COURSE OUTCOME - REGULATION 2023

SEMESTER – I

U23HST11 - Communicative English	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Remember appropriate words in a situational conversation.
CO2	Gain understanding basic grammatical structures and use them in the right context.
CO3	Read and infer the denotative and connotative meanings of technical texts.
CO4	Write Dialogue, Letter and paragraphs on various topics.
CO5	Make the students prepare effective notes for the main sources available.
CO6	Enhance them to give operational talk.

U23MAT12 - Matrices and Calculus	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Use the matrix algebra methods for solving practical problems.
CO2	Use both the limit definition and rules of differentiation to differentiate functions.
CO3	Apply differential calculus tools in solving various application problems.
CO4	Able to use differential calculus ideas on several variable functions.
CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.
CO6	Solve the ordinary differential equations using different techniques for that model engineering problems.

U23PHT13 - Physics for Engineers and Technologists	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Differentiate the elastic and plastic nature of the materials.
CO2	Know the experimental techniques in both production and applications of ultrasonic waves.
CO3	Gain knowledge in the basics of quantum mechanics concepts.
CO4	Develop new devices based on LASER source.
CO5	Understand the advantages of optical fiber than metal wire.
CO6	Demonstrate some useful experiments based on optical fibre

U23CYT14 - Chemistry for Engineering & Technology	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CO2	Apply the basic knowledge of Corrosion and various electrodes.
CO3	Know the economically and new methods of synthesis nano materials.
CO4	Apply the knowledge of phase rule and composites for material selection requirements.
CO5	Understand the concepts of suitable fuels for engineering processes and applications.
CO6	Have the knowledge of different forms of energy resources and apply them for suitable applications in energy sectors.

U23GET15 - Problem Solving and Python Programming	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Describe algorithmic solutions to simple computational problems
CO2	Write and execute simple Python programs
CO3	Illustrate simple Python programs using conditionals and loops for solving problems
CO4	Explain the Concept of Files and exceptions
CO5	Apply simple Python programs for Read and write data from/to files in Python programs
CO6	Explain the concept of exceptions and handling

U23BSP11 - Physics and Chemistry Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the functioning of various physics laboratory equipment.
CO2	Observe and tabulate experimental data.
CO3	Solve problems individually and collaboratively.
CO4	Analyze the quality of water samples with respect to their acidity, alkalinity
CO5	Determine the amount of hardness in the water
CO6	Analyze quantitatively the impurities in solution by electro analytical techniques

U23GEP13 - Problem Solving and Python Programming Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Develop algorithmic solutions to simple computational problems.
CO2	Develop and execute simple Python programs
CO3	Build programs in Python using conditionals and loops for solving problems
CO4	Apply functions to decompose a Python program
CO5	Construct compound data using Python data structures
CO6	Utilize Python packages in developing software applications

U23HSP12 - English Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Identify and comprehend complex academic texts.
CO2	Interpret accurately and fluently in formal and informal communicative contexts.
CO3	Demonstrate their opinions effectively in both oral and written medium of communication.
CO4	Plan travelogue and construct paragraphs on various aspects.
CO5	Develop journal reading skills and small talk.
CO6	Utilizing technical terms and making power point presentations.

SEMESTER – II

U23HST21 - Professional English	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Compare and contrast products and ideas in technical texts.
CO2	Identify cause and effects in events, industrial processes through technical texts.
CO3	Analyze problems to arrive at feasible solutions and communicate them orally and in the written format.
CO4	Motivate students to write reports and win job applications.
CO5	Recall and comprehend different discourses and genres of texts.
CO6	Making the students become virtuous presenters.

U23MAT22 - Statistical and Numerical Methods	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
CO3	Solve the algebraic and transcendental equations.
CO4	Understand the knowledge of numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
CO5	Solve the ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
CO6	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.

U23PHT25 - Physics for Information Sciences	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Know basics of Crystallography and its importance for varied materials properties
CO2	Acquire knowledge on basics of semiconductor physics and its applications in various devices
CO3	Illustrate the SMA and metallic glasses
CO4	Understand the optical properties of materials and working principles of various optical devices
CO5	Explain types of polarization and its mathematical expression
CO6	Classify the various types of dielectric breakdown based on materials

U23CST21 - Programming in C	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Demonstrate knowledge on C Programming constructs
CO2	Implement small programming applications using arrays and strings
CO3	Implement modular applications in C using functions and pointers
CO4	Write programs in C using structures and unions
CO5	Illustrate sequential and random-access file processing using C program.
CO6	Explain the concept of Command line arguments

U23EET23 - Basic Electrical and Electronics Engineering	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Compute the electric circuit parameters for simple problems
CO2	Explain the working principle of electrical machines
CO3	Explain the applications of electrical machines
CO4	Analyze the characteristics of analog electronic devices
CO5	Explain the basic concepts of digital electronics
CO6	Explain the operating principles of measuring instruments

U23ECT23 - Digital Principles and System Design	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Simplify Boolean functions using K Map
CO2	Explain the design and working of combinational circuits such as adders, comparators, decoders, and multiplexers.
CO3	Describe the operation of flip-flops, counters, and shift registers in synchronous sequential circuits.
CO4	Discuss the principles of asynchronous sequential circuit design and methods to avoid hazards.
CO5	Illustrate the functions and applications of memory devices like RAM, ROM, PROM, and EEPROM.
CO6	Summarize the structure and usage of programmable logic devices and programmable logic arrays.

U23CSP21 - Programming in C Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Demonstrate knowledge on C programming constructs.
CO2	Develop programs in C using basic constructs
CO3	Construct programs in C using arrays.
CO4	Develop applications in C using strings, pointers, functions
CO5	Build applications in C using structures.
CO6	Develop applications in C using file processing

U23HSP22 - Communication Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Distinguish their technical competency through language skill.
CO2	Predict context effectively in-group discussions held in a formal/semi-formal discussions.
CO3	Understanding candidates' key characteristics.
CO4	Finding personality traits by sharing and comparing thoughts and ability.
CO5	Understanding the value of ethics (rules and regulations).
CO6	Construct emails and effective job applications.

SEMESTER – III

U23MAT32 - Discrete Mathematics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the concept of elementary mathematical logical arguments.
CO2	Apply basic counting techniques to solve combinatorial problems.
CO3	Identify the applications of Graph theory models and data structures.
CO4	Explain the concepts and properties of algebraic structures such as groups, rings and fields.
CO5	Extend the concepts of Boolean algebra in the area of lattices.
CO6	Apply the knowledge of argumental discrete mathematical problems.

U23ITT31 - Computer Organization and Architecture	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basics structure of computers, operations and instructions
CO2	Explain the design concepts of arithmetic and logic unit
CO3	Apply pipelined control units and the different types of hazards in the instructions
CO4	Interpret the concepts of parallel processing architectures
CO5	Summarize the fundamentals of memory system
CO6	Explain the concepts of I/O system

U23ITT32 - Data Structures	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Describe linear data structures using array and linked list.
CO2	Apply various operations like stacks, queues in linear data structure.
CO3	Demonstrate non-linear data structures tree and its application.
CO4	Apply various algorithms and operations in graph
CO5	Apply searching, sorting and hashing techniques in data structures.
CO6	Interpret sorting algorithms for a given problem.

U23ITT33 - Database Management Systems	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Construct SQL Queries using relational algebra.
CO2	Design database using ER model and normalize the database
CO3	Construct queries to handle transaction processing and maintain consistency of the database
CO4	Compare and contrast various indexing strategies and apply the knowledge to tune the performance of the database
CO5	Outline the various storage and optimization techniques.
CO6	Explain the different advanced databases.

U23ITT34 - Object Oriented Programming	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Apply the concepts of classes and objects to solve simple problems
CO2	Develop programs using inheritance, packages and interfaces.
CO3	Make use of exception handling mechanisms and multithreaded model to solve real world problems
CO4	Build Java applications with I/O packages, string classes, Collections and generics concepts
CO5	Integrate the concepts of event handling
CO6	Integrate JavaFX components and controls for developing GUI based applications

U23ITP31 - Object oriented Programming Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Design and develop java programs using object-oriented programming concepts
CO2	Design Interfaces and develop application using Interfaces
CO3	Develop simple applications using object-oriented concepts such as package, exceptions
CO4	Implement multithreading, and generics concepts
CO5	Create GUIs and event driven programming applications for real world problems
CO6	Develop applications using generic programming and event handlings.

U23ITP32 - Data Structures Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Develop and array implement of Stack and Queue ADTs
CO2	Develop and array implement of List ADT
CO3	Develop and implement List, Stack and Queue ADTs.
CO4	Apply the concept of Binary Trees , Binary Search Trees, AVL Trees
CO5	Develop and implement Heaps using Priority Queues
CO6	Apply the concept of searching and sorting algorithms

U23ITP33 - Database Management Systems Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Utilize typical data definitions and manipulation commands
CO2	Develop applications to test Nested and Join Queries
CO3	Build simple applications using Views
CO4	Build Procedures and Functions
CO5	Develop and manipulate data using NOSQL database.
CO6	Develop applications that require a Front-end Tool

SEMESTER – IV

U23CST41 - Design and Analysis of Algorithms	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Analyze the efficiency of algorithms using various frameworks
CO2	Apply graph algorithms to solve problems and analyze their efficiency.
CO3	Make use of algorithm design techniques like divide and conquer, dynamic programming and greedy techniques to solve problems.
CO4	Make use of state space tree method for solving problems.
CO5	Solve problems using approximation algorithms and randomized algorithms.
CO6	Understand the concept of NP, NP- Complete and NP Hard Problems

U23CST43 - Operating System	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the overall view of the computer system and operating system
CO2	Apply various scheduling algorithm to avoid and prevent deadlock
CO3	Compare and contrast various memory management schemes
CO4	Explain the functionality of file systems, I/O systems, and Virtualization.
CO5	Understand the building blocks of virtual machines and explain the virtualization
CO6	Compare iOS and Android OS

U23ITT43 - Web Technologies	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Create simple Website by understand the basics
CO2	Apply HTML and CSS effectively to create interactive and dynamic websites
CO3	Build dynamic web pages with validation using Java Script objects and apply different event handling mechanisms
CO4	Demonstrate simple web pages using Typescript
CO5	Illustrate Servlets in web applications
CO6	Create simple database applications.

U23CST44 - Computer Networks	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Learn Domain Name System and SNMP in the network
CO2	Compare the different transport layer protocols and their applicability based on user Requirements
CO3	Understand the different services of network layer
CO4	Explain the concept of Routing and protocols
CO5	Explain how data flows from one node to another node with regard to data link Layer
CO6	Identify various layers of network and discuss the functions of physical layer

U23GET41 - Environmental Sciences and Engineering	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Summarize the values, threats, conservation of biodiversity and ecosystems.
CO2	Discuss the sources, effects, control measures of different types of pollution and solid waste management.
CO3	Associate the effects of exploitation of natural resources of environment.
CO4	Recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development.
CO5	Demonstrate the knowledge of sustainability practices and identify green materials.
CO6	Discuss scientific, technological, economic and social solutions using sustainable energy and green engineering.

U23ITP41 - Operating Systems Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Illustrate the various CPU scheduling algorithms.
CO2	Apply deadlock avoidance and detection algorithms.
CO3	Implement semaphore concepts.
CO4	Create processes and implement IPC.
CO5	Analyze the performance of the various Page Replacement Algorithms
CO6	Implement File Organization and File Allocation Strategies

U23ITP42 - Computer Networks Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Implement various protocols using TCP and UDP.
CO2	Compare the performance of different transport layer protocols.
CO3	Use simulation tools to analyze the performance of various network protocols.
CO4	Analyze various routing algorithms.
CO5	Implement error correction codes
CO6	Explain Network simulator (NS) and Simulate Congestion Control Algorithms using NS.

U23ITP43 - Web Technology Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Design simple web pages using mark-up languages like HTML and CSS
CO2	Create dynamic web pages using DHTML and java script that is easy to navigate and use.
CO3	Develop Program server-side web pages that have to process request from client side web pages.
CO4	Develop web data using XML and web pages using JSP.
CO5	Understand various web services and how these web services interact.
CO6	Develop web service using real-world scenario

SEMESTER – V

U23CST71 - Cloud Computing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the design challenges in the cloud.
CO2	Understand the concept of virtualization and its types.
CO3	Experiment with virtualization of hardware resources and Docker
CO4	Learn and deploy services on the cloud and set up a cloud environment
CO5	Explain security challenges in the cloud environment.
CO6	Illustrate and choose the appropriate technologies, algorithms and approaches for implementation and use of cloud.

U23CBT41 - Foundations of Data Science	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Define the data science process.
CO2	Gain knowledge on relationships between data.
CO3	Explain the concepts of correlation and regression, including how to interpret scatter plots and the correlation coefficient
CO4	Use NumPy and Pandas for effective data manipulation and analysis.
CO5	Understand applying visualization Libraries in Python to interpret and explore data.
CO6	Use three-dimensional plotting data for data visualization.

U23CSP71 - Cloud Computing Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Configure various virtualization tools such as Virtual Box and VMware workstation.
CO2	Design and deploy a web application in a PaaS environment.
CO3	Learn how to simulate a cloud environment to implement new schedulers.
CO4	Install and use a generic cloud environment that can be used as a private cloud.
CO5	Manipulate large data sets in a parallel environment.
CO6	Install and use a single node cluster and run multiple applications.

U23AIP42 - Data Science Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the real-world data and information.
CO2	Apply data science using excel & Python.
CO3	Design of mathematical model for problem solving
CO4	Interpret various tools and its advantages.
CO5	Illustrate the different opportunities in industries.
CO6	Apply data modelling for real-world applications.

SEMESTER – VI

U23ITT61 - Big Data Analytics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Summarize the evolution, characteristics, and technologies of big data analytics.
CO2	Explain the principles of various clustering and classification methods and apply these techniques to real-world use cases
CO3	Understand different mining algorithms and recommendation systems for large volumes of data.
CO4	Perform analytics on data streams.
CO5	Illustrate NoSQL databases and management.
CO6	Illustrate statistical analysis and data visualization in R.

U23ITT62 - Artificial Intelligence and Machine Learning	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Use appropriate search algorithms for problem solving.
CO2	Explain reasoning under uncertainty.
CO3	Understand supervised learning models.
CO4	Understand ensemble and unsupervised models.
CO5	Explain deep learning neural network models.
CO6	Explain the concept of batch normalization and regularization.

U23CST64 - Information Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Discuss the basics of information security.
CO2	Illustrate the legal, ethical and professional issues in information security.
CO3	Explain the basics of risk assessment and control.
CO4	Describe various security models, standards and frameworks.
CO5	Illustrate the tools that are used for security analysis.
CO6	Explain the access control mechanisms to safeguard information systems and prevent unauthorized access.

U23AIP52 - Big Data Analytics Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Process big data using Hadoop framework
CO2	Build and apply linear and logistic regression models.
CO3	Perform data analysis with machine learning methods.
CO4	Apply various NoSQL database operations.
CO5	Build applications using MongoDB.
CO6	Develop applications using clustering techniques.

U23CSP42 - Machine Learning Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understandtheimplementationproceduresforthemachinelearningalgorithms.
CO2	Design Java/Python programs for various Learning algorithms.
CO3	Apply appropriate data sets to the Machine Learning algorithms
CO4	Apply Machine Learning algorithms to solve real world problems
CO5	Apply k-Nearest Neighbor algorithm to classify their is data set.
CO6	Apply non-parametric Locally Weighted Regression algorithm

SEMESTER – VII

U23CST62 - Internet of Things	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Describe the characteristics, physical and logical designs, domains and architecture.
CO2	Explain about Arduino and its types
CO3	Differentiate M2M and IoT, SDN and NFV design methodologies
CO4	Compare the communication models in IOT
CO5	Describe various real time applications of IOT
CO6	Design IoT applications using Arduino/Raspberry Pi /open platform

U23GET61- - Human Values and Ethics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand key democratic values like equality, freedom, and citizen participation in governance.
CO2	Comprehend secularism and religious tolerance, focusing on non-discriminatory practices in India
CO3	Learn scientific thinking, evidence-based approaches, and the importance of skepticism and rationalism.
CO4	Apply ethical reasoning to social issues, focusing on gender bias, discrimination, and inclusive practices.
CO5	Understand the importance of transparency and fairness in scientific endeavors for societal good.
CO6	Understand the ethical responsibilities of scientists in the application of their inventions.

U23ITT72 - Software Engineering and Project Management	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Identify the key activities in managing a software project.
CO2	Understand the concepts of requirements engineering and analysis Modelling.
CO3	Compare and contrast the various testing and maintenance.
CO4	Explain the process of performing analytics on data streams.
CO5	Make use of different phases in project management.
CO6	Utilize the stream activities in process/project database.

U23CSP62 - Internet of Things Laboratory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the concept of Internet of Things
CO2	Implement interfacing of various sensors with Arduino/Raspberry Pi.
CO3	Demonstrate the ability to transmit data wirelessly between different devices.
CO4	Show an ability to upload/download sensor data on cloud and server.
CO5	Implement IoT based street light control system.
CO6	Implement IoT based weather monitoring system

PROFESSIONAL ELECTIVE – I

U23CBT51 - Theory of Computation	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Outline automata theory using Finite Automata.
CO2	Write regular expressions for any pattern.
CO3	Interpret context free grammar and Pushdown Automata.
CO4	Explain the Turing machine for computational functions.
CO5	Differentiate between decidable and undecidable problems.
CO6	Describe the characteristics of P, NP and NP Complete problems.

U23CSV13 - Neural Networks and Deep Learning	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand Convolution Neural Network for image processing.
CO2	Understand the basics of associative memory and unsupervised learning networks.
CO3	Know the CNN and its variants for suitable applications.
CO4	Understand the fundamental computations in deep learning and apply this knowledge to construct and train deep neural networks for a range of tasks.
CO5	Interpret autoencoders and generative models for suitable applications.
CO6	Illustrate RNN and autoencoder, etc

U23CSV14 - Text and Speech Analysis	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain existing and emerging deep learning architectures for text and speech processing.
CO2	Understand the deep learning techniques for NLP tasks, language behavior and machine translation.
CO3	Describe answering models and coherence for text processing.
CO4	Understand question-answering systems, chat bots and dialogue systems.
CO5	Learn about the deep learning models for building speech recognition and text-to-speech systems.
CO6	Understand the applications using HMM and DNN systems and strings.

U23CSV12 - Recommender Systems	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basic concepts of recommender systems.
CO2	Illustrate machine-learning and data-mining algorithms in recommender systems datasets.
CO3	Outline the Collaborative Filtering in carrying out performance evaluation of recommender systems based on various metrics.
CO4	Describe types of attacks on recommender systems and their detection methods.
CO5	Identify and describe various evaluation paradigms used in recommender systems
CO6	Explain the goals and design issues associated with user studies for evaluating recommender systems.

U23CSV15 - Business Analytics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the real-world business problems and model with analytical solutions.
CO2	Identify the business processes for extracting Business Intelligence.
CO3	Describe predictive analytics for business forecasting.
CO4	Describe analytics for supply chain and logistics management.
CO5	Use analytics for marketing and sales.
CO6	Understand marketing techniques, Power BI, etc

U23CSV17 - Computer Vision	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand basic knowledge, theories and methods in image processing and computer vision.
CO2	Explain about advanced image processing techniques in OpenCV.
CO3	Apply 2D a feature-based based image alignment, segmentation and motion estimations
CO4	Apply 3D image reconstruction techniques
CO5	Design and develop innovative image processing and computer vision applications
CO6	Design and develop innovative computer vision applications

U23CSV43 - Social Network Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamental concepts and challenges of security within social networks.
CO2	Describe the techniques for analyzing and evaluating social network data to identify and address security issues.
CO3	Illustrate effective security measures and protocols to protect social networks from various threats and vulnerabilities.
CO4	Examine privacy issues related to social networks and develop strategies to safeguard personal information and user privacy.
CO5	Utilize the tools and technologies for detecting and mitigating security threats in social network environments.
CO6	Learn about the security policies and frameworks relevant to social networks.

U23ITV18 - Predictive Analytics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamentals of predictive analytics, the CRISP-DM process, and the role of data and statistical tools..
CO2	Learn data preparation, pre-processing, and feature selection techniques for effective predictive modeling.
CO3	Explore predictive modeling techniques, including decision trees, regression models, neural networks, and model optimization
CO4	Learn the time series analysis methods, including ARIMA, LSTM modeling, and forecasting techniques
CO5	Understand the advanced predictive analysis techniques like deep learning, unsupervised learning, and model stacking.
CO6	Understand ethical and legal considerations in predictive analysis through practical case studies.

PROFESSIONAL ELECTIVE – II

U23CSV28 - Principles of Programming Languages	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand syntax and semantics of programming languages.
CO2	Understand data, data types, and basic statements of programming languages.
CO3	Learn sub program constructs.
CO4	State object -oriented, concurrency, and event handling programming constructs and develop programs in Scheme, ML, and Prolog.
CO5	Use and adopt new programming languages.
CO6	Identify simple programs using functional programming languages to solve basic computational problems

U23ITV22 - Advanced Java Programming	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain Java's networking classes to develop basic client-server applications.
CO2	Understand the architecture and functionality of JDBC to establish and manage database connections in Java applications.
CO3	IdentifyJ2EE architecture and web application structure to develop and deploy web-based applications.
CO4	Describe the Servlets lifecycle and configuration to manage HTTP requests and responses effectively in web applications.
CO5	Use the JSP architecture and lifecycle to develop and manage dynamic web content.
CO6	Show JSP elements and JSTL to create interactive and data-driven web applications.

U23ITV23 - Full Stack Web Development	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the various stacks available for web application development.
CO2	Use Node.js for application development.
CO3	Discuss applications with MongoDB.
CO4	Use the features of Angular and Express.
CO5	Explain React applications.
CO6	Compare REST APIs.

U23CSV24 - UI and UX Design	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain UI for user applications.
CO2	Compare UX design of any product or application.
CO3	Use the UX skills in a product development.
CO4	State the sketching principles.
CO5	Understand the wireframe and prototype.
CO6	Use the role of research in the design process and how ideation contributes to effective information architecture.

U23CSV25 - Software Testing and Automation	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basic concepts of software testing and the need for software testing.
CO2	Compare test planning and different activities involved in test planning.
CO3	Use effective test cases that can uncover critical defects in the application.
CO4	Show the software testing using Selenium.
CO5	Identify wireframe and prototype.
CO6	Describe the testing using testing, XML and packages.

U23CSV26 - Web Application Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand and describe the fundamental concepts of web application security, including common vulnerabilities and threats.
CO2	Identify security risks in web applications, applying appropriate mitigation strategies.
CO3	Use secure coding practices to prevent web-based attacks such as XSS, SQL injection, and CSRF.
CO4	Summarize robust authentication, authorization, and session management techniques to enhance web application security.
CO5	Explain the usage of security testing tools and methodologies to assess the security posture of web applications.
CO6	Discuss the compliance with legal, ethical, and regulatory standards for secure web application development and deployment.

U23ITV27 – DevOps	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand different actions performed through version control tools like Git.
CO2	Perform continuous integration and continuous testing and continuous deployment using Jenkins by building and automating test cases using Maven & Gradle.
CO3	Ability to perform automated continuous deployment.
CO4	Ability to do configuration management using Ansible.
CO5	Understand to leverage cloud-based DevOps tools using Azure DevOps.
CO6	Use Github Accounts and Azure pipelines.

U23ITV28 - Full Stack Mobile App Development	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamentals of Full Stack mobile application development.
CO2	Illustrate the basic concepts of KOTLIN programming.
CO3	Explain the application user interfaces.
CO4	Understand interactive applications using maps, location based services, UI/UX.
CO5	Use advanced Android components such as Recycler View, Card View, and media handling to develop feature-rich mobile applications.
CO6	Compare Android applications with features such as SMS/MMS, media integration, and monetization strategies.

PROFESSIONAL ELECTIVE – III

U23ITV31 - Data Warehousing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamentals of data warehouse architecture for various Problems.
CO2	Explain the ETL and Online Analytical Processing Technologies and its operations.
CO3	Use the Categories of Metadata & Partitioning strategy technique.
CO4	Learn the differentiation of various schemas for given problem.
CO5	Frame roles of Data Warehousing Process Managers and System Configuration Managers.
CO6	Identify the skills and knowledge to effectively manage and optimize the various processes within a data warehouse.

U23ITV32 - Cloud Virtualization	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the design challenges in the cloud.
CO2	Explain the concept of virtualization and its types.
CO3	Experiment with virtualization of hardware resources and Docker.
CO4	Equip students with knowledge of cloud deployment models and service management for cloud infrastructure.
CO5	Discuss security challenges in the cloud environment.
CO6	Identify and address common challenges in implementing and maintaining IAM systems

U23CSV23 - Cloud Services Management	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain cloud-design skills to build and automate business solutions using cloud technologies.
CO2	Extend Strong theoretical foundation leading to excellence and excitement towards adoption of cloud-based services.
CO3	Solve the real-world problems using Cloud services and technologies.
CO4	Discover Cloud service management operations. CO 5:
CO5	Explain cloud-design skills to build and automate business solutions using cloud technologies.
CO6	Extend Strong theoretical foundation leading to excellence and excitement towards adoption of cloud-based services.

U23ITV34 - Computational Bioinformatics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the models for biological data.
CO2	Explain and implement data warehousing solutions for bioinformatics applications.
CO3	Learn the models of protein structures to understand their functions.
CO4	Discuss pattern matching techniques to protein and genomic data.
CO5	Use microarray technology for genomic expression study
CO6	Compare scientific data management systems by functionality and performance

U23CSV34 - Storage Technologies	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamentals of information storage management and various cloud infrastructure services and deployment models.
CO2	Explain the usage of advanced intelligent storage systems and RAID.
CO3	Interpret storage networking architectures, including SAN, storage subsystems, and virtualization.
CO4	Examine the different role in providing disaster recovery and remote replication technologies.
CO5	Discuss the security needs and security measures to be employed in information storage management.
CO6	Understand the processes for managing storage infrastructure.

U23CSV35 - Software Defined Networks	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the key concepts, principles, and architecture of Software Defined Networking (SDN)
CO2	Identify the functions of the data plane and control plane.
CO3	Explain the key concepts of SDN architecture, the role of the SDN controller, and key communication protocols
CO4	Illustrate various techniques of network function virtualization.
CO5	Understand management and orchestration techniques to optimize NFV environments.
CO6	Discuss various use cases of SDN and NFV.

U23CSV36 - Stream Processing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamentals of data processing and its challenges
CO2	Describe the current research trends in data-stream processing.
CO3	Learn the suitability of stream mining algorithms for data stream systems.
CO4	Use stream processing systems, services and applications.
CO5	Remember the structured streaming concepts, including dataset creation, schema inference, and partitioning.
CO6	Outline the appropriate architecture and frameworks based on the specific needs of real-time data processing applications.

U23CBT73 - Security and Privacy in Cloud	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the key concepts, issues, and principles related to security and privacy in cloud computing.
CO2	Identify and classify different types of security threats and vulnerabilities specific to cloud environments and cloud-based services.
CO3	Describe the secure cloud infrastructure through access control methods, including user identification, authentication and role-based access control
CO4	Discuss the various risks audit and monitor mechanisms in the cloud.
CO5	Explain proactive monitoring skills to detect and address security issues.
CO6	Use the various architectural and design considerations for security in the cloud.

PROFESSIONAL ELECTIVE – IV

U23ITV41 - Digital and Mobile Forensics	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the knowledge on digital forensics.
CO2	Know about digital crime and investigations.
CO3	Be forensic ready.
CO4	Identify digital evidence from iOS devices.
CO5	Identify the digital from Android devices.
CO6	Learn the Oxygen Forensics.

U23ITV42 - Internetworking with TCP/IP	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the IP addressing schemes and network protocols.
CO2	Describe the fundamentals of network design and implementation.
CO3	Learn with the network management issues.
CO4	Use the TCP protocol at initial Level.
CO5	Remember the TCP protocol to the next Level.
CO6	Discuss the TCP protocol to the Next level and its functions.

U23CBT63 - Ethical Hacking	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Remember the knowledge on basics of computer based vulnerabilities
CO2	Understand on different foot printing, reconnaissance and scanning methods.
CO3	Discuss the enumeration and vulnerability analysis methods
CO4	Compare hacking options available in Web and wireless applications.
CO5	Show the options for network protection.
CO6	Use ethical hacking to expose the vulnerabilities.

U23CSV44 - Modern Cryptography	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Use the basic principles of cryptography and general cryptanalysis.
CO2	Learn the concepts of symmetric encryption and authentication.
CO3	Identify the use of public key encryption, digital signatures, and key establishment.
CO4	Understand the cryptographic algorithms to compose build and analyze simple cryptographic solutions.
CO5	Use of Message Authentication Codes.
CO6	Explain the Analyzing Cryptographic Protocols.

U23ITV45 - Cloud Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the cloud concepts and fundamentals.
CO2	Learn security design principles for cloud computing and virtualization
CO3	Use cloud security controls, including access management, incident response, and auditing techniques.
CO4	Understand various risks ,audit and monitoring mechanisms in the cloud.
CO5	Show monitoring and management strategies to detect, respond to, and mitigate security threats in cloud environments.
CO6	Define the various architectural and design considerations for security in the cloud.

U23CSV46 - Cryptocurrency and Blockchain Technologies	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Show emerging abstract models for Blockchain Technology.
CO2	Identify major research challenges and technical gaps existing between theory and practice in cryptocurrency domain.
CO3	Summarize conceptual understanding of the function of Block.
CO4	Learn hyper ledger Fabric and Ethereum platform to implement the Blockchain Application.
CO5	Show various new applications of block chain.
CO6	Compare block chain based solutions and write smart contract using Ethereum.

U23CSV43 - Social Network Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the fundamental concepts and challenges of security within social networks.
CO2	Remember the techniques for analyzing and evaluating social network data to identify and address security issues.
CO3	Understand effective security measures and protocols to protect social networks from various threats and vulnerabilities.
CO4	Examine privacy issues related to social networks and develop strategies to safeguard personal information and user privacy.
CO5	Utilize the tools and technologies for detecting and mitigating security threats in social network environments.
CO6	Learn security policies and frameworks relevant to social networks.

U23CBT81 - Malware Analysis	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the executable formats, Windows internals, and APIs
CO2	Learn techniques and concepts to unpack, extract, and decrypt malware.
CO3	Use the reverse-engineering of malware and anti-malware analysis techniques.
CO4	Discuss the proficiency with industry-standard malware analysis tools.
CO5	Learn the various malware sample tools.
CO6	Explain the skills to carry out static and dynamic malware techniques.

PROFESSIONAL ELECTIVE – V

U23CSV54 - Digital Marketing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Learn the role and importance of digital marketing.
CO2	Compare, how digital marketing can be utilized by organizations.
CO3	Learn key elements of a digital marketing strategy.
CO4	Discuss, how the effectiveness of a digital marketing campaign can be measured.
CO5	Explain advanced practical skills in common digital marketing tools.
CO6	Learn about various strategies in digital marketing.

U23CSV52 - Multimedia and Animation	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain multimedia components, challenges, and technologies for effective learning.
CO2	Describe multimedia file formats and color models for images, audio, video, and web.
CO3	Compare 2D and 3D creative and interactive presentations for multimedia applications.
CO4	Use different standard animation techniques for 2D, 2 1/2 D, 3D applications.
CO5	Understand the complexity of multimedia applications.
CO6	Learn about Virtual reality and Augmented reality.

U23AIV52 - Video Creation and Editing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the strengths and limitations of nonlinear editing.
CO2	Identify the infrastructure and significance of storytelling.
CO3	Use suitable methods for recording to CDs and VCDs.
CO4	Address the core issues of advanced editing and training techniques.
CO5	Learn projects using advanced Tools.
CO6	Explain company-oriented expectations regarding applications.

U23CSV24 - UI and UX Design	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand user-centered design, focusing on usability, accessibility, and research.
CO2	Learn UI design principles and interaction behaviors for user-friendly interfaces.
CO3	Use user personas based on research tools and methods.
CO4	Explore wireframing, prototyping, and usability testing for UI design.
CO5	Align designs with branding guidelines for a consistent user experience.
CO6	Gain expertise in research, design, ideation, and information architecture.

U23CSV55 - Visual Effects	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Use animation in 2D / 3D following the principles and techniques.
CO2	Use CGI, color and light elements in VFX applications.
CO3	To Utilize special effects using any of the state of the art tools.
CO4	Learn popular visual effects techniques using advanced tools.
CO5	Use compositing tools for creating VFX for a variety of application.
CO6	Gain proficiency in industry-standard VFX software such as Adobe After Effects, Nuke, Blender, or similar tools, to execute complex visual effects tasks.

U23CSV56 - Game Development	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the concepts of 2D and 3D Graphics.
CO2	Understand the applicability of the game design documents.
CO3	Explain rendering, sorting, and pathfinding algorithms in game engine design.
CO4	Survey different gaming environments and frameworks.
CO5	Discuss simple game in Pygame.
CO6	Explain various algorithms used in game development.

U23CSV57 - Multimedia Data Compression and Storage	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basics of text, Image and Video compression.
CO2	Understand the various compression algorithms for multimedia content.
CO3	Explain the applications of various compression techniques.
CO4	Use knowledge on multimedia storage on disks.
CO5	Understand scheduling methods for request streams.
CO6	Know about the constraints on storage systems.

U23ITV57 - Android Mobile Application Development	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Identify various concepts of mobile programming that make it unique from programming for other platforms
CO2	Create, test and debug Android application by setting up Android development
CO3	Demonstrate methods in storing, sharing and retrieving data in Android applications
CO4	Utilize rapid prototyping techniques to design and develop sophisticated mobile interfaces
CO5	Create interactive applications in android using databases with multiple activities including audio, video and notifications and deploy them in marketplace.
CO6	Understand the projects on deploying android application.

PROFESSIONAL ELECTIVE – VI

U23CSV67 - Knowledge Engineering	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Learn the basics of Knowledge Engineering.
CO2	Explore the methodologies and modeling for Agent Design and Development.
CO3	Understand about the design and develop ontologies.
CO4	To know the reasoning with ontologies and rules.
CO5	To grasp the essential of learning and rule learning.
CO6	To learn the rule generation and analysis in hypothesis learning.

U23CSV61 - Robotics Process Automation	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the key distinctions between RPA and existing automation techniques and platforms.
CO2	Ui Path to design control flows and workflows for the target process.
CO3	Explore the recording, web scraping and process mining by automation.
CO4	Use UI Path Studio to detect, and handle exceptions in automation processes.
CO5	Illustrate the use of Orchestrator for creation, monitoring, scheduling, and controlling of automated bots and processes.
CO6	Explain the error handling and debugging in RPA.

U23CSV64 - Quantum Computing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	To learn the basics of quantum computing.
CO2	Understand the background of Quantum Mechanics.
CO3	Describe various computation models and their use.
CO4	Model the circuits using quantum computation, environments and frameworks.
CO5	Know the quantum operations such as noise and error–correction.
CO6	Explain the private key cryptography.

U23CSV63 - Cyber Security	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain the basics of cyber security, cyber-crime and cyber law.
CO2	Learn various types of attacks and learn the tools to launch the attacks.
CO3	Explore various tools to perform information gathering.
CO4	Identify the intrusion techniques to detect intrusion.
CO5	Discuss intrusion prevention techniques to prevent intrusion.
CO6	To grasp the essential of Unified Threat Management Products.

U23ITV65 - Optimization Techniques	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the Formulate and solve linear programming problems (LPP).
CO2	Evaluate Integer Programming Problems, Transportation and Assignment Problems.
CO3	Use the solution to network problems using CPM and PERT techniques.
CO4	Learn to optimize the functions object to the constraints.
CO5	Identify and solve problems under Markovian queuing models.
CO6	Explain Queuing system and multiple service channels.

U23CSV46 - Cryptocurrency and Blockchain Technologies	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Show emerging abstract models for Blockchain Technology.
CO2	Identify major research challenges and technical gaps existing between theory and practice in cryptocurrency domain.
CO3	Summarize conceptual understanding of the function of Block.
CO4	Learn hyper ledger Fabric and Ethereum platform to implement the Blockchain Application.
CO5	Show various new applications of block chain.
CO6	Compare block chain based solutions and write smart contract using Ethereum.

U23CSV66 - 3D Printing and Design	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Outline and examine the basic concepts of 3D printing technology
CO2	Outline 3D printing workflow
CO3	Explain and categories the concepts and working principles of 3D printing using inkjet technique
CO4	Explain and categories the working principles of 3D printing using laser technique
CO5	Outline and examine the basic concepts of 3D printing technology
CO6	Outline 3D printing workflow

U23ITV67 - Game theory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Discuss the notion strategic game and equilibria and identify the characteristics of main applications of these concepts.
CO2	Understand the use of Nash Equilibrium for other problems.
CO3	Identify key strategic aspects and based on these be able to connect them to appropriate game theoretical concepts given a real-world situation.
CO4	Identify some applications that need aspects of Bayesian Games.
CO5	Explain the typical Virtual Business scenario using Game theory.
CO6	To grasp the essential of mechanism designs with unrestricted references.

PROFESSIONAL ELECTIVE – VII

U23AIV13 - Soft Computing	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basic concepts of AR and VR
CO2	Understand the tools and technologies related to AR/VR
CO3	Explain the working principle of AR/VR related Sensor devices
CO4	Summarize various models using modeling techniques
CO5	Explain AR applications in different domains
CO6	Explain VR applications in different domains

U23CSV13 - Neural Networks and Deep Learning	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Outline the Convolution Neural Networks for image processing.
CO2	Understand the basics of associative memory and unsupervised learning networks.
CO3	Interpret CNN and its variants for suitable applications.
CO4	Explain the key computations underlying deep learning and use them to build and train deep neural networks for various tasks.
CO5	Inference auto encoders and generative models for suitable applications.
CO6	Simplify the application of image generation and natural language processing.

U23CSV14 - Text and Speech Analysis	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Explain existing and emerging deep learning architectures for text and speech processing.
CO2	Understand the deep learning techniques for NLP tasks, language behavior and machine translation.
CO3	Describe answering models and coherence for text processing.
CO4	Understand question-answering systems, chat bots and dialogue systems.
CO5	Learn about the deep learning models for building speech recognition and text-to-speech systems.
CO6	Understand the applications using HMM and DNN systems and strings.

U23CSV51 - Augmented Reality/ Virtual Reality	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the basic concepts of AR and VR.
CO2	Understand the tools and technologies related to AR/VR.
CO3	Know the working principle of AR/VR related Sensor devices.
CO4	Explain various applications of VR.
CO5	Describe AR/VR applications in different domains.
CO6	Interpret the concepts of annotation and navigation.

U23ITV65 - Optimization Techniques	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Formulate and solve linear programming problems.
CO2	Explain integer programming methods and their application in transportation and assignment problems.
CO3	Explain project scheduling concepts, including network diagrams, floats, and cost implications in CPM and PERT.
CO4	Describe the necessary and sufficient conditions for solving unconstrained optimization problems using classical methods.
CO5	Identify and solve problems under Markovian queuing models.
CO6	Discuss Queuing system and multiple service channels.

U23CSV58 - Cognitive Science	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Understand the underlying theory behind cognition.
CO2	Connect to the cognition elements computationally.
CO3	Understand the applicability of mathematical functions through Web PPL.
CO4	Discuss applications using cognitive inference model.
CO5	Illustrate applications using cognitive learning model.
CO6	Outline the hierarchical models and mixture models

U23AIV56 - Ethics and AI	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Learn about morality and ethics in AI
CO2	Acquire the knowledge of real time application ethics, issues and its challenges.
CO3	Understand the ethical harms and ethical initiatives in AI
CO4	Learn about AI standards and Regulations like AI Agent, Safe Design of Autonomous and Semi- Autonomous Systems
CO5	Understand the concepts of Robo ethics and Morality with professional responsibilities.
CO6	Learn about the societal issues in AI with National and International Strategies on AI

U23ITV67 - Game theory	
Course Code	**Course Outcomes**
	Upon completion of the course, the students will be able to:
CO1	Discuss the notion of a strategic game and equilibria and identify the characteristics of main applications of these concepts.
CO2	Discuss the use of Nash Equilibrium for other problems.
CO3	Identify key strategic aspects and based on these be able to connect them to appropriate game theoretic concepts given a real world situation.
CO4	Identify some applications that need aspects of Bayesian Games.
CO5	Understand the applicability of a typical Virtual Business scenario using Game theory.
CO6	Learn about the societal issues in AI with National and International Strategies on AI.