income instruments and stocks using various models for the purpose of investment.
DJ19DSHN1C3.3	Build and analyse efficient portfolio strategies.
DJ19DSHN1C3.4	Estimate risk and return parameters, and build better diversified portfolios and bond valuation.

B.Tech. Semester VIII Course Outcomes

DJ19DSC801 & DJ19DST801 - Data Ethics and Data Ethics Tutorial

Learners will be able to:	
DJ19DSC801.1	Describe the basic concepts related to Data Ethics and data driven business model.
DJ19DSC801.2	Explain the concept of Bias and Privacy in relation to Data Ethics.
DJ19DSC801.3	Discuss various digital trust and data governance in different applications.

DJ19DSC802 & DJ19DSL802 - High Performance Computing and

High Performance Computing Laboratory

Learners will be able to:	
DJ19DSC802.1	Develop a deep understanding of the architecture and capabilities of GPUs, and they will be able to explain the relevance of GPUs in data science.
DJ19DSC802.2	Optimize GPU-based applications and identify and address performance bottlenecks, make efficient use of GPU memory, and apply parallel programming patterns to solve data science problems.
DJ19DSC802.3	Implement GPU-accelerated solutions for data processing and machine learning tasks, ultimately improving the speed and efficiency of data-driven decision-making processes.



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DJ19DCL8011 & DJ19DSL8011 - Introduction to Quantum and

Introduction to Quantum Computing Laboratory

Learners will be able to:	
DJ19DCL8011.1	To identify and analyse Quantum Building Blocks.
DJ19DCL8011.2	Apply advanced quantum computation algorithms for a real-world problem statement.

DJ19DCL8012 & DJ19DSL8012 - Geo-Spatial Data Science & Geo-Spatial Data Science Laboratory

Learners will be able to:	
DJ19DCL8012.1	Apply tools and techniques used to analyze and visualize geospatial data.
DJ19DCL8012.2	Applying data science methods to solve real-world problems with geospatial data.
DJ19DCL8012.3	Analyze geospatial large data models and ethical issues.

DJ19DCL8013 & DJ19DSL8013 - Advanced Networking Technology & Advanced Networking Technology Laboratory

Learners will be able to:	
DJ19DCL8013.1	Evaluate/ Design Small – Medium Scale Networks from access layer to backbone layer.
DJ19DCL8013.2	Design for Emerging areas such as Iot and IIoT.
DJ19DCL8013.3	Migrate designs to new technologies that are high speed-high security-high QoS Networks.

DJ19DCL8014 & DJ19DSL8014 - Social Network Analysis & Social Network Analysis Laboratory

Learners will be able to:	
DJ19DCL8014.1	Analyze a social network using various visualization tools.
DJ19DCL8014.2	Illustrate large-scale network data and mechanisms used for network growth models.
DJ19DCL8014.3	Examine social networks analysis and prediction using case studies.
DJ19DCL8014.4	Apply appropriate anomaly detection and graph representation method on a network.



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DJ19ILO8021 - Project Management

Learners will be able to:	
DJ19ILO8021.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJ19ILO8021.2	Apply selection criteria and select an appropriate project from different options.
DJ19ILO8021.3	Create a work breakdown structure for a project and develop a schedule based on it. Manage project risk strategically.
DJ19ILO8021.4	Use Earned value technique and determine & predict status of the project.
DJ19ILO8021.5	Capture lessons learned during project phases and document them for future reference.

DJ19ILO8022 - Entrepreneurship Development and Management

Learners will be able to:	
DJ19ILO8022.1	Develop idea generation, creative and innovative skills.
DJ19ILO8022.2	Prepare a Business Plan
DJ19ILO8022.3	Compare different entrepreneur supporting institutions
DJ19ILO8022.4	Correlate suitable MSME scheme for an entrepreneur
DJ19ILO8022.5	Interpret financial and legal aspects of a business.

DJ19ILO8023 - Corporate Social Responsibility

Learners will be able to:	
DJ19ILO8023.1	Understand the key characteristics of Corporate Social Responsibility (CSR) in the context of present-day management.
DJ19ILO8023.2	Apprise regarding business decision-making which is informed by ethical values and respect for people, communities and the environment.
DJ19ILO8023.3	Become aware of creating a strategic plan that enables an organization to reach out to its internal and external stakeholders with consistent messages.
DJ19ILO8023.4	Understand critical issues of Corporate Social Responsibility (CSR) in a cross-cultural setting.



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DJ19ILO8024 - Human Resource Management

Learners will be able to:	
DJ19ILO8024.1	Understand the concepts, aspects, techniques and practices of the human resource management
DJ19ILO8024.2	Understand the Human resource management (HRM) processes, functions, changes and challenges in today's emerging organizational perspective.
DJ19ILO8024.3	Gain knowledge about the latest developments and trends in HRM.
DJ19ILO8024.4	Apply the knowledge of behavioral skills learnt and integrate it with in inter personal and intergroup environment emerging as future stable engineers and managers.

DJ19ILO8025 - Corporate Finance Management

Learners will be able to:	
DJ19ILO8025.1	Understand Indian finance system.
DJ19ILO8025.2	Apply concepts of time value money and risk returns to product, services and business.
DJ19ILO8025.3	Understand corporate finance; evaluate and compare performance of multiple firms.
DJ19ILO8025.4	Take Investment, finance as well as dividend decisions.

DJ19ILO8026 - Logistics and Supply Chain Management

Learners will be able to:	
DJ19ILO8026.1	Demonstrate the functional strategy map of supply chain management
DJ19ILO8026.2	Analyze the determinants of Supply Chain and Transportation networks design.
DJ19ILO8026.3	Demonstrate the need of coordination and sourcing decisions in supply chain.
DJ19ILO8026.4	Understand pricing, revenue management and role of IT in supply chain.
DJ19ILO8026.5	Understand various sustainability aspects of a supply chain.

DJ19ILO8027 - IPR and Patenting



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Learners will be able to:	
DJ19ILO8027.1	Recognize the crucial role of IP for the purposes of product and technology development.
DJ19ILO8027.2	Understand how and when to file a patent
DJ19ILO8027.3	Apply the knowledge to understand the entire ecosystem
DJ19ILO8027.4	Derive value from IP and leverage its value in new product and service development

DJ19ILO8028 - Digital Marketing Management

Learners will be able to:	
DJ19ILO8028.1	Understand the digital marketing framework & model and consumer behaviour.
DJ19ILO8028.2	Develop digital marketing strategy roadmap
DJ19ILO8028.3	Explain the terminology and concepts for developing web-specific media plans
DJ19ILO8028.4	Understand concepts related to digital campaign management and revenue generation models.
DJ19ILO8028.5	Get a perspective on global digital marketing technology/tools and future trends

DJ19ILO8029 - Environmental Management

Learners will be able to:	
DJ19ILO8029.1	Understand and identify environmental issues relevant to India and global concerns.
DJ19ILO8029.2	Learn concepts of ecology
DJ19ILO8029.3	Familiarise environment related legislations
DJ19ILO8029.4	Understand Environmental Auditing Procedures.

DJ19ILO8030 - Labour and Corporate Law



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Learners will be able to:	
DJ19ILO8030.1	Illustrate the role of trade union in the industrial setup
DJ19ILO8030.2	Understand the important causes, impact of industrial disputes and settlement procedures.
DJ19ILO8030.3	To provide in-depth understanding of corporate social responsibility.
DJ19ILO8030.4	Apply concepts, principles and theories to understand simple business laws.
DJ19ILO8030.5	Analyse the principle of international business and strategies adopted by firms to expand globally.

DJ19DSP803 - Project-II

Learners will be able to:	
DJ19DSP803.1	Develop the proposed solution using appropriate techniques.
DJ19DSP803.2	Test the developed system for its correctness using appropriate techniques
DJ19DSP803.3	Work effectively as a member of the team.

DJ19DSHN1C4 - Stochastic Calculus (Honors)

Learners will be able to:	
DJ19DSHN1C4.1	Apply probability theory to analyze random events and situations, and compute probabilities for various scenarios.
DJ19DSHN1C4.2	Describe Brownian motion, understand its properties, and apply it in the context of stochastic processes.
DJ19DSHN1C4.3	Apply numerical methods, including Euler-Maruyama and Monte Carlo simulations, for practical stochastic modeling and analysis.



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Semester III Course Outcomes

DJS23APC201 & DJS23APC201T Linear Algebra and Optimization Techniques & Linear Algebra and Optimization Techniques Tutorial

On completion of the course, learner will be able to:	
DJS23APC201.1	Apply the concept of vector spaces, subspaces and the inner product spaces to the engineering problems.
DJS23APC201.2	Apply the concept of vector spaces using linear transformations which is used in computer graphics and inner product spaces.
DJS23APC201.3	Apply the concepts of eigenvalue and eigenvectors and diagonalization in linear systems.
DJS23APC201.4	Expand the periodic function by using Fourier series and complex form of Fourier series.

DJS23APC202 & DJS23APC202L Data Structures & Data Structures Laboratory

On completion of the course, learner will be able to:	
DJS23APC202.1	Understand the concept of time complexity for algorithms.
DJS23APC202.2	Assimilate the concept of various linear and non-linear data structures.
DJS23APC202.3	Solve the problem using appropriate data structure.
DJS23APC202.4	Implement appropriate searching and sorting algorithms for a given problem.

DJS23APC203L Python Laboratory

On completion of the course, learner will be able to:	
DJS23APC203L.1	Understand basic and object-oriented concepts, data structure implementation in python.
DJS23APC203L.2	Apply file, directory handling and text processing concepts in python.
DJS23APC203L.3	Apply database connectivity, client-server communication using python.
DJS23APC203L.4	Utilize libraries like NumPy, Matplotlib, and Pandas for data manipulation, analysis, and visualization

DJS23AMD201 Operating Systems

On completion of the course, learner will be able to:	
DJS23AMD201.1	Understand the architecture and functionality of computer systems and operating systems
DJS23AMD201.2	Understand and apply the fundamental concepts of process and thread management and evaluate scheduling algorithm's performance to optimize operating system efficiency.
DJS23AMD201.3	Identify the need of concurrency and apply principles of concurrency to solve classical synchronization problems.
DJS23AMD201.4	Understand and apply deadlock handling strategies.
DJS23AMD201.5	Identify the need for memory management and apply the mechanisms for the same.



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DJS23XHS233T Professional and Business Communication Tutorial

On completion of the course, learner will be able to:	
DJS23XHS233T.1	Apply group discussion techniques in professional situations
DJS23XHS233T.2	Use employability skills to optimize career opportunities
DJS23XHS233T.3	Employ storytelling techniques for effective presentation
DJS23XHS233T.4	Prepare technical documents using appropriate style, format, and language
DJS23XHS233T.5	Analyse the concept of professional ethics
DJS23XHS233T.6	Demonstrate interpersonal skills in professional and personal situations

DJS23XHS234 Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23XHS234.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23XHS234.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23XHS234.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level
DJS23XHS234.4	Describe an understanding of the overall role and importance of the finance function.
DJS23XHS234.5	Analyse financial performance and make appropriate inferences

DJS23XEL201L Community Engagement Service

On completion of the course, learner will be able to:	
DJS23XEL201L.1	Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23XEL201L.2	Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23XEL201L.3	Witness diversity in communities and cultures and demonstrate change in approach / attitude as, an evidence of unconditional acceptance.
DJS23XEL201L.4	Recognise, experience and value, effectiveness of working in a team, demonstrating co- existence of the roles - sincere worker and effective leader.

DJS23XSC201P Innovative Product Development I

On completion of the course, learner will be able to:	
DJS23XSC201P.1	Identify the requirement for a product based on societal/research needs.
DJS23XSC201P.2	Justify the need of the solution with proficiency in written and oral communication.
DJS23XSC201P.3	Develop interpersonal skills, while working as a team.



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DJS23AH1201 Computer Graphics and Virtual Reality

On completion of the course, learner will be able to:	
DJS23AH1201.1	Implement various algorithms to generate lines, circles, curves, fractals, and polygons and colour them.
DJS23AH1201.2	Apply 2D and 3D Transformations, viewing, and projections on a given object.
DJS23AH1201.3	Understand the concept of colour models, lighting, shading, and hidden surface elimination.
DJS23AH1201.4	Understand the fundamentals of Animation, Virtual reality, the related technologies, and describe applications of Virtual Reality.



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Semester IV Course Outcomes

DJS23ACPC401 & DJS23ATPC401 Probability and Statistical Inference & Probability and Statistical Inference Tutorial

On completion of the course, learner will be able to:	
DJS23ACPC401.1	Apply the concepts of probability and distributions to some case studies.
DJS23ACPC401.2	Demonstrate sampling distributions and estimate statistical parameters.
DJS23ACPC401.3	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS23ACPC401.4	Perform analysis of variance on data.

DJS23ACPC402 & DJS23ALPC402 Design and Analysis of Algorithms & Design and Analysis of Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS23ACPC402.1	Analyze the performance of algorithms using asymptotic analysis.
DJS23ACPC402.2	Apply the concept of Greedy method to solve all feasible solutions of problems
DJS23ACPC402.3	Find optimal solution of problem by applying the concept of dynamic programming strategy.
DJS23ACPC402.4	Understand the concepts of backtracking, branch and bound to represent solution by state space tree.
DJS23ACPC402.5	Implement string matching techniques.

DJS23ACPC403 & DJS23ALPC403 Artificial Intelligence & Artificial Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS23ACPC403.1	Apply various search algorithms (uninformed and informed) to solve a wide range of problems, from simple puzzles to complex optimization tasks. Represent knowledge using logical and probabilistic models and perform reasoning tasks effectively.
DJS23ACPC403.2	Discover local search and optimization problem.
DJS23ACPC403.3	Develop intelligent agents that can play games optimally or near-optimally using techniques
DJS23ACPC403.4	Inference techniques like forward chaining, backward chaining, and resolution to solve problems and draw conclusions from given knowledge bases as well as planning.

DJS23ALPC404 Programming Laboratory-II (Web Development)

On completion of the course, learner will be able to:	
DJS23ALPC404.1	Implement interactive web page(s) using HTML5, CSS3 and JavaScript.
DJS23ALPC404.2	Implement Single Page Application using React.js and Node.js Framework.
DJS23ALPC404.3	Construct web based Node.js applications using Express.
DJS23ALPC404.4	Apply MongoDB for frontend and backend connectivity using REST API.



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DJS23ACMD401 & DJS23ALMD401 Database Management Systems & Database Management Systems Laboratory

On completion of the course, learner will be able to:	
DJS23ACMD401.1	Design an optimized database.
DJS23ACMD401.2	Construct SQL queries to perform operations on the database.
DJS23ACMD401.3	Demonstrate appropriate transaction management and recovery techniques for a given problem.
DJS23ACMD401.4	Apply indexing mechanisms for efficient retrieval of information from database.

DJS23ITHSX06 Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJS23ITHSX06.1	Understand the importance of a Human-Centric design approach for developing a solution.
DJS23ITHSX06.2	Generate innovative ideas to design sustainable solutions for real-world problems.
DJS23ITHSX06.3	Apply design thinking principles to solve real-world problems

DJS23ICHSX08 & DJS23ITHSX08 Universal Human Values & Universal Human Values Tutorial

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.



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DJS23IPSCX02 Innovative Product Development II

On completion of the course, learner will be able to:	
DJS23IPSCX02.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX02.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX02.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX02.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX02.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX02.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare them to be successful entrepreneurs.
DJS23IPSCX02.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS23ALH1401 C# Programming Laboratory

On completion of the course, learner will be able to:	
DJS23ALH1401.1	Understand the foundation in C# programming for VR development.
DJS23ALH1401.2	Discover Unity Engine and its VR tools.
DJS23ALH1401.3	Analyze complex problems and break them into manageable tasks for immersive VR experiences.
DJS23ALH1401.4	Apply optimization in VR applications for performance and user experience.



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Semester V Course Outcomes

DJS22AMC501 & DJS22AML501 Digital Signal and Image Processing & Digital Signal and Image Processing Laboratory

On completion of the course, learner will be able to:	
DJS22AMC501.1	Classify signals and systems on the basis of their properties and analyze the implications in the context of practical signals and systems
DJS22AMC501.2	Represent signals in the time and frequency domain using multiple representations and analyze LTI systems using convolution in the frequency domain
DJS22AMC501.3	Implement image enhancement techniques in spatial and frequency domain.
DJS22AMC501.4	Interpret and apply image segmentation and representation techniques for object recognition

DJS22AMC502 & DJS22AML502 Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22AMC502.1	Analyse model performance using evaluation metrics.
DJS22AMC502.2	Implement and tune regression and classification algorithms.
DJS22AMC502.3	Apply knowledge of Bayesian learning principles.
DJS22AMC502.4	Apply clustering and dimensionality reduction techniques.
DJS22AMC502.5	Understand the fundamentals of Neural Networks.

DJS22AMC503 & DJS22AML503 Natural Language Processing & Natural Language Processing Laboratory

On completion of the course, learner will be able to:	
DJS22AMC503.1	Understand the Principles and Process of Natural Languages and real-world applications.
DJS22AMC503.2	Demonstrate understanding of state-of-the-art algorithms and techniques for text-based processing of natural language with respect to morphology.
DJS22AMC503.3	Perform POS tagging for a given natural language and select a suitable language modelling technique based on the structure of the language.
DJS22AMC503.4	Check the syntactic and semantic correctness of sentences using grammars and labelling

DJS22AML504 Programming Laboratory-III (Full stack development using Python)

On completion of the course, learner will be able to:	
DJS22AML504.1	Design front end application using basic React.
DJS22AML504.2	Design front end applications using functional components of React.
DJS22AML504.3	Design back-end applications using Node.js.
DJS22AML504.4	Construct web based Node.js applications using Express.
DJS22AML504.5	Apply MongoDB for frontend and backend connectivity using REST API.



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DJS22AMC5011 & DJS22AML5011 Computer Network Security & Computer Network Security Laboratory

On completion of the course, learner will be able to:	
DJS22AMC5011.1	Understand the concepts of data communication and functionalities of ISO - OSI model TCP/IP model.
DJS22AMC5011.2	Illustrate the functions of Data link layer and Network Layer.
DJS22AMC5011.3	Demonstrate the working of transport and application layer protocols.
DJS22AMC5011.4	Identify security vulnerabilities and explore various monitoring measures.
DJS22AMC5011.5	Explore the fundamentals of security algorithms.

DJS22AMC5012 & DJS22AML5012 Advanced Data Structures and Algorithms & Advanced Data Structures and Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS22AMC5012.1	Understand the concept of time complexity and its importance in analyzing algorithms and to Explore the complexity analysis of popular machine learning algorithms.
DJS22AMC5012.2	Explore balanced search tree data structures and spatial data structures used in geometric and spatial applications.
DJS22AMC5012.3	Apply graph algorithms to solve real-world problems related to network flows, matching, and optimization.
DJS22AMC5012.4	Understand the complexity classes NP, P, NP-complete, and NP-hard and their significance in algorithm classification and to explore the computational geometry algorithms

DJS22AMC5013 & DJS22AML5013 Recommendation Systems and Recommendation Systems Laboratory

On completion of the course, learner will be able to:	
DJS22AMC5013.1	Understanding the architecture and working of Collaborative Filtering, Content based recommendation systems
DJS22AMC5013.2	Understanding the architecture and basics of Knowledge based recommendation systems.
DJS22AMC5013.3	Analyzing hybrid and ensembles recommendation systems
DJS22AMC5013.4	Evaluation of recommendation systems by selecting right evaluation parameter.

DJS22A5 Environmental Studies

On completion of the course, learner will be able to:	
DJS22A5.1	Understand how human activities affect environment.
DJS22A5.2	Understand the various technology options that can make a difference.



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DJS22AMHN1C1 Innovative Product Development III(C)

On completion of the course, learner will be able to:	
DJS22ILL1.1	Identify the requirement for a product based on societal/research needs
DJS22ILL1.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS22AMHN1C1 Computer Graphics

On completion of the course, learner will be able to:	
DJS22AMHN1C1.1	Implement various algorithms to generate lines, circles, curves, fractals, and polygons and colour them.
DJS22AMHN1C1.2	Apply 2D and 3D Transformations, viewing, and projections on a given object.
DJS22AMHN1C1.3	Understand the concept of color models, lighting, shading, and hidden surface elimination.
DJS22AMHN1C1.4	Understand the fundamentals of animation.
DJS22AMHN1C1.5	Understand the architecture and rendering pipeline of the OpenGL graphics API.



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Semester VI Course Outcomes

DJS22AMC601 & DJS22AML601 Computer Vision & Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS22AMC601.1	Explain the fundamentals of computer vision, including imaging geometry, transformations, and image formation, and analyze low-level image processing techniques for feature detection and noise modelling.
DJS22AMC601.2	Apply advanced feature extraction techniques such as Canny, SIFT, SURF, and HOG, and evaluate model fitting methods like RANSAC and Hough Transform for object recognition and image analysis.
DJS22AMC601.3	Demonstrate object segmentation and detection using techniques such as region growing, graph-cut, and semantic segmentation, and develop solutions for clustering and texture analysis in computer vision applications.
DJS22AMC601.4	Utilize supervised, unsupervised, and deep learning models such as CNNs, RNNs, and YOLO to design and implement vision-based pattern recognition and transfer learning systems.
DJS22AMC601.5	Analyse 3D data representation, stereo vision, and 3D reconstruction methods, and construct solutions for shape inference using photometric stereo, optical flow, and other shape-from-X techniques.

DJS22AMC602 & DJS22AML602 Deep Learning & Deep Learning Laboratory

On completion of the course, learner will be able to:	
DJS22AMC602.1	Understand the fundamentals of deep neural networks and their training mechanisms.
DJS22AMC602.2	Apply optimization and regularization techniques to improve model performance.
DJS22AMC602.3	Design and implement CNN models for supervised learning tasks.
DJS22AMC602.4	Develop solutions for sequence learning applications using recurrent networks.
DJS22AMC602.5	Analyze unsupervised learning techniques for dimensionality reduction and data reconstruction.
DJS22AMC602.6	Evaluate recent trends in adversarial networks and generative models.

DJS22AMC603 & DJS22AML603 Dev Ops and ML Ops & Dev Ops and ML Ops Laboratory

On completion of the course, learner will be able to:	
DJS22AMC603.1	Understand the fundamental concepts of DevOps.
DJS22AMC603.2	Comprehend the concept of continuous integration and continuous delivery.
DJS22AMC603.3	Compare various stages of continuous deployment and monitoring strategies.
DJS22AMC603.4	Explore various tools to implement concepts in DevOps.
DJS22AMC603.5	Describe the concepts used in the automation of Machine Learning life cycle phases.
DJS22AMC603.6	Elaborate deployment strategies in MLOps.



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DJS22AML604 Cloud Computing Laboratory

On completion of the course, learner will be able to:	
DJS22AML604.1	Understand the fundamental concepts and principles of cloud computing.
DJS22AML604.2	Use virtualization technologies and tools.
DJS22AML604.3	Understand the concept of identity and access management in cloud computing.
DJS22AML604.4	Utilize big data processing frameworks such as Hadoop, Spark, and Flink to process and analyze large datasets.

DJS22AMC6011 & DJS22AML6011 IoT Foundations & IoT Foundations Laboratory

On completion of the course, learner will be able to:	
DJS22AMC6011.1	Understand the basic architecture and organization of processor and controller.
DJS22AMC6011.2	Discover embedded systems design principles and concepts.
DJS22AMC6011.3	Appraise the role of IoT protocols for efficient network communication.
DJS22AMC6011.4	Illustrate different sensor technologies for sensing real world entities and identify the applications of IoT in Industry.

DJS22AMC6012 & DJS22AML6012 Time Series Analysis & Time Series Analysis Laboratory

On completion of the course, learner will be able to:	
DJS22AMC6012.1	To understand the basics of Time series Analysis.
DJS22AMC6012.2	To apply statistical smoothening methods for the time series data.
DJS22AMC6012.3	To forecast the time series data using traditional methods.
DJS22AMC6012.4	To analyze and explore the deep learning techniques for forecasting the time series data

DJS22AMC6013 & DJS22AML6013 Human Machine Interaction & Human Machine Interaction Laboratory

On completion of the course, learner will be able to:	
DJS22AMC6013.1	Identify the various design principles used for interacting between human and machine.
DJS22AMC6013.2	Apply human psychology of everyday actions and UI design processes for real world applications.
DJS22AMC6013.3	Implement mobile, windows, and web-based application.
DJS22AMC6013.4	Evaluate and justify UI design and Create an application for a social and technical task.

DJS22IHL Professional and Business Communication Laboratory



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On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situation
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethic

DJS22ILLL2 Innovative Product Development IV

On completion of the course, learner will be able to:	
DJS22ILLL2.1	Identify the requirement for a product based on societal/research needs
DJS22ILLL2.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILLL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILLL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILLL2.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILLL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILLL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS22AMHN1C2 Augmented Reality and Virtual Reality

On completion of the course, learner will be able to:	
DJS22AMHN1C2.1	Understand the fundamentals of AR and VR technology.
DJS22AMHN1C2.2	Analyse the complex virtual world, complex sound and GPU optimization techniques.
DJS22AMHN1C2.3	Apply the spatial mapping in AR and designing the user interface for VR.
DJS22AMHN1C2.4	Discover the Mobile AR software tools.



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Semester VII Course Outcomes

DJ19AMC701 & DJ19AML701 High Performance Computing & High Performance Computing Laboratory

On completion of the course, learner will be able to:	
DJ19AMC701.1	Understand different parallel processing approaches and platforms involved in achieving High Performance Computing.
DJ19AMC701.2	Explore GPU and CUDA Programming.
DJ19AMC701.3	Understand the principles of Grid and Cloud Computing with practical examples and applications.
DJ19AMC701.4	Analyze the performance measures in high performance computing.
DJ19AMC701.5	Discover the advanced topic in GPU including libraries and framework.

DJ19AMC702 & DJ19AML702 Large Language Models Large Language Models Laboratory

On completion of the course, learner will be able to:	
DJ19AMC702.1	Introduce the fundamental concepts and applications of Generative AI and to provide in-depth understanding of Transformer architecture, the core building block of Large Language Models (LLMs).
DJ19AMC702.2	Explore various LLM architectures and techniques like BERT, GPT-3, T5.
DJ19AMC702.3	Apply prompt engineering techniques for effective LLM interaction and understand the concept of Retrieval Augmented Generation (RAG) and its role in LLMs.
DJ19AMC702.4	Evaluate LLM performance and identify potential biases and understand multimodal LLMs that can process and understand different data modalities.

DJ19AMC703 Big Data Laboratory

On completion of the course, learner will be able to:	
DJ19AMC703.1	Set up and configure Hadoop clusters, and Implement MapReduce programs for data processing and analysis
DJ19AMC703.2	Utilize PostgreSQL/MongoDB for database management, including creating and managing schemas, tables, and performing complex queries with conditions and joins.
DJ19AMC703.3	Implement Hive built-in functions and operators, execute data processing scripts using Pig Latin.
DJ19AMC703.4	Work with Spark to create and manage RDDs, perform actions and transformations, and implement Machine Learning Algorithms.

DJ19AMEC7011 & DJ19AMEL7011 Robotics & Robotics Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC7011.1	Explain the basics of robot anatomy, movement mechanisms, and classifications, and apply this knowledge to real-world robotic systems.
DJ19AMEC7011.2	Perform kinematic analysis and solve direct and inverse kinematics problems for various robot configurations, enhancing their problem-solving skills in robotics.
DJ19AMEC7011.3	Conduct workspace analysis and trajectory planning, and will implement pick-and-place
DJ19AMEC7011.4	Capable of using ROS for robot programming, interface sensors and actuators.



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DJ19AMEC7012 & DJ19AMEL7012 Artificial Intelligence in Finance & Artificial Intelligence in Finance Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC7012.1	Demonstrate Knowledge of AI Applications and its role in Finance
DJ19AMEC7012.2	Implement Risk Management Models to assess and manage financial risks
DJ19AMEC7012.3	Optimize financial portfolio strategies that align with given risk profiles and investment goals.
DJ19AMEC7012.4	Develop AI-driven credit scoring models and compare their performance to traditional scoring systems
DJ19AMEC7012.5	Design the fraud detection system that detect and prevent potential fraudulent activities.

DJ19AMEC7013 & DJ19AMEL7013 Artificial Intelligence in Cyber Security & Artificial Intelligence in Cyber Security Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC7013.1	Understand the various concept of Cyber Security.
DJ19AMEC7013.2	Understand the concepts in AI and Machine Learning for Cyber security.
DJ19AMEC7013.3	Learn various AI and Machine learning models for cyber security.
DJ19AMEC7013.4	Ability to apply AI and machine learning models in cyber security issues.

DJ19CEP703 Project Stage I

On completion of the course, learner will be able to:	
DJ19CEP703.1	Develop the proposed solution using appropriate techniques.
DJ19CEP703.2	Test the developed system for its correctness using appropriate techniques.
DJ19CEP703.3	Work effectively as a member of the team.

DJS22AMHN1C3 Game Design and Gamification

On completion of the course, learner will be able to:	
DJS22AMHN1C3.1	Understanding game design fundamentals.
DJS22AMHN1C3.2	Analyze Game Mechanics and Dynamics.
DJS22AMHN1C3.3	Building foundation for the game.
DJS22AMHN1C3.4	Analyze Opponent Moves in Gamification.



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Semester VIII Course Outcomes

DJ19AMC801 & DJ19AML801 Reinforcement Learning & Reinforcement Learning Laboratory

On completion of the course, learner will be able to:	
DJ19AMC801.1	Explain basic and advanced Reinforcement Learning techniques
DJ19AMC801.2	Identify suitable learning tasks to which Reinforcement learning and Deep Reinforcement Learning techniques can be applied.
DJ19AMC801.3	Apply appropriate Reinforcement Learning method to solve a given problem.
DJ19AMC801.4	Integrate deep learning techniques with reinforcement learning, including the use of neural networks for function approximation and policy representation.

DJ19AMC802 & DJ19AML802 Ethical AI & Ethical AI Laboratory

On completion of the course, learner will be able to:	
DJ19AMC802.1	Understand the principles of responsible AI development, including fairness, accountability, and transparency
DJ19AMC802.2	Identify and describe various sources of bias in AI systems, including data collection, feature selection, and model training processes. Analyze real-world examples of bias in AI applications.
DJ19AMC802.3	Evaluate the role of fairness in AI governance. Identify strategies to promote equitable outcomes and mitigate biases in AI systems.
DJ19AMC802.4	Analyze the implications of privacy and anonymity for individuals and organizations in the context of data management and usage.

DJ19AMEC8011 & DJ19AMEL8011 AI in Healthcare & AI in Healthcare Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC8011.1	Classify the types of AI systems used in healthcare, including ML, natural language processing (NLP), and expert systems, and explain their role in healthcare transformation.
DJ19AMEC8011.2	Apply data mining techniques to healthcare datasets, EHRs, DICOM standards and exploratory data analysis (EDA) for medical imaging data.
DJ19AMEC8011.3	Explore AI applications in genomics, including various NGS pipelines, and evaluate how AI can predict genetic disorders and pandemics.
DJ19AMEC8011.4	Evaluate AI's potential for discovering new drug candidates and streamlining clinical trial processes.

DJ19AMEC8012 & DJ19AMEL8012 Quantum AI & Quantum AI Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC8012.1	Understand quantum requirements and formulate design solutions using quantum circuits.
DJ19AMEC8012.2	Illustrate applicable solutions in one or more application domains using a quantum architecture that integrates ethical, social, and legal concerns.
DJ19AMEC8012.3	Apply the Advanced Quantum Algorithms on real time problem.
DJ19AMEC8012.4	Evaluate suitable algorithms for AI problems



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DJ19AMEC8013 & DJ19AMEL8013 Image Generative AI & Image Generative AI Laboratory

On completion of the course, learner will be able to:	
DJ19AMEC8013.1	Understand the principles of Image Generation and Implement Image Manipulation Techniques.
DJ19AMEC8013.2	Compare and contrast various generative models, including GANs and VAEs, and apply their architectures to real-world problems.
DJ19AMEC8013.3	Demonstrate proficiency in using diffusion models and vision transformers in generating images and utilize vision language models to create and interpret text, image pairs, including text-to-image and image-to-text generation.
DJ19AMEC8013.4	Understand and apply techniques for video generation and critically assess the ethical implications of image generation.

DJ19CEP803 Project Stage II

On completion of the course, learner will be able to:	
DJ19CEP803.1	Develop the proposed solution using appropriate techniques.
DJ19CEP803.2	Test the developed system for its correctness using appropriate techniques.
DJ19CEP803.3	Work effectively as a member of the team.

DJ19AMLHN1C4 Metaverse

On completion of the course, learner will be able to:	
DJ19AMLHN1C4.1	Comprehend the key technologies fueling the Metaverse (VR, AR, blockchain, AI).
DJ19AMLHN1C4.2	Categorize and discuss the various applications of the Metaverse across different industries.
DJ19AMLHN1C4.3	Explore the legal frameworks governing the Metaverse and intellectual property rights.
DJ19AMLHN1C4.4	Discover emerging technologies that may shape the future of the Metaverse.



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Semester III Course Outcomes

DJS23SCPC301 & DJS23STPC301 Linear Algebra and Optimization Techniques & Linear Algebra and Optimization Techniques Tutorial

On completion of the course, learner will be able to:	
DJS23SCPC301.1	Apply the concept of vector spaces, subspaces and the inner product spaces to the engineering problems.
DJS23SCPC301.2	Apply the concept of vector spaces using linear transformations which is used in computer graphics and inner product spaces
DJS23SCPC301.3	Apply the concepts of eigenvalue and eigenvectors and diagonalization in linear systems.
DJS23SCPC301.4	Apply the concept of unconstrained optimization techniques to the engineering problems.

DJS23SCPC302 & DJS23SLPC302 Data Structures & Data Structures Laboratory

On completion of the course, learner will be able to:	
DJS23SCPC302.1	Understand the concept of time complexity for algorithms.
DJS23SCPC302.2	Assimilate the concept of various linear and non-linear data structures.
DJS23SCPC302.3	Solve the problem using appropriate data structure.
DJS23SCPC302.4	Implement appropriate searching and sorting algorithms for a given problem.

DJS23SLPC303 Python for Data Science Laboratory

On completion of the course, learner will be able to:	
DJS23SLPC303.1	Understand basic and object-oriented concepts, data structure implementation in python.
DJS23SLPC303.2	Apply file, directory handling and text processing concepts in python.
DJS23SLPC303.3	Apply database connectivity, client-server communication using python.
DJS23SLPC303.4	Develop python-based application (web/Desktop) using Django web framework/Tkinter

DJS23SCMD301 Database Technologies Laboratory

On completion of the course, learner will be able to:	
DJS23SCMD301.1	Design an optimized database
DJS23SCMD301.2	Construct SQL queries to perform operations on the database.
DJS23SCMD301.3	Demonstrate appropriate transaction management and recovery techniques for a given problem.
DJS23SCMD301.4	Build data lake and data warehouse for different needs.
DJS23SCMD301.5	Design Document oriented databases.



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DJS23OCOE301 Product Life Cycle Management

On completion of the course, learner will be able to:	
DJS23OCOE301.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJS23OCOE301.2	Illustrate various approaches and techniques for designing and developing products.
DJS23OCOE301.3	Acquire knowledge in applying virtual product development tools.
DJS23OCOE301.4	Acquire knowledge in implementation of Environmental aspects in PLM.

DJS23OCOE302 Management Information System

On completion of the course, learner will be able to:	
DJS23OCOE302.1	Explain the fundamental concepts of the management information systems used in business
DJS23OCOE302.2	Describe IT infrastructure and its components and its current trends.
DJS23OCOE302.3	Use the tools and technologies for accessing information from databases to improve business performance and decision making
DJS23OCOE302.4	Identify and explain the security and ethical challenges in MIS along with the measures to be taken
DJS23OCOE302.5	Select a suitable social computing platform for the given requirements that integrates AI and IoT
DJS23OCOE302.6	Explain the processes involved in the information system within the organization includes information acquisition and enterprise and global management technologies.

DJS23OCOE303 Operations Research

On completion of the course, learner will be able to:	
DJS23OCOE303.1	Formulate the real-world optimisation problem into a Linear Programming Problem (LPP) and analyse the solution obtained using LPP optimisation models.
DJS23OCOE303.2	Solve Linear Programming Problems using transportation and assignment models.
DJS23OCOE303.3	Apply Decision Theory to determine the optimal course of action when a number of alternatives are available, and their consequences cannot be forecast with certainty and uncertainty.
DJS23OCOE303.4	Apply Game Theory for decision making under conflicting situations where there are one or more opponents (players).
DJS23OCOE303.5	To breaking down a large problem into smaller sub problems and solved recursively or iteratively using Dynamic Programming models.



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DJS23OCOE304 Personal Finance Management

On completion of the course, learner will be able to:	
DJS23OCOE304.1	Understand the Indian financial system.
DJS23OCOE304.2	Use a framework for financial planning to understand the overall role finances play in his/her personal life
DJS23OCOE304.3	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJS23OCOE304.4	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJS23OCOE304.5	Understand how Microfinance can help in financial inclusion.

DJS23OCOE305 Public Systems and Policies

On completion of the course, learner will be able to:	
DJS23OCOE305.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJS23OCOE305.2	Analyse the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJS23OCOE305.3	Explain public policy and its operations with special focus on policy relating to Government finance.
DJS23OCOE305.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJS23OCOE305.5	Analyze and evaluate the impact of public policy on firms and the economy at large and work under various fields as policymakers.

DJS23OCOE306 Fundamentals of Biomedical Instruments

On completion of the course, learner will be able to:	
DJS23OCOE306.1	Associate & describe the different physiological processes taking place within the human body.
DJS23OCOE306.2	Identify the use of biomaterials and apply principles of various transducers & sensors.
DJS23OCOE306.3	Demonstrate the working principle of various medical instruments.
DJS23OCOE306.4	Demonstrate principles used in imaging modalities and analysis.
DJS23OCOE306.5	Identify different processes used in telemetry and telemedicine.

DJS23OCOE307 IPR & Patenting

On completion of the course, learner will be able to:	
DJS23OCOE307.1	Map a given project/ idea to a suitable intellectual property rights.
DJS23OCOE307.2	Explain the fundamentals of the patents, copyrights, and design registrations.
DJS23OCOE307.3	Draft applications to protect various intellectual property rights.
DJS23OCOE307.4	Communicate with national and/or international intellectual property organisations.



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DJS23OCOE308 Entrepreneurship and Startup Ecosystem

On completion of the course, learner will be able to:	
DJS23OCOE308.1	Effectively Navigate the Global Startup Landscape
DJS23OCOE308.2	Cultivate an Entrepreneurial Mindset.
DJS23OCOE308.3	Create Effective Business Models
DJS23OCOE308.4	Understand the significance of Intellectual Property rights.
DJS23OCOE308.5	Master Fundraising Strategies

DJS23IPSCX01 Innovative Product Development I

On completion of the course, learner will be able to:	
DJS23IPSCX01.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX01.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX01.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX01.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX01.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX01.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare them to be successful entrepreneurs.
DJS23IPSCX01.7	Demonstrate product/project management principles during the design and development work and excel in written (Technical paper preparation) as well as oral communication.

DJS23ITHSX05 Professional and Business Communication Tutorial

On completion of the course, learner will be able to:	
DJS23ITHSX05.1	Apply group discussion techniques in professional situations
DJS23ITHSX05.2	Use employability skills to optimize career opportunities
DJS23ITHSX05.3	Employ storytelling techniques for effective presentation
DJS23ITHSX05.4	Prepare technical documents using appropriate style, format, and language
DJS23ITHSX05.5	Analyze the concept of professional ethics
DJS23ITHSX05.6	Demonstrate interpersonal skills in professional and personal situations

DJS23ICHSX07 Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences



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DJS23ILELX11 Community Engagement Service

On completion of the course, learner will be able to:	
DJS23ILELX11.1	Knowledge application: Applies knowledge understandings acquired from one's academic study/ field/ discipline for community level education, information dissemination by participation and engagement in community welfare activities.
DJS23ILELX11.2	Commitment for cause: Identify and experience commitment for community engagement activities that reinforce sense of belongingness and gratitude towards societal cause.
DJS23ILELX11.3	Diversity: Witness diversity in communities and cultures and demonstrate change in approach / attitude as, an evidence of unconditional acceptance.
DJS23ILELX11.4	Team: Recognise, experience and value, effectiveness of working in a team, demonstrating co-existence of the roles - sincere worker and effective leader.

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DJS23SCH1301 Cellular Biology

On completion of the course, learner will be able to:	
DJS23SCH1301.1	Define and recall the cell structure and functions
DJS23SCH1301.2	Classify the cell constituents and biomolecules
DJS23SCH1301.3	Elaborate the principles and regulations of replication, transcription and translation mechanism
DJS23SCH1301.4	Develop knowledge on genome-level cellular organisation
DJS23SCH1301.5	Identify the cellular data and apply basic sequencing algorithms



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Semester IV Course Outcomes

DJS23SCPC401 & DJS23STPC401 Probability and Statistical Inference & Probability and Statistical Inference Tutorial

On completion of the course, learner will be able to:	
DJS23SCPC401.1	Apply the concepts of probability and distributions to some case studies.
DJS23SCPC401.2	Demonstrate sampling distributions and estimate statistical parameters.
DJS23SCPC401.3	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS23SCPC401.4	Perform analysis of variance on data.

DJS23SCPC402 & DJS23SLPC402 Design and Analysis of Algorithms & Design and Analysis of Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS23SCPC402.1	Analyze the performance of algorithms using asymptotic analysis.
DJS23SCPC402.2	Apply the concept of Greedy method to solve all feasible solutions of problems.
DJS23SCPC402.3	Find an optimal solution of problem by applying the concept of dynamic programming strategy.
DJS23SCPC402.4	Understand the concepts of backtracking, branch and bound to represent solution by state space tree.
DJS23SCPC402.5	Implement string matching techniques

DJS23SCPC403 & DJS23SLPC403 Artificial Intelligence & Artificial Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS23SCPC403.1	Apply various search algorithms (uninformed and informed) to solve a wide range of problems, from simple puzzles to complex optimization tasks. Represent knowledge using logical and probabilistic models and perform reasoning tasks effectively.
DJS23SCPC403.2	Discover local search and optimization problem.
DJS23SCPC403.3	Develop intelligent agents that can play games optimally or near-optimally using techniques
DJS23SCPC403.4	Inference techniques like forward chaining, backward chaining, and resolution to solve problems and draw conclusions from given knowledge bases as well as planning.
DJS23SCPC403.5	Develop the ability to apply first-order logic (FOL) inference methods, such as unification, forward chaining, backward chaining, and resolution, to solve complex problems



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DJS23SLPC404 Web Development Laboratory

On completion of the course, learner will be able to:	
DJS23SLPC404.1	Create interactive web pages using HTML5, CSS3, and Bootstrap for responsive design.
DJS23SLPC404.2	Develop dynamic and interactive functionalities using JavaScript.
DJS23SLPC404.3	Build Single Page Applications (SPAs) with React.js for a seamless user experience.
DJS23SLPC404.4	Design server-side applications using Node.js for efficient backend processing.
DJS23SLPC404.5	Utilize Express.js to construct robust web-based Node.js applications.
DJS23SLPC404.6	Integrate MongoDB with frontend and backend using REST API for effective data management and connectivity

DJS23SLPC404 Web Development Laboratory

On completion of the course, learner will be able to:	
DJS23SLPC404.1	Create interactive web pages using HTML5, CSS3, and Bootstrap for responsive design.
DJS23SLPC404.2	Develop dynamic and interactive functionalities using JavaScript.
DJS23SLPC404.3	Build Single Page Applications (SPAs) with React.js for a seamless user experience.
DJS23SLPC404.4	Design server-side applications using Node.js for efficient backend processing.
DJS23SLPC404.5	Utilize Express.js to construct robust web-based Node.js applications.
DJS23SLPC404.6	Integrate MongoDB with frontend and backend using REST API for effective data management and connectivity

DJS23SCMD401 & DJS23SLMD401 Introduction to Operating Systems and Computer Networking Fundamentals & Introduction to Operating Systems and Computer Networking Fundamentals Laboratory

On completion of the course, learner will be able to:	
DJS23SCMD401.1	Understand the architecture and functionality of computer systems and operating systems, focusing on process, thread management, and optimizing system efficiency through scheduling algorithms.
DJS23SCMD401.2	Apply principles of concurrency to address classical synchronization problems, and implement deadlock handling and memory management strategies.
DJS23SCMD401.3	Demonstrate data communication concepts at the physical layer and differentiate between the ISO-OSI and TCP/IP models.
DJS23SCMD401.4	Design networks with appropriate IP addressing schemes, including subnetting and supernetting, and analyze networking protocols at the data link and transport layers.
DJS23SCMD401.5	Explore wireless technologies and understand various application layer protocols.



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SEM-IV Open Electives:

DJS23OCOE401 Project Management

On completion of the course, learner will be able to:	
DJS23OCOE401.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJS23OCOE401.2	Apply selection criteria and select an appropriate project from different options.
DJS23OCOE401.3	Create a work break down structure for a project and develop a schedule based on it. Manage project risk strategically.
DJS23OCOE401.4	Use Earned value technique and determine & predict status of the project. Capture lessons learned during project phases and document them for future reference
DJS23OCOE401.5	Differentiate between traditional waterfall approach and agile scrum methodology for software development projects.

DJS23OCOE402 Cyber Security, Policies and Laws

On completion of the course, learner will be able to:	
DJS23OCOE402.1	Understand and describe the major types of cybercrime and navigate legal frameworks and regulations concerning digital personal and data protection.
DJS23OCOE402.2	Navigate legal frameworks and regulations concerning digital personal data protection, including provisions of the Indian IT Act and Digital Personal Data Protection Act (2023).
DJS23OCOE402.3	Implement strategies for cybersecurity outlined in the National Cyber Security Policy.
DJS23OCOE402.4	Apply appropriate law enforcement strategies to both, prevent and control cybercrime.
DJS23OCOE402.5	Comprehend regulations and strategies pertaining to AI (Artificial Intelligence) and large language models.

DJS23OCOE403 Advanced Operations Research

On completion of the course, learner will be able to:	
DJS23OCOE403.1	Apply Duality theory to solve linear programming problem and analyse optimum solution.
DJS23OCOE403.2	Construct linear integer programming models and apply the O.R. algorithms and techniques to solve linear integer programming problems.
DJS23OCOE403.3	Determine best satisfying solution under a varying quantity of resources and priorities of the goals.
DJS23OCOE403.4	Set up decision models and solve nonlinear programming- unconstrained optimization problems.
DJS23OCOE403.5	Set up decision models and solve nonlinear programming- constrained optimization problems



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DJS23OCOE404 Corporate Finance Management

On completion of the course, learner will be able to:	
DJS23OCOE404.1	Understand Indian finance system.
DJS23OCOE404.2	Apply concepts of time value money and risk returns to product, services and business.
DJS23OCOE404.3	Understand corporate finance and working capital management.
DJS23OCOE404.4	Take Investment and finance decisions.
DJS23OCOE404.5	Take dividend decisions

DJS23OCOE405 Corporate Social Responsibility

On completion of the course, learner will be able to:	
DJS23OCOE405.1	Upon completion of this course, students will be able to analyse and critique the ethical dimensions of Corporate Social Responsibility initiatives, demonstrating a comprehensive understanding of CSR principles and their ethical underpinnings.
DJS23OCOE405.2	Upon completion of this course, students will demonstrate an understanding of the legislative frameworks shaping Corporate Social Responsibility both in India and globally, alongside recognizing the key drivers fostering CSR practices within the Indian context
DJS23OCOE405.3	Upon completion of this course, students will be able to identify and discuss the significance of social responsibility and community engagement initiatives, demonstrating an understanding of their impact on both businesses and society
DJS23OCOE405.4	Evaluate the key drivers of CSR in India, understanding market pressures, civil society influence, and regulatory frameworks, while assessing case studies of successful CSR initiatives.
DJS23OCOE405.5	Design and propose CSR strategies and community engagement programs that align with sustainable development goals, emphasizing corporate volunteering, stakeholder engagement, and public-private partnerships

DJS23OCOE406 Bioinformatics

On completion of the course, learner will be able to:	
DJS23OCOE406.1	Understand the structure and function of cells, organelles, and biomolecules.
DJS23OCOE406.2	Understand the types of data stored in bioinformatics databases and their relevance to biological research.
DJS23OCOE406.3	Explore genomic databases and understand the structure and content of protein databases.
DJS23OCOE406.4	Understand system biology concepts and molecular evolution.
DJS23OCOE406.5	Apply knowledge of cellular and molecular biology concepts to analyze a biological problem



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DJS23OCOE407 Human Resource Management

On completion of the course, learner will be able to:	
DJS23OCOE407.1	Understand the changing environment of the HRM and the role of the HR managers.
DJS23OCOE407.2	Understand the recruitment process and the application of the IT.
DJS23OCOE407.3	Understand the importance of the training and development.
DJS23OCOE407.4	Understand about the pay plans, performance appraisal and compensation
DJS23OCOE407.5	Understand the importance of the labour relation, the employee security and collective bargaining

DJS23OCOE408 Digital Marketing Management

On completion of the course, learner will be able to:	
DJS23OCOE408.1	Understand the digital marketing framework & model and consumer behaviour.
DJS23OCOE408.2	Develop digital marketing strategy roadmap.
DJS23OCOE408.3	Explain the terminology and concepts for developing web-specific media plans.
DJS23OCOE408.4	Understand concepts related to digital campaign management and revenue generation models.
DJS23OCOE408.5	Get a perspective on global digital marketing technology/tools and future trends.

DJS23OCOE409 Logistics and Supply Chain Management

On completion of the course, learner will be able to:	
DJS23OCOE409.1	Develop a sound understanding of the important role of supply chain management in today's business environment.
DJS23OCOE409.2	Develop criteria and standards to achieve improved business performance by integrating and optimizing the total logistics and supply-chain process.
DJS23OCOE409.3	Summarize the value of focusing on information business logistics systems which drives improved accuracy and decision-making at all levels of management
DJS23OCOE409.4	Become familiar with current supply chain information technology management trends.
DJS23OCOE409.5	Use available technologies to enhance work performance and support supply chain functions, processes, transactions, and communications.

DJS23IPSCX02 Innovative Product Development II

On completion of the course, learner will be able to:	
DJS23IPSCX02.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX02.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX02.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX02.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX02.5	Demonstrate product/project management principles during the design and development work and excel in written (Technical paper preparation) as well as oral communication.



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DJS23ILHSX06 Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJS23ILHSX06.1	Understand and apply the design thinking process to analyze and solve real-world problems.
DJS23ILHSX06.2	Develop the ability to empathize with users, create user personas, and design empathy and journey maps tailored to specific challenges.
DJS23ILHSX06.3	Demonstrate proficiency in defining clear and actionable problem statements that uncover areas of opportunity.
DJS23ILHSX06.4	Generate diverse ideas using ideation techniques, such as brainstorming and SCAMPER, to approach problem-solving creatively and collaboratively.
DJS23ILHSX06.5	Create and test prototypes, iterating based on feedback and validating solutions through digital platforms and peer review

DJS23ICHSX08 & DJS23ITHSX08 Universal Human Values & Universal Human Values Tutorial

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co-existence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work



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Semester V Course Outcomes

DJS22ADC501 & DJS22ADL501 Image Processing & Image Processing Laboratory

On completion of the course, learner will be able to:	
DJS22ADC501.1	Illustrate & make use of the fundamental concepts and basic elements of digital image processing.
DJS22ADC501.2	Apply image enhancement in spatial domain, frequency domain and using histogram modelling.
DJS22ADC501.3	Apply different image segmentation and representation techniques on images.
DJS22ADC501.4	Examine different morphological operations used in binary image processing.
DJS22ADC501.5	Analyse image in frequency domain through different transforms.

DJS22ADC502 & DJS22ADL502 Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22ADC502.1	Analyse model performance using evaluation metrics.
DJS22ADC502.2	Implement and tune regression and classification algorithms.
DJS22ADC502.3	Apply knowledge of Bayesian learning principles.
DJS22ADC502.4	Apply clustering and dimensionality reduction techniques.
DJS22ADC502.5	Understand the fundamentals of Neural Networks.

DJS22ADC503 & DJS22ADL503 Natural Language Processing & Natural Language Processing Laboratory

On completion of the course, learner will be able to:	
DJS22ADC503.1	Understand the Principles and Process of Natural Languages and real-world applications.
DJS22ADC503.2	Demonstrate understanding of state-of-the-art algorithms and techniques for text-based processing of natural language with respect to morphology
DJS22ADC503.3	Perform POS tagging for a given natural language and select a suitable language modelling technique based on the structure of the language
DJS22ADC503.4	Check the syntactic and semantic correctness of sentences using grammars and labelling

DJS22ADL504 Computer Networks and Cloud Computing Lab

On completion of the course, learner will be able to:	
DJS22ADL504.1	Demonstrate data communication concepts, protocols, and utilize them in the design of networks incorporating IP addressing, subnetting, and supernetting schemes.
DJS22ADL504.2	Evaluate, analyze, and investigate protocol performance variances comprehensively.
DJS22ADL504.3	Acquire fundamental knowledge in cloud computing principles.
DJS22ADL504.4	Gain proficiency in utilizing diverse cloud services and technologies for practical applications.



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DJS22ADC5011 & DJS22ADL5011 IoT and Edge Computing & IoT and Edge Computing Laboratory

On completion of the course, learner will be able to:	
DJS22ADC5011.1	Gain a comprehensive understanding of the Internet of Things (IoT) ecosystem, including key concepts, architectures, and communication protocols.
DJS22ADC5011.2	Examine the principles and advantages of edge computing in the context of IoT, understanding the role it plays in enhancing data processing efficiency and reducing latency.
DJS22ADC5011.3	Investigate and develop the unique security challenges posed by IoT devices and edge computing, including vulnerabilities, privacy concerns, and potential attack vectors.

DJS22ADC5012 & DJS22ADL5012 Nature Inspired Computing & Nature Inspired Computing Laboratory

On completion of the course, learner will be able to:	
DJS22ADC5012.1	Describe the fundamental principles of nature-inspired computing and its significance in solving complex real-world problems across various domains.
DJS22ADC5012.2	Demonstrate proficiency in implementing and analyzing evolutionary algorithms and swarm intelligence techniques.
DJS22ADC5012.3	Understand of the principles of artificial immune systems and their applications
DJS22ADC5012.4	Acquire knowledge of various biologically inspired computing hardware technologies

DJS22ADC5013 & DJS22ADL5013 Recommendation Systems & Recommendation Systems Laboratory

On completion of the course, learner will be able to:	
DJS22ADC5013.1	Compare different types of Recommender Systems.
DJS22ADC5013.2	Understand various issues related to recommender system development.
DJS22ADC5013.3	Design a recommender system for a given problem
DJS22ADC5013.4	Relate data collected from a recommender system to understand user preferences and/or behaviour.
DJS22ADC5013.5	Describe system evaluation methods from both algorithmic and users' perspectives

DJS22ADC5014 & DJS22ADL5014 DevOps & DevOps Laboratory

On completion of the course, learner will be able to:	
DJS22ADC5014.1	Apply software engineering principles for application development.
DJS22ADC5014.2	Students will be to interpret and apply various principles, phases and activities of Agile as well as scrum methodology
DJS22ADC5014.3	Be able to understand and implement Devops principles for CI/CD
DJS22ADC5014.4	Apply testing process for application development.
DJS22ADC5014.5	Students will be able to apply Configuration Management Tools using Containerization



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DJS22A3 Environmental Studies

On completion of the course, learner will be able to:	
DJS22A3.1	Understand how human activities affect environment
DJS22A3.2	Understand the various technology options that can make a difference

DJS22ILLL1 Innovative Product Development-III

On completion of the course, learner will be able to:	
DJS22ILLL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILLL1.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS22ILLL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILLL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyses the impact of the proposed method of design and development of the product.
DJS22ILLL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILLL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILLL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS22ADHN1C1 Introduction to Biological Science

On completion of the course, learner will be able to:	
DJS22ADHN1C1.1	Define and recall the cell structure and functions
DJS22ADHN1C1.2	Classify the cell constituents and biomolecules
DJS22ADHN1C1.3	Elaborate the principles and regulations of replication, transcription and translation mechanism
DJS22ADHN1C1.4	Develop knowledge on genome-level cellular organization



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Semester VI Course Outcomes

DJS22ADC601 & DJS22ADL601 Computer Vision & Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS22ADC601.1	Understand foundational concepts of computer vision and apply geometric transformations
DJS22ADC601.2	Analyze and implement feature detection and description techniques
DJS22ADC601.3	Apply segmentation and detection methods for object recognition
DJS22ADC601.4	Evaluate and apply clustering as well motion detection and optical flow algorithms
DJS22ADC601.5	Implement and leverage deep learning models
DJS22ADC601.6	Assess the Performance of Computer Vision Systems in Real-World Applications

DJS22ADC602 & DJS22ADL602 Deep Learning & Deep Learning Laboratory

On completion of the course, learner will be able to:	
DJS22ADC602.1	Understand the fundamentals of deep neural networks and their training mechanisms.
DJS22ADC602.2	Apply optimization and regularization techniques to improve model performance.
DJS22ADC602.3	Design and implement CNN models for supervised learning tasks.
DJS22ADC602.4	Develop solutions for sequence learning applications using recurrent networks
DJS22ADC602.5	Analyze unsupervised learning techniques for dimensionality reduction and data reconstruction.
DJS22ADC602.6	Evaluate recent trends in adversarial networks and generative models.

DJS22ADC603 & DJS22ADL603 Optimization Techniques & Optimization Techniques Laboratory

On completion of the course, learner will be able to:	
DJS22ADC603.1	Understand basics of Optimization methods
DJS22ADC603.2	Apply Linear Programming Techniques for Optimization
DJS22ADC603.3	Solve Transportation Problems with various methods
DJS22ADC603.4	Apply Optimization for assignment problems
DJS22ADC603.5	Implement various Optimization Methods for ML
DJS22ADC603.6	Implement various Optimization Methods for DL

DJS22ADL604 Big Data Laboratory

On completion of the course, learner will be able to:	
DJS22ADL604.1	Describe big data and use cases from selected business domains.
DJS22ADL604.2	Use Hadoop related tools such as HBase, Cassandra, Pig, and Hive for big data Analytics
DJS22ADL604.3	Build and maintain reliable, scalable, distributed systems using Apache Spark.
DJS22ADL604.4	Design and build MongoDB based Big Data Applications and learn MongoDB query language.
DJS22ADL604.5	Demonstrate proficiency in using Tableau and Power BI to create visually compelling and interactive data visualizations on complex data sets
DJS22ADL604.6	Communicate data-driven insights and stories through visually engaging presentations using Tableau and Power BI.



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DJS22ADC6011 & DJS22ADL6011 MLOps & MLOps Laboratory

On completion of the course, learner will be able to:	
DJS22ADC6011.1	Understand the Fundamentals of MLOps and Its Role in ML Lifecycle Management.
DJS22ADC6011.2	Develop Skills in Data and Model Management for Reproducibility and Scalability.
DJS22ADC6011.3	Build and Automate ML Model Training Pipelines.
DJS22ADC6011.4	Implement Model Deployment and Serving Strategies Using CI/CD.
DJS22ADC6011.5	Monitor and Optimize ML Model Performance and Infrastructure.
DJS22ADC6011.6	Apply Governance, Compliance, and Security Principles in MLOps.

DJS22ADC6012 & DJS22ADL6012 Network Security and Cryptography & Network Security and Cryptography Laboratory

On completion of the course, learner will be able to:	
DJS22ADC6012.1	Understand the basics of Network Security.
DJS22ADC6012.2	Learn the basics of Cryptography
DJS22ADC6012.3	Implement different Key Management and Authentication.
DJS22ADC6012.4	Explore Security at Network and Transport Layer.
DJS22ADC6012.5	Analyze different Non-Cryptographic Protocol Vulnerabilities.
DJS22ADC6012.6	Identify the function of an IDS and firewall for the system security

DJS22ADC6013 & DJS22ADL6013 Computational Finance & Computational Finance Laboratory

On completion of the course, learner will be able to:	
DJS22ADC6013.1	Understand the knowledge of time value of money, debt and leasing on real time financial data.
DJS22ADC6013.2	Measure the Capital Budgeting and Depreciation.
DJS22ADC6013.3	Understand the knowledge of Break-Even Point and Leverage on real time financial data.
DJS22ADC6013.4	Apply the knowledge of various investment methods and measuring and managing various types of financial risks.
DJS22ADC6013.5	Apply the knowledge of Insurance and its types on real time financial data
DJS22ADC6013.6	Apply Financial Planning Strategies for Personal and Business Insurance

DJS22ADC6014 & DJS22ADL6014 Social Media Analytics & Social Media Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22ADC6014.1	Understand the fundamental concepts of social media and its impact on communication
DJS22ADC6014.2	Describe the significance of social media analytics in evaluating online presence and decisionmaking
DJS22ADC6014.3	Analyze the effectiveness of social media strategies using quantitative and qualitative metrics
DJS22ADC6014.4	Utilize various social media analytics tools to extract and interpret relevant data
DJS22ADC6014.5	Apply effective visualization techniques to represent and communicate insights from social media data
DJS22ADC6014.6	Evaluate the ethical and legal considerations involved in the use of social media data for analytics



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DJS22IHL Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics

DJS22ILLL2 Innovative Product Development IV

On completion of the course, learner will be able to:	
DJS22ILLL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILLL2.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILLL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILLL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILLL2.5	Develop interpersonal skills, while working as a member of the team or as the leader
DJS22ILLL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS22ILLL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS22ADHN1C2 & DJS22ADHN1L1 Algorithms for Computational Biology & Algorithms for Computational Biology Laboratory

On completion of the course, learner will be able to:	
DJS22ADHN1C2.1	Understand Computational Biology and Algorithms
DJS22ADHN1C2.2	Apply Sequence Alignment and Evolutionary Analysis Techniques
DJS22ADHN1C2.3	Analyze Protein Structures and Molecular Interactions
DJS22ADHN1C2.4	Interpret Gene Expression Data Using Advanced Algorithms
DJS22ADHN1C2.5	Model and Analyze Biological Networks
DJS22ADHN1C2.6	Leverage Machine Learning for Biological Data Analysis



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Semester VII Course Outcomes

DJ19ADC701 & DJ19ADL701 Large Language Models & Large Language Models Laboratory

On completion of the course, learner will be able to:	
DJ19ADC701.1	Introduce the fundamental concepts and applications of Generative AI and to provide in-depth understanding of Transformer architecture, the core building block of Large Language Models (LLMs).
DJ19ADC701.2	Explore various LLM architectures and techniques like BERT, GPT-3, T5.
DJ19ADC701.3	Apply prompt engineering techniques for effective LLM interaction and understand the concept of Retrieval Augmented Generation (RAG) and its role in LLMs.
DJ19ADC701.4	Evaluate LLM performance and identify potential biases and understand multimodal LLMs that can process and understand different data modalities

DJ19ADC702 & DJ19ADL702 Time Series Analysis and Forecasting & Time Series Analysis and Forecasting Laboratory

On completion of the course, learner will be able to:	
DJ19ADC702.1	To understand the basics of Time series Analysis.
DJ19ADC702.2	To apply statistical smoothening methods for the time series data
DJ19ADC702.3	To forecast the time series data using traditional methods
DJ19ADC702.4	To analyse and explore the deep learning techniques for forecasting the time series data

DJ19ADL703 Semantic Web Laboratory

On completion of the course, learner will be able to:	
DJ19ADL703.1	Demonstrate proficiency in creating, querying, and manipulating RDF datasets using RDFlib in Python.
DJ19ADL703.2	Design and develop ontologies using the Web Ontology Language (OWL),
DJ19ADL703.3	Integrate heterogeneous datasets using semantic technologies and understand the role of graph databases in managing semantic data
DJ19ADL703.4	Apply semantic querying principles to extract meaningful insights from semantic datasets
DJ19ADL703.5	Deploy a Semantic Web application on a cloud platform using Neo4j for data storage and retrieval

DJ19ADC7011 & DJ19ADL7011 Security Operations & Security Operations Laboratory

On completion of the course, learner will be able to:	
DJ19ADC7011.1	Understanding cyber threats and attack methodologies empowers organizations to better defend against cyberattacks..
DJ19ADC7011.2	Ability to design, implement, and manage security controls in dynamic and distributed IT infrastructures.
DJ19ADC7011.3	Proficiency in using security tools and technologies for threat intelligence, monitoring, and response
DJ19ADC7011.4	Understanding of security automation frameworks and techniques for streamlining security operations.
DJ19ADC7011.5	Skill in identifying, analysing, and mitigating security risks and vulnerabilities.



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DJ19ADC7012 & DJ19ADL7012 Recommendation Systems & Recommendation Systems Laboratory

On completion of the course, learner will be able to:	
DJ19ADC7012.1	Compare different types of Recommender Systems
DJ19ADC7012.2	Understand various issues related to recommender system development.
DJ19ADC7012.3	Design a recommender system for a given problem.
DJ19ADC7012.4	Relate data collected from a recommender system to understand user preferences and/or behaviour.
DJ19ADC7012.5	Describe system evaluation methods from both algorithmic and users' perspectives

DJ19ADC7013 & DJ19ADL7013 Probabilistic Graph Models & Probabilistic Graph Models Laboratory

On completion of the course, learner will be able to:	
DJ19ADC7013.1	Explain the basic fundamentals of probabilistic graph theory.
DJ19ADC7013.2	Illustrate various principles of graph theory and algorithms.
DJ19ADC7013.3	Integrate core theoretical knowledge of graph theory to solve problems.

DJ19ADC7014 & DJ19ADL7014 Computational Finance-I & Computational Finance-I Laboratory

On completion of the course, learner will be able to:	
DJ19ADC7014.1	Apply the knowledge of time value of money, debt and leasing on real time financial data.
DJ19ADC7014.2	Measure the Capital Budgeting and Depreciation. 3
DJ19ADC7014.3	Apply the knowledge of Break-Even Point and Leverage on real time financial data.
DJ19ADC7014.4	Apply the knowledge of various investment methods and measuring and managing various types of financial risks.
DJ19ADC7014.5	Apply the knowledge of Insurance and its types on real time financial data

DJ19ILO7011 Product Life Cycle Management

On completion of the course, learner will be able to:	
DJ19ILO7011.1	Gain knowledge about phases of PLM, PLM strategies and methodology for PLM feasibility study and PDM implementation.
DJ19ILO7011.2	Illustrate various approaches and techniques for designing and developing products.
DJ19ILO7011.3	Apply product engineering guidelines / thumb rules in designing products for moulding, machining, sheet metal working etc.
DJ19ILO7011.4	Acquire knowledge in applying virtual product development tools for components, machining and manufacturing plant



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DJ19ILO7012 Management Information System

On completion of the course, learner will be able to:	
DJ19ILO7012.1	Explain how information systems Transform Business.
DJ19ILO7012.2	Identify the impact information systems have on an organization.
DJ19ILO7012.3	Describe IT infrastructure and its components and its current trends
DJ19ILO7012.4	Understand the principal tools and technologies for accessing information from databases to improve business performance and decision-making.
DJ19ILO7012.5	Identify the types of systems used for enterprise-wide knowledge management and how they provide value for businesses.

DJ19ILO7013 Operations Research

On completion of the course, learner will be able to:	
DJ19ILO7013.1	Convert a real-world problem in to a Linear Programming Problem and analyse the solution obtained using Simplex method or other algorithms.
DJ19ILO7013.2	Identify real-world problems as Transportation Problem and Assignment Problem and Solve the decision problem by choosing appropriate algorithm
DJ19ILO7013.3	Identify the decision situations which vary with time and analyse them using principle of dynamic programming to real life situations.
DJ19ILO7013.4	Explain reasons of formation of queues, classify various queuing systems and apply parameters defined for various queuing systems for decision making in real life situations.
DJ19ILO7013.5	Understand the concept of decision making in situation of competition and recommend strategies in case of two-person zero sum games.
DJ19ILO7013.6	Describe concept of simulation and apply Monte Carlo Simulation technique to systems such as inventory, queuing and recommend solutions for them
DJ19ILO7013.7	Understand need for right replacement policy and determine optimal replacement age.

DJ19ILO7014 Cyber Security and Laws

On completion of the course, learner will be able to:	
DJ19ILO7014.1	Understand the different types of cybercrime and security issues E Business.
DJ19ILO7014.2	Analyses different types of cyber threats and techniques for security management.
DJ19ILO7014.3	Explore the legal requirements and standards for cyber security in various countries to regulate cyberspace.
DJ19ILO7014.4	Impart the knowledge of Information Technology Act and legal framework of right to privacy, data security and data protection.



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DJ19ILO7015 Personal Finance Management

On completion of the course, learner will be able to:	
DJ19ILO7015.1	Use a framework for financial planning to understand the overall role finances play in his/her personal life.
DJ19ILO7015.2	Compute income from salaries, house property, business/profession, capital gains and income from other sources.
DJ19ILO7015.3	Compute the amount of CGST, SGST and IGST payable after considering the eligible input tax credit.
DJ19ILO7015.4	Understand how Microfinance can help in financial inclusion

DJ19ILO7016 Energy Audit and Management

On completion of the course, learner will be able to:	
DJ19ILO7016.1	To identify and describe present state of energy security and its importance
DJ19ILO7016.2	To identify and describe the basic principles and methodologies adopted in energy audit of a utility.
DJ19ILO7016.3	To describe the energy performance evaluation of some common electrical installations and identify the energy saving opportunities.
DJ19ILO7016.4	To describe the energy performance evaluation of some common thermal installations and identify the energy saving opportunities.
DJ19ILO7016.5	To analyze the data collected during performance evaluation and recommend energy saving measures.

DJ19ILO7017 Disaster Management and Mitigation Measures

On completion of the course, learner will be able to:	
DJ19ILO7017.1	Know natural as well as manmade disaster and their extent and possible effects on the economy.
DJ19ILO7017.2	Know the institutional framework and organization structure in India for disaster management and get acquainted with government policies, acts and various emergency laws.
DJ19ILO7017.3	Get to know the simple dos and don'ts in such extreme events and build skills to respond accordingly.
DJ19ILO7017.4	Understand the importance of disaster prevention and various mitigation measure with the exposure to disasters hotspots across the globe.

DJ19ILO7018 Science of Well-being

On completion of the course, learner will be able to:	
DJ19ILO7018.1	Describe concepts of holistic health and well-being, differentiate between its true meaning and misconceptions and understand the benefits of well-being.
DJ19ILO7018.2	Recognize meaning of happiness, practice gratitude and self-compassion and analyze incidents from one's own life.
DJ19ILO7018.3	Understand the causes and effects of stress, identify reasons for stress in one's own surrounding and self
DJ19ILO7018.4	Recognize the importance of physical health and fitness, assess their life style and come up with limitations or effectiveness.
DJ19ILO7018.5	Inspect one's own coping mechanism, assess its effectiveness, develop and strategize for betterment and execute it



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DJ19ILO7019 Research Methodology

On completion of the course, learner will be able to:	
DJ19ILO7019.1	Prepare a preliminary research design for projects in their subject matter areas
DJ19ILO7019.2	Accurately collect, analyze and report data
DJ19ILO7019.3	Present complex data or situations clearly
DJ19ILO7019.4	Review and analyze research findings 5. Write report about findings of research carried out

DJ19ILO7020 Public Systems and Policies

On completion of the course, learner will be able to:	
DJ19ILO7020.1	Understand the importance of public systems in a fast-changing environment in the global context.
DJ19ILO7020.2	Analyze the transformations in public systems with emphasis on current initiatives and emerging challenges in the field.
DJ19ILO7020.3	Explain public policy and its operations with special focus on policy relating to Government finance
DJ19ILO7020.4	Make policies and know about the happenings in the world, in the nation and those in their locality.
DJ19ILO7020.5	Analyze and evaluate the impact of the public policy on firms and economy at large and work under various fields as policymakers

J19DSP704 Project Stage – I

On completion of the course, learner will be able to:	
J19DSP704.1	Discover potential research areas in the field of IT.
J19DSP704.2	Survey several available literatures in the related field of study.
J19DSP704.3	Compare the several existing solutions for research challenges
J19DSP704.4	Design the solution for the research plan.
J19DSP704.5	Summarize the findings of the study conducted. 6. Work effectively as a member of the team.

DJ19ADHN1C3 & DJ19ADHN1L3 Big Data in Bioinformatics & Big Data in Bioinformatics Laboratory

On completion of the course, learner will be able to:	
DJ19ADHN1C3.1	Have a basic understanding of challenges in handling huge biological data
DJ19ADHN1C3.2	Apply tools for biological data analysis
DJ19ADHN1C3.3	Learn the basics of integrating the multi-omics data and the use of NoSQL databases for querying and storing & retrieval of biological data.
DJ19ADHN1C3.4	Use distributed computing architectures and cloud computing platforms for biological data analysis
DJ19ADHN1C3.5	Perform visualization on genomic epidemic data



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Semester VIII Course Outcomes

DJ19ADC801 & DJ19ADT801 Data Ethics & Data Ethics Tutorial

On completion of the course, learner will be able to:	
DJ19ADC801.1	Articulate the importance of ethical considerations in data practices and the implications of ethical lapses.
DJ19ADC801.2	Apply ethical theories and frameworks to address data-related ethical challenges in diverse scenarios.
DJ19ADC801.3	Identify sources of bias in algorithms and datasets, and use appropriate techniques to mitigate them.
DJ19ADC801.4	Demonstrate an understanding of privacy laws, data governance, and the ethical obligations associated with data security.
DJ19ADC801.5	Integrate data ethics principles into data-driven business practices enhancing digital trust and responsible data use.
DJ19ADC801.6	Understand data governance principles, tools, and business value through case studies like the VW emissions scandal.

DJ19ADC802 & DJ19ADL802 Nature Inspired Computing & Nature Inspired Computing Laboratory

On completion of the course, learner will be able to:	
DJ19ADC802.1	Classify computational problems and explain the significance of NP-Hard challenges.
DJ19ADC802.2	Implement evolutionary algorithms using genetic representation, fitness functions, and operators.
DJ19ADC802.3	Design swarm intelligence algorithms like PSO and ACO for solving optimization problems.
DJ19ADC802.4	Analyze behavioral systems and neural mechanisms in AI for sensory processing and learning.
DJ19ADC802.5	Apply immuno-computing for anomaly detection and explore biologically inspired computing hardware
DJ19ADC802.6	Learn biologically inspired computing hardware: memristors, neuromorphic, DNA, and quantum-inspired computing

DJ19ADC8011 & DJ19ADL8011 Reinforcement Learning & Reinforcement Learning Laboratory

On completion of the course, learner will be able to:	
DJ19ADC8011.1	Explain basic and advanced Reinforcement Learning techniques.
DJ19ADC8011.2	Identify suitable learning tasks to which Reinforcement learning and Deep Reinforcement Learning techniques can be applied.
DJ19ADC8011.3	Use appropriate Reinforcement Learning method to solve a given problem
DJ19ADC8011.4	Implementing Temporal Difference (TD) learning methods
DJ19ADC8011.5	Apply deep reinforcement learning techniques to complex problem-solving scenarios
DJ19ADC8011.6	Design and Evaluate effective policies in full reinforcement learning problems



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DJ19ADC8012 & DJ19ADL8012 High Performance Computing & High Performance Computing Laboratory

On completion of the course, learner will be able to:	
DJ19ADC8012.1	Understand different parallel processing approaches
DJ19ADC8012.2	Identify and evaluate the platforms and technologies involved in achieving high performance computing (HPC).
DJ19ADC8012.3	Explore GPU and CUDA Programming.
DJ19ADC8012.4	Know the principles of Grid and Cloud Computing with practical examples and applications.
DJ19ADC8012.5	Analyze the performance measures in high performance computing.
DJ19ADC8012.6	Discover the advanced topic in GPU including libraries and framework.

DJ19ADC8013 & DJ19ADL8013 AI in Healthcare & AI in Healthcare Laboratory

On completion of the course, learner will be able to:	
DJ19ADC8013.1	Apply AI techniques to solve healthcare challenges and improve patient care.
DJ19ADC8013.2	Develop machine learning and deep learning models for healthcare applications
DJ19ADC8013.3	Analyze and process healthcare data for diagnosis and prediction.
DJ19ADC8013.4	Implement AI solutions for medical imaging, diagnostics, and personalized treatment.
DJ19ADC8013.5	Assess ethical and privacy considerations in the deployment of AI solutions in healthcare.
DJ19ADC8013.6	Understand AI innovations in personalized medicine, drug discovery, remote monitoring, and healthcare operations

DJ19ADC8014 & DJ19ADL8014 Explainable AI & Explainable AI Laboratory

On completion of the course, learner will be able to:	
DJ19ADC8014.1	Understand the concept and importance of explainable AI .
DJ19ADC8014.2	Differentiate Between Interpretability and Explainability in Machine Learning Models
DJ19ADC8014.3	Apply XAI Techniques on Machine Learning Models
DJ19ADC8014.4	Evaluate the Interpretability and Trustworthiness of AI Models
DJ19ADC8014.5	Explain the Role of Attention Mechanisms and Feature Visualization in Deep Learning Models
DJ19ADC8014.6	Apply XAI Techniques in Healthcare and Autonomous Systems

DJ19ILO8021 Project Management

On completion of the course, learner will be able to:	
DJ19ILO8021.1	Explain project management life cycle and the various project phases as well as the role of project manager.
DJ19ILO8021.2	Apply selection criteria and select an appropriate project from different options.
DJ19ILO8021.3	Create a work breakdown structure for a project and develop a schedule based on it. Manage project risk strategically.
DJ19ILO8021.4	Use Earned value technique and determine & predict status of the project.
DJ19ILO8021.5	Capture lessons learned during project phases and document them for future reference.



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DJ19ILO8022 Entrepreneurship Development and Management

On completion of the course, learner will be able to:	
DJ19ILO8022.1	Develop idea generation, creative and innovative skills
DJ19ILO8022.2	Prepare a Business Plan
DJ19ILO8022.3	Compare different entrepreneur supporting institutions
DJ19ILO8022.4	Correlate suitable MSME scheme for an entrepreneur
DJ19ILO8022.5	Interpret financial and legal aspect of a business.

DJ19ILO8023 Corporate Social Responsibility

On completion of the course, learner will be able to:	
DJ19ILO8023.1	Describe the fundamental concepts of Corporate Social Responsibility (CSR)
DJ19ILO8023.2	Recognize the international framework for CSR to enable business decision-making which is informed by human values.
DJ19ILO8023.3	Explain CSR Legislation in India and the world
DJ19ILO8023.4	Relate the drivers of CSR in India
DJ19ILO8023.5	Identify the key stakeholders of CSR

DJ19ILO8024 Human Resource Management

On completion of the course, learner will be able to:	
DJ19ILO8024.1	Understand the key concepts, aspects, techniques and practices of the human resource management.
DJ19ILO8024.2	Apply Principles of Organizational Behavior to analyze the impact of personality, perception, and motivation on individual behavior and decision-making within organizations.
DJ19ILO8024.3	Evaluate Group Dynamics and Team Effectiveness
DJ19ILO8024.4	Analyze Strategic HRM and Organizational Structure
DJ19ILO8024.5	Demonstrate knowledge of basic labor laws and current trends in HRM, including diversity management and the role of technology in shaping the future of work

DJ19ILO8025 Corporate Finance Management

On completion of the course, learner will be able to:	
DJ19ILO8025.1	1. Understand Indian finance system.
DJ19ILO8025.2	2. Apply concepts of time value money and risk returns to product, services and business.
DJ19ILO8025.3	3. Understand corporate finance; evaluate and compare performance of multiple firms.
DJ19ILO8025.4	4. Take Investment, finance as well as dividend decisions



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DJ19ILO8026 Logistics and Supply Chain Management

On completion of the course, learner will be able to:	
DJ19ILO8026.1	Demonstrate the functional strategy map of supply chain management.
DJ19ILO8026.2	Analyze the determinants of Supply Chain and Transportation networks design
DJ19ILO8026.3	Demonstrate the need of coordination and sourcing decisions in supply chain
DJ19ILO8026.4	Understand pricing, revenue management and role of IT in supply chain.
DJ19ILO8026.5	Gain knowledge of various sustainability aspects of a supply chain.

DJ19ILO8027 IPR and Patenting

On completion of the course, learner will be able to:	
DJ19ILO8027.1	Recognize the crucial role of IP for the purposes of product and technology development.
DJ19ILO8027.2	Understand how and when to file a patent.
DJ19ILO8027.3	Apply the knowledge to understand the entire ecosystem.
DJ19ILO8027.4	Derive value from IP and leverage its value in new product and service development.
DJ19ILO8027.5	Identify appropriate Intellectual Property Right for a creation.

DJ19ILO8028 Digital Marketing Management

On completion of the course, learner will be able to:	
DJ19ILO8028.1	Understand the digital marketing framework & model and consumer behaviour
DJ19ILO8028.2	Develop digital marketing strategy roadmap.
DJ19ILO8028.3	Explain the terminology and concepts for developing web-specific media plans.
DJ19ILO8028.4	Understand concepts related to digital campaign management and revenue generation models.
DJ19ILO8028.5	Get a perspective on global digital marketing technology/tools and future trends

DJ19ILO8029 Environmental Management

On completion of the course, learner will be able to:	
DJ19ILO8029.1	Understand and identify environmental issues relevant to India and global concerns
DJ19ILO8029.2	Learn concepts of ecology
DJ19ILO8029.3	Familiarize environment related legislations
DJ19ILO8029.4	Understand Environmental Auditing Procedures.

DJ19ILO8030 Labour and Corporate Law

On completion of the course, learner will be able to:	
DJ19ILO8030.1	Illustrate the role of trade union in the industrial setup.
DJ19ILO8030.2	Understand the important causes, impact of industrial disputes and settlement procedures.
DJ19ILO8030.3	To provide in-depth understanding of corporate social responsibility.
DJ19ILO8030.4	Apply concepts, principles and theories to understand simple business laws
DJ19ILO8030.5	Analyse the principle of international business and strategies adopted by firms to expand globally



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DJ19ADP804 Project Stage II

On completion of the course, learner will be able to:	
DJ19ADP804.1	The department must allocate 2 days in the Semester VIII every week.
DJ19ADP804.2	Students will do coding and testing in Semester VIII.
DJ19ADP804.3	Each group along with its guide/mentor shall identify an appropriate technique/s for testing the developed system.
DJ19ADP804.4	The project assessment for term work will be done at least two times at department level by giving presentation to panel members which consist of at least three (3) members as Internal examiners (including the project guide/mentor) appointed by the Head of the department of respective Program.
DJ19ADP804.5	A report is to be prepared summarizing the findings of the literature survey, coding and testing.
DJ19ADP804.6	Every team must publish their work in national / international conference/journals (if possible, publish in Scopus indexed journals) or file a patent.

DJ19ADHN1C3 & DJ19ADHN1L3 Big Data in Bioinformatics & Big Data in Bioinformatics Laboratory

On completion of the course, learner will be able to:	
DJ19ADHN1C3.1	Have a basic understanding of challenges in handling huge biological data
DJ19ADHN1C3.2	2. Apply tools for biological data analysis
DJ19ADHN1C3.3	3. Learn the basics of integrating the multi-omics data and the use of NoSQL databases for querying and storing & retrieval of biological data.
DJ19ADHN1C3.4	4. Use distributed computing architectures and cloud computing platforms for biological data analysis
DJ19ADHN1C3.5	5. Perform visualization on genomic epidemic data



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Semester III Course Outcomes

DJS23BCPC301 & DJS23BTPC301 Linear Algebra Optimization Techniques & Linear Algebra Optimization Techniques Tutorials

On completion of the course, learner will be able to:	
DJS23BCPC301.1	Apply the concept of vector spaces, subspaces and the inner product spaces to the engineering problems.
DJS23BCPC301.2	Apply the concept of vector spaces using linear transformations which is used in computer graphics and inner product spaces.
DJS23BCPC301.3	Apply the concepts of eigenvalue and eigenvectors and diagonalization in linear systems.
DJS23BCPC301.4	Apply the concept of unconstrained optimization techniques to the engineering problems.

DJS23BCPC302 & DJS23BLPC302 Data Structures & Data Structures Laboratory

On completion of the course, learner will be able to:	
DJS23BCPC302.1	Understand the concept of time complexity for algorithms.
DJS23BCPC302.2	Assimilate the concept of various linear data structures .
DJS23BCPC302.3	Assimilate the concept of non linear data structures trees.
DJS23BCPC302.4	Assimilate the concept of non linear data structures graphs.
DJS23BCPC302.5	Implement appropriate searching algorithms for a given problem.
DJS23BCPC302.6	Implement appropriate sorting algorithms for a given problem.

DJS23BCPC303 & DJS23BLPC303 Database Management Systems & Database Management Systems Laboratory

On completion of the course, learner will be able to:	
DJS23BCPC303.1	Understand fundamental concepts in database system.
DJS23BCPC303.2	Design and draw ER and EER diagram for the real life problem
DJS23BCPC303.3	Construct SQL queries to perform operations on the database.
DJS23BCPC303.4	Analyse and apply concepts of normalization to relational database design
DJS23BCPC303.5	Demonstrate appropriate transaction management and recovery techniques for a given problem.
DJS23BCPC303.6	Apply indexing mechanisms for efficient retrieval of information from database.



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DJS23BCMD301 Operating Systems

On completion of the course, learner will be able to:	
DJS23BCMD301.1	Describe the fundamental organization of a computer system.
DJS23BCMD301.2	Understand the role of Operating System in terms of process, memory, file and I/O management
DJS23BCMD301.3	Identify the need of concurrency and apply appropriate method to solve the concurrency or deadlock problem.
DJS23BCMD301.4	Apply appropriate memory mapping, memory allocation methods.
DJS23BCMD301.5	Apply and analyze different techniques of file management.
DJS23BCMD301.6	Differentiate between various disk scheduling algorithms.

DJS23IPSCX01 Innovative Product Development I

On completion of the course, learner will be able to:	
DJS23IPSCX01.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX01.2	Apply knowledge and skills required to solve a societal need by conceptualizing a product, especially while working in a team.
DJS23IPSCX01.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX01.4	Draw proper inferences through theoretical/ experimental/simulations and analyze the impact of the proposed method of design and development of the product.
DJS23IPSCX01.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX01.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs.
DJS23IPSCX01.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication.

DJS23ITHSX05 Professional and Business Communication Tutorial

On completion of the course, learner will be able to:	
DJS23ITHSX05.1	Apply group discussion techniques in professional situations
DJS23ITHSX05.2	Use employability skills to optimize career opportunities
DJS23ITHSX05.3	Employ storytelling techniques for effective presentation
DJS23ITHSX05.4	Prepare technical documents using appropriate style, format, and language
DJS23ITHSX05.5	Analyze the concept of professional ethics
DJS23ITHSX05.6	Demonstrate interpersonal skills in professional and personal situations



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DJS23ICHSX07 Economics and Financial Management

On completion of the course, learner will be able to:	
DJS23ICHSX07.1	Analyse individual decision making, how prices and quantities are determined in product and factor markets, microeconomic and macroeconomic outcomes
DJS23ICHSX07.2	Analyse the performance and functioning of government, RBI, markets, and institutions in the context of social and economic problems.
DJS23ICHSX07.3	Analyse the current economic status of India at global levels and provision in budget to address economic issues at national level.
DJS23ICHSX07.4	Describe an understanding of the overall role and importance of the finance function.
DJS23ICHSX07.5	Analyse financial performance and make appropriate inferences.



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Semester IV Course Outcomes

DJS23BCPC401 & DJS23BTPC401 Probability and Statistical Inference & Probability and Statistical Inference Tutorial

On completion of the course, learner will be able to:	
DJS23BCPC401.1	Apply the concepts of probability and distributions to some case studies.
DJS23BCPC401.2	Demonstrate sampling distributions and estimate statistical parameters.
DJS23BCPC401.3	Develop hypothesis based on data and perform testing using various statistical techniques.
DJS23BCPC401.4	Perform analysis of variance on data.

DJS23BCPC402 & DJS23BLPC402 Design and Analysis of Algorithms & Design and Analysis of Algorithms Laboratory

On completion of the course, learner will be able to:	
DJS23BCPC402.1	Analyze the performance of algorithms using asymptotic analysis.
DJS23BCPC402.2	Apply the concept of Greedy method to solve all feasible solutions of problems.
DJS23BCPC402.3	Find an optimal solution of problem by applying the concept of dynamic programming strategy.
DJS23BCPC402.4	Understand the concepts of backtracking, branch and bound to represent solution by state space tree.
DJS23BCPC402.5	Implement string matching techniques.

DJS23BCPC403 & DJS23BLPC403 Computer Networks & Computer Networks Laboratory

On completion of the course, learner will be able to:	
DJS23BCPC403.1	Demonstrate the concepts of data communication at physical layer and compare ISO - OSI model & TCP/IP model.
DJS23BCPC403.2	Exemplify the working of networking protocols at data link layer.
DJS23BCPC403.3	Create a network design incorporating appropriate IP addressing, subnetting, and supernetting strategies.
DJS23BCPC403.4	Analyze working of the transport layer protocols and recognition of different Application layer protocols.
DJS23BCPC403.5	Explore the concepts of Wireless technologies.

DJ22ADC304 & DJ22ADL304 Operating Systems & Operating Systems Laboratory

On completion of the course, learner will be able to:	
DJ22ADC304.1	Understand the role of Operating System in terms of process, memory, file and I/O management
DJ22ADC304.2	Apply appropriate process scheduling, memory mapping and disk scheduling methods.
DJ22ADC304.3	Identify the need of concurrency and apply the appropriate method to solve the concurrency or deadlock problem.
DJ22ADC304.4	Apply and analyze different techniques of file and I/O management.



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DJS23BLPC404 Python programming Laboratory

On completion of the course, learner will be able to:	
DJS23BLPC404.1	Gain a solid foundation in Python, covering basic data types, operators, control structures, and functions.
DJS23BLPC404.2	Enhance your understanding of OOP concepts in Python, including classes, objects, inheritance, and polymorphism.
DJS23BLPC404.3	Understand exception handling, file operations (reading, writing, and managing different file types), and creating modular code in Python.
DJS23BLPC404.4	Build interactive desktop applications using Tkinter, focusing on GUI design and event handling.
DJS23BLPC404.5	Learn to develop web applications with Flask and integrate database connectivity for dynamic and data driven applications.

DJS23BCMD401 & DJS23BTMD401 Theoretical Computer Science & Theoretical Computer Science Tutorial

On completion of the course, learner will be able to:	
DJS23BCMD401.1	Build a framework for representing and modeling computational processes.
DJS23BCMD401.2	Understand expressions to provide a formal way to describe regular languages.
DJS23BCMD401.3	Design Context free grammar, pushdown automata to recognize the language.
DJS23BCMD401.4	Develop an understanding of computation through Turing Machine.
DJS23BCMD401.5	Acquire fundamental understanding of decidability and undecidability.

DJS23ILHSX06 Design Thinking Laboratory

On completion of the course, learner will be able to:	
DJS23ILHSX06.1	Understand and apply the design thinking process to analyze and solve real-world problems.
DJS23ILHSX06.2	Develop the ability to empathize with users, create user personas, and design empathy and journey maps tailored to specific challenges.
DJS23ILHSX06.3	Demonstrate proficiency in defining clear and actionable problem statements that uncover areas of opportunity.
DJS23ILHSX06.4	Generate diverse ideas using ideation techniques, such as brainstorming and SCAMPER, to approach problem-solving creatively and collaboratively.
DJS23ILHSX06.5	Create and test prototypes, iterating based on feedback and validating solutions through digital platforms and peer review.



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DJS23ICHSX08 Universal Human Values & Universal Human Values Tutorial

On completion of the course, learner will be able to:	
DJS23ICHSX08.1	Understand the significance of value inputs in a classroom, distinguish between values and skills, understand the need, basic guidelines, content and process of value education, explore the meaning of happiness and prosperity and do a correct appraisal of the current scenario in the society.
DJS23ICHSX08.2	Distinguish between the Self and the Body, understand the meaning of Harmony in the Self the Co- existence of Self and Body.
DJS23ICHSX08.3	Understand the value of harmonious relationship based on trust, respect and other naturally acceptable feelings in human-human relationships and explore their role in ensuring a harmonious society.
DJS23ICHSX08.4	Understand the harmony in nature and existence and work out their mutually fulfilling participation in the nature.
DJS23ICHSX08.5	Distinguish between ethical and unethical practices and start working out the strategy to actualize a harmonious environment wherever they work.

DJS23IPSCX02 Innovative Product Development-II (A)

On completion of the course, learner will be able to:	
DJS23IPSCX02.1	Identify the requirement for a product based on societal/research needs.
DJS23IPSCX0.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS23IPSCX0.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS23IPSCX0.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS23IPSCX0.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS23IPSCX0.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJS23IPSCX0.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication



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Semester V Course Outcomes

DJS22ICC501 & DJS22ICL501 Network Security & Network Security Laboratory

On completion of the course, learner will be able to:	
DJS22ICC501.1	Discuss the various network attacks and suggest their counter measures.
DJS22ICC501.2	Get the knowledge of IPsec Security, working of Internet key exchange protocol along with its uses in IPsec.
DJS22ICC501.3	Understand the working and security of wireless networks.
DJS22ICC501.4	Gain the knowledge of Transport layer security.
DJS22ICC501.5	Understand the working of E-mail security protocol.
DJS22ICC501.6	Identify the security significance of entity Authentication as well as Network access control.

DJS22ICC502 & DJS22ICL502 Introduction to Blockchain Technology
& Introduction to Blockchain Technology Laboratory

On completion of the course, learner will be able to:	
DJS22ICC502.1	Acquire basic knowledge of Blockchain technology.
DJS22ICC502.2	Implement cryptographic primitives useful for Blockchain.
DJS22ICC502.3	Understand bitcoin cryptocurrency networks and consensus mechanisms.
DJS22ICC502.4	Design smart contracts for various blockchain applications.
DJS22ICC502.5	Use various tools for Blockchain implementation.
DJS22ICC502.6	Analyze the recent trends of Blockchain technology.

DJS22ICC503 & DJS22ICL503 Artificial Intelligence & Artificial Intelligence Laboratory

On completion of the course, learner will be able to:	
DJS22ICC503.1	Develop a basic understanding of AI building blocks presented in intelligent agents.
DJS22ICC503.2	Design an appropriate problem-solving method for an agent to find a sequence of actions to reach the goal state.
DJS22ICC503.3	Analyze various AI approaches to knowledge– intensive problem solving, reasoning and planning.
DJS22ICC503.4	Understand planning and various types of planning.
DJS22ICC503.5	Acquire basic knowledge of Expert System.
DJS22ICC503.6	Analyze the working and architecture for Generative Networks.



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DJS22ICC5011 & DJS22ICL5011 Digital forensics & Digital forensics Laboratory

On completion of the course, learner will be able to:	
DJS22ICC5011.1	Define the concept of ethical hacking and its associated applications in Information Communication Technology (ICT) world.
DJS22ICC5011.2	Underline the need of digital forensic and role of digital evidences.
DJS22ICC5011.3	Explain the methodology of incident response and various security issues in ICT world, and identify digital forensic tools for data collection.
DJS22ICC5011.4	Recognize the importance of digital forensic duplication and various tools for analysis to achieve adequate perspectives of digital forensic investigation in various applications or devices like Windows/Unix system.
DJS22ICC5011.5	Apply forensic tools and techniques for data acquisition, imaging, and analysis to ensure integrity and authenticity of evidence.
DJS22ICC5011.6	Communicate forensic findings effectively through detailed network forensic reports, including analysis methodology, findings, and recommendations.

DJS22ICC5012 & DJS22ICL5012 Vulnerability Assessment & Penetration Testing
& Vulnerability Assessment & Penetration Testing Laboratory

On completion of the course, learner will be able to:	
DJS22ICC5012.1	To understand the basic principles for Information Gathering and Detecting Vulnerabilities in the system
DJS22ICC5012.2	Understand the basic of vulnerability assessment & penetration testing.
DJS22ICC5012.3	Apply various tools and techniques to find vulnerabilities in the system.
DJS22ICC5012.4	Utilize exploit development frameworks and tools.
DJS22ICC5012.5	Analyze the impact of web application vulnerabilities.
DJS22ICC5012.6	Aware of the various ways through which hackers' attempts to compromise an Application.

DJS22ICC5013 & DJS22ICL5013 IoT Architecture and Protocols
& IoT Architecture and Protocols Laboratory

On completion of the course, learner will be able to:	
DJS22ICC5013.1	Describe the IoT Characteristics and Conceptual Framework.
DJS22ICC5013.2	Differentiate between the levels of the IoT architectures.
DJS22ICC5013.3	Interpret sensor network and its components.
DJS22ICC5013.4	Analyze the IoT access technologies.
DJS22ICC5013.5	Illustrate various protocols at network layer and application layer for IoT.
DJS22ICC5013.6	Analyze and evaluate security issues in IoT and risk analysis structure.



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DJS22ICL504 UI/UX Laboratory

On completion of the course, learner will be able to:	
DJS22ICL504.1	Identify user requirements.
DJS22ICL504.2	Build UI for user Applications.
DJS22ICL504.3	Create Wireframe and Prototype.
DJS22ICL504.4	Generate test report using usability testing.
DJS22ICL504.5	Work effectively as a member of the team.

DJS22A3 Environmental Studies

On completion of the course, learner will be able to:	
DJS22A3.1	Understand how human activities affect environment.
DJS22A3.2	Understand the various technology options that can make a difference.

DJS22ILL1 Innovative Product Development-I (A)

On completion of the course, learner will be able to:	
DJS22ILL1.1	Identify the requirement for a product based on societal/research needs.
DJS22ILL1.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILL1.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILL1.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILL1.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILL1.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJS22ILL1.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication



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Semester VI Course Outcomes

DJS22ICC601 & DJS22ICL601 Secure Software Engineering & Secure Software Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22ICC601.1	Understand and demonstrate basic knowledge in software engineering.
DJS22ICC601.2	Identify requirements, and develop UML modelling.
DJS22ICC601.3	Identify risks, manage the change to assure quality in software projects.
DJS22ICC601.4	Design Security Patterns and Anti-Patterns.
DJS22ICC601.5	Apply testing principles on software project and understand the maintenance concepts.
DJS22ICC601.6	Understand secure coding principals.

DJS22ICC603 & DJS22ICL603 Data Engineering & Data Engineering Laboratory

On completion of the course, learner will be able to:	
DJS22ICC602.1	Describe different data Architectures for Data Engineering Business Model.
DJS22ICC602.2	Introduced dataware house with utilization of different data Techniques and ETL process.
DJS22ICC602.3	Build and Configuring the data Sources with utilization of Data Preprocessing traits.
DJS22ICC602.4	Design Different Ways to Ingest Data with Message Queues and Event Streaming Platforms.
DJS22ICC602.5	Demonstrate Data Transformation Tools to Optimize for Analytics.
DJS22ICC602.6	Understand the Security aspects for Data Engineering based on Common data regulatory requirements.

DJS22ICC603 & DJS22ICL603 Big Data Analytics & Big Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJS22ICC603.1	Understand Big Data concepts, challenges, and applications, and apply Hadoop and its ecosystem to solve real-world problems.
DJS22ICC603.2	Distinguish NoSQL architectures and use MongoDB to manage and analyze distributed unstructured data.
DJS22ICC603.3	Execute complex data processing tasks using MapReduce and manage distributed applications with a focus on execution efficiency and fault tolerance.
DJS22ICC603.4	Gain proficiency in techniques for big data analysis, including similarity search, stream processing, link analysis, and frequent itemset mining.
DJS22ICC603.5	Develop expertise in building recommendation systems using content-based and collaborative filtering techniques.
DJS22ICC603.6	Analyze social networks as graphs and apply community detection techniques like Clique Percolation.



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DJS22ICL604 Cloud Computing Laboratory

On completion of the course, learner will be able to:	
DJS22ICL604.1	Implement different types of virtualization techniques.
DJS22ICL604.2	Analyze various cloud computing service models and implement them to solve the given problems.
DJS22ICL604.3	Design and develop real-world web applications and deploy them on commercial cloud.
DJS22ICL603.4	Identify major security issues in the cloud and mechanisms to address them.
DJS22ICL604.5	Explore various commercially available cloud services and recommend the appropriate one for the given application.
DJS22ICL604.6	Implement the concept of containerization.

DJS22ICC6011 & DJS22ICL6011 Machine Learning & Machine Learning Laboratory

On completion of the course, learner will be able to:	
DJS22ICC6011.1	Understand the types of machine learning
DJS22ICC6011.2	Apply regression analysis to real-world problems and datasets
DJS22ICC6011.3	Construct decision trees using different algorithms.
DJS22ICC6011.4	Make optimal decisions based on Bayesian principles.
DJS22ICC6011.5	Identify patterns in data and classify or cluster information into distinct categories.
DJS22ICC6011.6	Analyze different SVM techniques.

DJS22ICC6012 & DJS22ICL6012 Mobile Device Forensics & Mobile Device Forensics Laboratory

On completion of the course, learner will be able to:	
DJS22ICC6012.1	Describe mobile device architecture and its software characteristics.
DJS22ICC6012.2	Analyze various risks and attacks on mobile devices.
DJS22ICC6012.3	Acquire fundamental concept of mobile device management framework.
DJS22ICC6012.4	Usage of mobile forensics and its practices.
DJS22ICC6012.5	Express the functionalities of Mobile OS forensics.
DJS22ICC6012.6	Compare and analyze mobile data carving methods.

DJS22ICC6013 & DJS22ICL6013 Cryptocurrency Technology & Cryptocurrency Technology Laboratory

On completion of the course, learner will be able to:	
DJS22ICC6013.1	Understand evolution, principles and benefits of Cryptocurrencies.
DJS22ICC6013.2	Infer the various bitcoin related security and privacy issues.
DJS22ICC6013.3	Analyze the real-world cryptocurrency ecosystem.
DJS22ICC6013.4	Develop and deploy auction-based smart contracts on the Ethereum blockchain
DJS22ICC6013.5	Design cryptocurrency with appropriate policies and mechanisms
DJS22ICC6013.6	Explore applications beyond traditional cryptocurrencies.



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DJS22IHL Professional and Business Communication Laboratory

On completion of the course, learner will be able to:	
DJS22IHL.1	Prepare technical documents using appropriate style, format, and language
DJS22IHL.2	Use employability skills to optimize career opportunities
DJS22IHL.3	Employ storytelling techniques in corporate situations
DJS22IHL.4	Conduct effective meetings and document the process
DJS22IHL.5	Demonstrate interpersonal skills in professional and personal situations
DJS22IHL.6	Describe cultural differences, etiquettes, and the concept of professional ethics

DJS22ILLL2 Innovative Product Development-II

On completion of the course, learner will be able to:	
DJS22ILLL2.1	Identify the requirement for a product based on societal/research needs.
DJS22ILLL2.2	Apply knowledge and skills required to solve a societal need by conceptualising a product, especially while working in a team.
DJS22ILLL2.3	Use standard norms of engineering concepts/practices in the design and development of an innovative product.
DJS22ILLL2.4	Draw proper inferences through theoretical/ experimental/simulations and analyse the impact of the proposed method of design and development of the product.
DJS22ILLL2.5	Develop interpersonal skills, while working as a member of the team or as the leader.
DJS22ILLL2.6	Demonstrate capabilities of self-learning as part of the team, leading to life-long learning, which could eventually prepare themselves to be successful entrepreneurs
DJS22ILLL2.7	Demonstrate product/project management principles during the design and development work and also excel in written (Technical paper preparation) as well as oral communication



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Semester VII Course Outcomes

DJS19ICC701 & DJS19ICL701 Blockchain for Cybersecurity & Blockchain for Cybersecurity Laboratory

On completion of the course, learner will be able to:	
DJS19ICC701.1	Understand the taxonomy of blockchain threats and vulnerabilities.
DJS19ICC701.2	Develop blockchain based PKI solutions and apps for storing DNS entries.
DJS19ICC701.3	Review existing blockchain based data sharing frameworks and identify strengths and weaknesses.
DJS19ICC701.4	Evaluate decentralized distributed data sharing platform architecture using blockchain.
DJS19ICC701.5	Design applications of blockchain in digital forensics.
DJS19ICC701.6	Articulate the importance of privacy in blockchain networks and the specific challenges posed by enterprise-grade distributed ledger systems.

DJS19ICC702 & DJS19ICL702 Secure Software Engineering & Secure Software Engineering Laboratory

On completion of the course, learner will be able to:	
DJS19ICC702.1	Understand and demonstrate basic knowledge in software engineering.
DJS19ICC702.2	Identify requirements, analyze and prepare models.
DJS19ICC702.3	Plan, schedule and track the progress of the projects.
DJS19ICC702.4	Identify risks, manage the change to assure quality in software projects
DJS19ICC702.5	Apply testing principles on software project and understand the maintenance concepts
DJS19ICC702.6	Understand the properties of secure software.

DJS19ICC7011 & DJS19ICL7011 Deep Learning & Deep Learning Laboratory

On completion of the course, learner will be able to:	
DJS19ICC7011.1	Proficient in the basic principles of the fundamental concepts of neural networks and deep learning.
DJS19ICC7011.2	Apply supervised and unsupervised deep learning algorithms
DJS19ICC7011.3	Implement deep network training and design concepts.
DJS19ICC7011.4	Build solution using appropriate neural network models.
DJS19ICC7011.5	Illustrate performance of deep learning models.
DJS19ICC7011.6	Understanding of the fundamental concepts about different types of GANs.



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DJS19ICC7012 & DJS19ICL7012 Malware Analysis & Malware Analysis Laboratory

On completion of the course, learner will be able to:	
DJS19ICC7012.1	Identify various malwares and understand the behavior of malwares in real world applications.
DJS19ICC7012.2	Implement different malware analysis techniques.
DJS19ICC7012.3	Understand the fundamental principles of static malware analysis and its importance in cybersecurity.
DJS19ICC7012.4	Apply advanced dynamic analysis techniques to analyze sophisticated malware threats
DJS19ICC7012.5	Assess of malware functionality and the tools and techniques.
DJS19ICC7012.6	Explore advanced obfuscation methods.

DJS19ICC7013 & DJS19ICL7013 Data Analytics & Data Analytics Laboratory

On completion of the course, learner will be able to:	
DJS19ICC7013.1	Comprehend basics of data analytics and visualization.
DJS19ICC7013.2	Apply various regression models on given data set and perform prediction..
DJS19ICC7013.3	Demonstrate advance understanding of Time series concepts and analysis of data using various time series models.
DJS19ICC7013.4	Analyze Text data and gain insights.
DJS19ICC7013.5	Explore different stages of visualization .
DJS19ICC7013.6	Explore diverse analytics methodologies and visualization approaches leveraging Python.

DJ19CPC703 Project Stage I

On completion of the course, learner will be able to:	
DJ19CPC703.1	Discover potential research areas in the field of IoT design with Security.
DJ19CPC703.2	Survey several available literatures in the related field of study.
DJ19CPC703.3	Compare the several existing solutions for research challenges.
DJ19CPC703.4	Design the solution for the research plan.
DJ19CPC703.5	Summarize the findings of the study conducted.
DJ19CPC703.6	Work effectively as a member of the team.



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Semester VIII Course Outcomes

DJS19ICC801 & DJS19ICL801 Social Network Analysis & Social Network Analysis Laboratory

On completion of the course, learner will be able to:	
DJS19ICC801.1	Understand the fundamental concepts, tools, and techniques for analyzing social networks.
DJS19ICC801.2	Illustrate large-scale network data and mechanisms used for network growth models.
DJS19ICC801.3	Apply link analysis techniques to real-world applications
DJS19ICC801.4	Explore the concepts behind community detection in social networks
DJS19ICC801.5	Engage in research projects that explore novel approaches to link prediction, encouraging innovation and critical thinking in the application of SNA techniques.
DJS19ICC801.6	Implement appropriate anomaly detection method on a networks.

DJS19ICC802 & DJS19ICL802 Ethical Hacking and Digital Forensic & Ethical Hacking and Digital Forensic Laboratory

On completion of the course, learner will be able to:	
DJS19ICC802.1	Define the concept of ethical hacking and explore different phases of it.
DJS19ICC802.2	Apply the System Hacking strategies in Ethical manner.
DJS19ICC802.3	Analyze and mitigate Network Hacking issues.
DJS19ICC802.4	Understand the fundamental of Cyber Forensics
DJS19ICC802.5	Examine the tools and techniques used for acquiring digital evidence.
DJS19ICC802.6	Assess and authenticate digital evidence data.

DJS19ICEC8011 & DJS19ICEL8011 Computer Vision & Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS19ICEC8011.1	Proficient in the basic principles of the fundamental concepts of neural networks and deep learning.
DJS19ICEC8011.2	Apply supervised and unsupervised deep learning algorithms
DJS19ICEC8011.3	Implement deep network training and design concepts.
DJS19ICEC8011.4	Build solution using appropriate neural network models.
DJS19ICEC8011.5	Illustrate performance of deep learning models.
DJS19ICEC8011.6	Understanding of the fundamental concepts about different types of GANs.



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DJS19ICEC8012 & DJS19ICEL80121 Industrial Internet of Everything & Computer Vision Laboratory

On completion of the course, learner will be able to:	
DJS19ICC8012.1	.Present key skills used in the IIoT manufacturing and Embedded systems applications.
DJS19ICC8012.2	Design suitable network architecture with Industrial Ethernet and Gateways.
DJS19ICC8012.3	Introduced operating systems, Networking and wireless communication protocols used in IIoT deployments.
DJS19ICC8012.4	Comprehend different protocols and Business models for Industrial Internet of Everything.
DJS19ICC8012.5	Deployment of IIoT Data Analytics by using Machine Learning algorithms.
DJS19ICC8012.6	Implement cloud-enabled robotics Applications of IIoT in robotics.

DJS19ICEC8013 & DJS19ICEL8013 Software Testing and Quality Assurance & Software Testing and Quality Assurance Laboratory

On completion of the course, learner will be able to:	
DJS19ICEC8013.1	Use various Software testing techniques to produce quality software.
DJS19ICEC8013.2	Design process models for units, integration, system, and acceptance testing
DJS19ICEC8013.3	Construct and Analyze Control Flow Graphs and Data Flow Graph.
DJS19ICEC8013.4	Apply System Testing and Functional Testing Techniques
DJS19ICEC8013.5	Design and develop automated test case.
DJS19ICEC8013.6	Identify various Quality Models

DJ19CPC803 Project Stage II

On completion of the course, learner will be able to:	
DJ19CPC803.1	Develop the proposed solution using appropriate techniques..
DJ19CPC803.2	Test the developed system for its correctness using appropriate techniques.
DJ19CPC803.3	Work effectively as a member of the team.



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F.Y. B. Tech.

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Semester I/II Course Outcomes

DJS23FCES103 & DJS23FLES103 Basic Electrical Engineering & Digital Electronics & Basic Electrical Engineering & Digital Electronics Laboratory & Tutorial

On completion of the course, learner will be able to:	
DJS23FCES103.1	Apply the knowledge of theorems/laws to analyse the DC circuits
DJS23FCES103.2	Analyse single phase AC circuits
DJS23FCES103.3	Demonstrate knowledge of basic number system, logic gates and sequential circuits

Semester I and II Course Outcomes

DJS23FCBS103 & DJS22FELEP Engineering Chemistry & Engineering Chemistry Laboratory & Tutorial

On completion of the course, learner will be able to:	
DJS23FCBS103.1.	Recognize new approaches of chemical analysis, which are more convenient, less hazardous and sustainable to perform.
DJS23FCBS103.2	Describe applications based on nanomaterials and modern polymers in engineering techniques
DJS23FCBS103.3	Analyze the quality of fuel for energy efficiency.
DJS23FCBS103.4	Recognize properties of materials and alloys with phase transformation.
DJS23FCBS103.5	Identify the parameters responsible for water pollution using suitable methods of water treatment.



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F.Y. B. TECH

(AY.2024-25)

Semester I/II Course Outcomes

DJS23FCHS101 & DJS23FLHS101 Effective Communication Skills-& effective Communication Skills Laboratory

On completion of the course, learner will be able to:	
DJS23FCHS101.1	Use skills related to the various aspects of communication to express ideas with greater clarity
DJS23FCHS101.2	Apply appropriate verbal/non-verbal cues in social and workplace situations and overcome the barriers to communication
DJS23FCHS101.3	Employ personal development strategies for self-assessment, goal setting and maintaining a professional persona online

Semester I/II Course Outcomes

DJS23FCES201 & DJS23FLES201 Object Oriented Programming using Java & Object Oriented Programming using Java Laboratory

Outcomes: On completion of the course, the learner will be able to:	
DJS23FCES201.1	Develop programs by applying Object-Oriented concepts of JAVA to solve real-world problems.
DJS23FCES201.2	Achieve Robustness and Concurrency while developing programs (Exception Handling and Multithreading).
DJS23FCES201.3	Design Graphical User Interface using swing.

Semester I and II Course Outcomes

DJS23FCES104 & DJS23FLES104 : Engineering Graphics & Engineering Graphics Laboratory

On completion of the course, the learner will be able to:	
DJS23FCES104.1.	Recognize the value of engineering graphics, as a language of engineers.
DJS23FCES104.2.	Construct orthographic views of basic shapes of solids
DJS23FCES104.3	Interpret and sketch orthographic and sectional orthographic views of various machine components.
DJS23FCES104.4.	Visualize objects, and draw isometric views.
DJS23FCES104.5	Build 2D sketches using Auto CAD.



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Semester I/II Course Outcomes

DJS23FTHS102 Indian Knowledge System

On completion of the course, learner will be able to:	
DJS23FTHS102.1	Understand the history of Indian education system.
DJS23FTHS102.2	Learn about Indian Scientists and their inventions.
DJS23FTHS102.3	Understand and appreciate the various art forms and architecture in India.
DJS23FTHS102.4	Illustrate the classic literature written in Indian languages.
DJS23FTHS102.5	Know the various religions followed in India and their philosophies.

Semester I/II Course Outcomes

DJS23FTLL101 Health and Wellness- Mind and Body Management

On completion of the course, the learner will be able to:	
DJS23FTLL101.1	Use the knowledge of Health and wellness in daily life.
DJS23FTLL101.2	Apply appropriate and innovative methods to avoid risks from harmful habits.
DJS23FTLL101.3	Employ personal development (both physical and emotional) strategies for better living
DJS23FTLL101.4	Create a plan for good health through a positive mindset.



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Semester I Course Outcomes

DJS23FCBS101 & DJS23FTBS101 Mathematics – I & Mathematics - I Tutorial

On completion of the course, learner will be able to:	
DJS23FTBS101.1	solve homogeneous and non-homogenous linear system of equations.
DJS23FTBS101.2	solve problems of hyperbolic and logarithmic functions using complex numbers.
DJS23FTBS101.3	use expansion of functions in engineering problems.
DJS23FTBS101.4	find maxima - minima and Jacobians using partial differentiation.
DJS23FTBS101.5	find the solution of linear system of equations, transcendental equations and curve fitting of given data using numerical methods and various libraries of SciLab

Semester II Course Outcomes

DJS23FCBS201 & DJS23FTBS201 Mathematics – II & Mathematics - II Tutorial

On completion of the course, learner will be able to:	
DJS23FTBS201.1	Solve Beta and Gamma function, DUIS and rectification of plane curves.
DJS23FTBS201.2	Solve Multiple integrals.
DJS23FTBS201.3	Find Area, Volume, and Mass of Lamina by applying the concepts of Multiple Integrals.
DJS23FTBS201.4	Solve various types of First Order and Higher Order differential equations.
DJS23FTBS201.5	Find the solutions of First Order Differential Equations and Integration by using Numerical Method and various libraries of scilab.



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Semester I and II Course Outcomes

DJS23FCES101 & DJS23FLES101 Structured Programming using C & Structured Programming using C Laboratory

On completion of the course, learner will be able to:	
DJS23FCES101.1.	Implement the programs in C.
DJS23FCES101.2	Debug the C programs

Semester I/II Course Outcomes

DJS23FCES102 & DJS23FLES102 Computational Engineering Mechanics & Computational Engineering Mechanics Laboratory

On completion of the course, learner will be able to:	
DJS23FCES102.1	Illustrate the effect of force and moment to determine the resultant of force system
DJS23FCES102.2	Apply the concept of equilibrium systems with the help of free body diagram.
DJS23FCES102.3	Correlate real life application to friction and estimate the Power transmitted by the belt.
DJS23FCES102.4	Apply the concept of geometric transformations to find the transformed position of an element/object.
DJS23FCES102.5	Analyze general plane motion of rigid bodies.

Semester I and II Course Outcomes

DJS23FCBS102 & DJS23FLBS102 Physics & Physics Laboratory & Tutorial

On completion of the course, learner will be able to:	
DJS23FLBS102.1.	Relate the scope and foundation of quantum mechanics & quantum computing and its role in development of modern technology.
DJS23FLBS102.2.	Apply the foundations of Optics and Photonics in precision measurements indispensable for the development of modern communication technology.
DJS23FLBS102.3	Assimilate the concepts of Electrodynamics, which are prerequisite in modern developments for signal communications, Antenna Theory etc.
DJS23FLBS102.4	Explore basic sensing techniques for physical measurements in modern instrumentation.



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Semester I and II Course Outcomes

DJS23FLVS101 Workshop Practices

On completion of the course, learner will be able to:	
DJS23FLVS101.1.	Get oriented to an engineering workshop environment and learn to conduct oneself adhering to the safety norms and set procedures.
DJS23FLVS101.2	Get familiarized with various methods of commonly used fabrication techniques and the type of hand tools /power tools required to perform such of these techniques.
DJS23FLVS101.3	Get acquainted with the production of simple jobs like joints, component of simple shape etc. as per component drawings with reasonable degree of tolerance.in fitting, carpentry, sheet metal, plumbing, welding, machining, 3D printing, electrical and electronic trades.

Semester I and II Course Outcomes

DJS23FCPC2IT Foundation of Information Technology

On completion of the course, learner will be able to:	
DJS23FCPC2IT.1.	Understand the organization of a computer system and networking. Understand the basics of computer security.
DJS23FCPC2IT.2.	Understand the basics of computer security.

Semester I and II Course Outcomes

DJS23FCPC2ME Elements of Mechanical Engineering

On completion of the course, learner will be able to:	
DJS23FCPC2ME.1.	Understand the scope of mechanical engineering and fundamentals of thermodynamics.
DJS23FCPC2ME.2.	Understand working principle of various energy conversion devices.
DJS23FCPC2ME.3	Identify various machine elements for different applications.
DJS23FCPC2ME.4	Understand various additive and subtractive manufacturing processes, chip less and chip removal processes.
DJS23FCPC2ME.5	Describe various types of conventional machine tools and CNC machines, with machining operations to generate cylindrical, and planar components.



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Semester I and II Course Outcomes

DJS23FCPC2DS Fundamentals of Data Analysis First Year Computer Science and Engineering (Data Science)

On completion of the course, learner will be able to:	
DJS23FCPC2DS.1.	Understand data properties.
DJS23FCPC2DS.2.	Apply statistical methods for data analysis.
DJS23FCPC2DS.3	Articulate various techniques to improve quality of data.