DRONACHARYA
College of Engineering

Khentawas, Farrukh Nagar, Gurugram, Haryana
Approved by: All India Council for Technical Education (AICTE), New Delhi
Affiliated to: Gurugram University, Gurugram

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

ACADEMIC YEAR 2023-24

SEMESTER VIII

Special Electrical Machines (PEC-EE-402G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Impart knowledge on construction, principle of operation and performance of all ac and dc machines with small andhigher rating
(CO2)	Understand the concepts of rotating magnetic fields
(CO3)	Analyze performance characteristics of ac machines.
(CO4)	Prepare the students to have a basic knowledge about motoring, generating and braking mode of ac machines

Applications of Power Electronics in Power Systems (PEC-EE-404G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Relate basic semiconductor physics to properties of power devices, and combine circuit mathematics and characteristics of linear and non linear devices.
(CO2)	Describe basic operation and compare performance of various power semiconductor devices, passive components and switching circuits
(CO3)	Design and Analyze power converter circuits and learn to select suitable power electronic devices by assessing the requirements of application fields.
(CO4)	Formulate and analyze a power electronic design at the system level and assess the performance
(CO5)	Identify the critical areas in application levels and derive typical alternative solutions, select suitable power converters to control Electrical Motors and other industry grade apparatus
(CO6)	Recognize the role power electronics play in the improvement of energy usage efficiency and the applications of power electronics in

	emerging areas.

Power System Stability (PEC- EE-406G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	understand about the classification of stability.
(CO2)	know power system stability problem
(CO3)	know about synchronous machine modelling.
(CO4)	how to handle various stability and unstability problem.

Advanced Control Systems (PEC-EE-408G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Design compensators using classical techniques.
(CO2)	Analyze both linear and nonlinear system using state space methods.
(CO3)	Analyze the stability of discrete system and nonlinear system.

Advances in Power Transmission & Distribution (PEC- EE-410G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Discuss Modelling of the transmission line parameters.
(CO2)	Explain the equivalent circuits for the transmission lines based on distance and determine voltage regulation and efficiency
(CO3)	To deal with the importance of HVDC Transmission and HVDC Converters
(CO4)	Knowledge of Modern power controllers to enhance the stability and capability of existing network.
(CO5)	Monitoring and improvement of Power Quality

Solar Thermal Applications (OEC- EE-402G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	The fundamental concepts about solar energy systems and devices are incorporated.
(CO2)	The performance of the systems along with practical case studies were done.

Electrical Safety and Standards (OEC-EE-404G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Describe electrical hazards and safety equipment.
(CO2)	Analyze and apply various grounding and bonding techniques
(CO3)	Select appropriate safety method for low, medium and high voltage equipment.
(CO4)	Participate in a safety team
(CO5)	Carry out proper maintenance of electrical equipment by understanding various standards

Industrial Control (OEC-EE-406G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand the basic principles & importance of process control in industrial process plants.
(CO2)	Specify the required instrumentation and final elements to ensure that well-tuned control is achieved.
(CO3)	Understand the use of block diagrams & the mathematical basis for the design of control systems.
(CO4)	Design and tune process (PID) controllers.
(CO5)	Use appropriate software tools (e.g.Matlab Control Toolbox & Simulink) for the modelling of plant dynamics and the design of well tuned control loops

(CO6)	Understand the importance and application of good instrumentation for the efficient design of process control loops for process engineering plants.
(CO7)	Draw a PID (Process & Instrumentation Diagram) & devise simple but effective plant wide control strategies using appropriate heuristics.

ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEM (PEC-EEE-418G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.
(CO2)	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning
(CO3)	Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.
(CO4)	Demonstrate profciency developing applications in an 'AI language', expert system shell, or data mining tool.
(CO5)	Demonstrate profciency in applying scientifc method to models of machine learning
(CO6)	Demonstrate an ability to share in discussions of AI, its current scope and limitations, and societal implications

SOFTWARE ENGINEERING (OEC-EEE-420G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Students will be able to decompose the given project in various phases of a lifecycle
(CO2)	Students will be able to choose appropriate process model depending on the user requirements
(CO3)	Students will be able perform various life cycle activities like Analysis, Design, Implementation, Testing and Maintenance.
(CO4)	Students will be able to know various processes used in all the phases of the product
(CO5)	Students can apply the knowledge, techniques, and skills in the development of a software product

OPERATIONS RESEARCH (OEC-ME-402G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Discuss the role of operations research in decision-making, and its applications in industry and should be able to formulate and design real-world problems through models & experiments
(CO2)	Knowledge of various types of deterministic models like linear programming, transportation model etc
(CO3)	Explore various types of stochastic models like waiting line model, project line model, simulation etc.
(CO4)	Deduce the relationship between a linear program and its dual and perform sensitivity analysis.
(CO5)	Describe different decision making environments and apply decision making process in the real world situation.

SOLAR ENERGY APPLIANCES (OEC- EE-408G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	The fundamental concepts about solar energy systems and devices are incorporated.
(CO2)	The performance of the systems along with practical case studies were done.

Renewable Energy Converters (OEC-EE-410G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand advanced concepts in power electronics
(CO2)	Adaptability to analyze power converter based renewable energy systems.
(CO3)	To troubleshoot gird compatibility issues with power electronics circuits.

Robotics (OEC-EE-412G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Students will be equipped with brief history of Robotic and application.
(CO2)	Students will be familiarized with kinematic motion of robot.
(CO3)	Student will be acquainted with the basic theory required for solving control problem in Robotics.
(CO4)	Students will be conversant to advance control strategies for Robotic applications.

Energy Management and Auditing (OEC-EE-414G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand the fundamentals of energy management systems
(CO2)	Carry out various energy audit processes.
(CO3)	Describe methods to improve efficiency of electrical energy systems
(CO4)	Asses the use of alternative energy sources in improving the energy management.

Optimization Theory (OEC- EEE-402G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Ability to apply the theory of optimization methods and algorithms to develop and for solving various types of optimization problems
(CO2)	Ability to go in research by applying optimization techniques in problems of Engineering and Technology
(CO3)	Ability to solve the mathematical results and numerical techniques of optimization theory to concrete Engineering problems by using computer software

IMAGE PROCESSING (OEC-EEE-404G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand the need for image transforms different types of image transforms and their properties.
(CO2)	Develop any image processing application.
(CO3)	Understand the rapid advances in Machine vision
(CO4)	Learn different techniques employed for the enhancement of images.
(CO5)	Learn different causes for image degradation and overview of image restoration techniques.
(CO6)	Understand the need for image compression and to learn the spatial and frequency domain techniques of image compression.
(CO7)	Learn different feature extraction techniques for image analysis and recognition

VIRTUAL INSTRUMENTATION (OEC- EEE-406G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Understand Virtual Instrument concepts.
(CO2)	Create a Virtual Instrument using graphical programming
(CO3)	Develop systems for real-time signal acquisition and analysis.
(CO4)	Apply concepts of network interface for data communication.
(CO5)	Implement and design data acquisition systems for practical applications.
(CO6)	Suggest solutions for automation and control applications using virtual instrumentation

Intelligent Instrumentation (OEC- EEE-408G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Able to understand the basic characteristic of intelligent instrumentation system
(CO2)	Knowledge of new sensor technology
(CO3)	Able to understand the data acquisition system in intelligent instrumentation system
(CO4)	Knowledge of automation in industrial plant
(CO5)	Able to understand the intelligent controller used in intelligent instrumentation system

Solid & Hazardous waste management (OEC- EEE-410G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	To realize the significance of solid and hazardous waste management in today life
(CO2)	To understand the processes involved in solid and hazardous waste management
(CO3)	To comprehend the techniques for various waste management
(CO4)	To appreciate the role of common/integrated waste management plants

OP-AMP APPLICATIONS (OEC-EEE-412G)

Course Outcome (CO)	Details of Course Outcomes
(CO1)	Describe operational amplifiers (op-amps) fundamentals and their applications.
(CO2)	Analyze and design of op-amp based feedback circuits with various inverting and non-inverting configurations.
(CO3)	Design linear op-amp circuits, including amplifiers, I-V/V-I converters, instrumentation amplifiers, integrators, differentiators.
(CO4)	Demonstrate basic filter theory, filter responses, and filter synthesis techniques

(CO5)	Analyze and design of discrete-time circuits (switched capacitor circuits) based on op amps
(CO6)	Analyze and design of nonlinear circuits (e.g., comparators, Schmitt triggers, rectifiers, and peak detectors) based on op amps.