Koneru Lakshmaiah Education Foundation
(Category -1, Deemed to be University estd. u/s. 3 of the UGC Act, 1956)
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Department of Electrical and Electronics Engineering
Program: B.Tech -Electrical and Electronics Engineering
Academic Year: 2021-2022

Course Code	Course Title	CO No	Description of the Course Outcome
20EE1201	Basics of Electrical & Electronics Engineering	CO1	Understand the passive circuit elements and it combinations performance in DC circuits using mesh, nodal and theorems.
		CO2	Understand the fundamentals of AC circuits and apply concept of resonance to series and parallel circuits.
		CO3	Understand the VI Characteristics of active circuit elements.
		CO4	Applications of semiconductor devices
		CO5	Test and analyse the electrical and electronics circuits for DC and AC
20EE2104	Mathematical Transforms for Signal Processing	CO1	understand basic concepts related to Signals and Systems
		CO2	Apply Fourier series and transforms to various periodic and aperiodic waveforms
		CO3	Apply Laplace transforms and its properties to various signals
		CO4	Apply Z transforms and its properties to various signals
20SC1203	OBJECT ORIENTED PROGRAMMING	CO1	To understand basic Concepts of OOP, fundamentals of java and apply the concepts of classes and objects through Java Language
		CO2	To apply constructors, Overloading, parameter passing, access control in Java programming.
		CO3	To apply Inheritance, Abstraction and Interfaces
		CO4	To apply Exception Handling, I/O Streams and understand Basic Concepts of Multithreading
		CO5	To apply OOP concepts to write programs and implement projects in java.
21CS3045R	INTRODUCTION TO BLOCKCHAIN AND CRYPTOCURRENCIES	CO1	Understanding or knowing the basic concepts of Cryptography for Blockchain
		CO2	Understand the basics of Blockchain and mining process
		CO3	Apply about the different types of Blockchain and consensus algorithms
		CO4	Apply the different types of crypto currencies & its importance and Blockchain applications
		CO5	Apply and analyze basic cryptography concepts and smart contracts applications using soft wallet.
21CS3064R	UX DESIGN	CO1	Understand and discuss about User Experience Design Process
		CO2	Apply User interface and differentiate from User Experience and principles of User Interface
		CO3	Analyzing and distinguishing about components of UI Design process with interactive Devices
		CO4	Determine graphic design techniques and psychology principles of User Experience
		CO5	Designing wire frames using Adobe XD, UX Pressia and whimsical

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21CS3071R	PROGRAMMING FOR GAME DEVELOPMENT	CO1	Illustrate the concepts of Game design and development.
		CO2	Understanding the use of mathematical and geometrical concepts in Game Programming.
		CO3	Explain the Core architectures of Game Programming.
		CO4	Relate above advance concepts in game development and explain various platforms and frameworks for Game Programming
		CO5	Implement Games using Course with Code in Unity
21EE2101	Electrical Circuits	CO1	Understand two port network parameters and their relations
		CO2	Analyze the transient behaviour of DC / AC circuits.
		CO3	Understand the network topology and apply three phase circuit balanced and unbalanced circuits.
		CO4	Understand magnetic circuit behaviour in series and parallel circuits.
		CO5	Test and analyse the electrical circuits for DC and AC
21EE2102	Electrical Machines	CO1	Understand the basic principles of electro mechanical energy conversion.
		CO2	Compute the performance of DC machines.
		CO3	Select a suitable technique to find the voltage regulation of an alternator and analyze the load sharing.
		CO4	Determine the performance of Transformers.
		CO5	Test the performance of Electrical Machines.
21EE2103	ELECTROMAGNETIC FIELDS AND ENGINEERING MATERIALS	CO1	Apply Coulomb's and Gauss's laws to different electrostatic field distributions
		CO2	Apply Biot-Savart's and Ampere's laws to different magnetic field distributions
		CO3	Understand force existence in different field distributions and inductance phenomenon
		CO4	Apply Maxwell's equations for time varying fields
21EE2201	ANALOG ELECTRONICS	CO1	Build Amplifier circuits using BJT and FET
		CO2	Analyze Feedback, Multi-stage, and Differential Amplifier circuits
		CO3	Analyze OP-AMP circuits for Signal conditioning and Instrumentation
		CO4	Apply Power amplifier circuits and Build oscillator circuits using OP-AMP
		CO5	Investigate the usage of Analog electronic circuits for amplification, instrumentation, and oscillator applications
21EE2202	INDUSTRIAL APPLICATIONS OF ELECTRICAL MACHINES	CO1	Understand the concepts of the 3-phase induction motor.
		CO2	Analyze the performance of 3-phase alternator.
		CO3	Analyze the performance of 3-phase synchronous motor
		CO4	Understand the concepts of 1-phase & special machines.
		CO5	Test the performance of AC Rotating Machines
21EE2203	ELECTRICAL POWER GENERATION, TRANSMISSION AND DISTRIBUTION	CO1	Understand working of various generating stations and economical aspects of generation
		CO2	Understand the parameters of overhead transmission lines and underground cables

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		CO3	Analyze the performance of overhead transmission lines and AC/DC distribution.
		CO4	Understand Mechanical Sag, corona, Insulators and substation layouts.
21EE2204	POWER ELECTRONICS	CO1	Select appropriate switch for a given power converter
		CO2	Analyze the steady state performance of Basic DC-DC converters
		CO3	Analyze the performance of Basic Switch-Mode PWM Inverter
		CO4	Understand the operation of basic phase controlled converters
		CO5	Test the basic power electronic converters by hardware realization and MATLAB software.
21EE3112	INTRODUCTION TO INDUSTRIAL INTERNET OF THINGS	CO1	Understand the Industry 4.0 Globalization
		CO2	Understand the Model and architecture of IIOT
		CO3	Understand the IIoT Computing
		CO4	Understand the Various Applications of IIoT
21EE3121	SOLAR PV AND MICRO ENERGY TECHNOLOGIES	CO1	Interpret principles and control of Solar PV Energy system
		CO2	Model and Select Solar PV energy system components
		CO3	Interpret and Model dynamics of fuel cell energy conversion
		CO4	Demonstrate ultra-micro-energy energy conversion technologies
21EE3131	DISTRIBUTION SYSTEM PRACTICES	CO1	Understand the basic structure of distribution system and compute AT&C loss.
		CO2	Apply the knowledge for erection and commissioning of a substation.
		CO3	Understand the various protection systems deployed in distribution system.
		CO4	Test and understand the test results of various distribution system equipment.
21EE3132	DISTRIBUTED ENERGY RESOURCES AND SMART GRIDS	CO1	Understand different types of distributed energy resources
		CO2	Apply the principles for integrating DERs to grid
		CO3	Understand smart grid objectives and its activities in India
		CO4	Monitor various applications in smart grid with its smart infrastructure.
21EE3142	COMMUNICATION PROTOCOLS & TESTING OF ELECTRIC VEHICLE	CO1	Understand the communication protocols used in Electric Vehicles
		CO2	Apply the communication protocols for fault diagnostics of Electric Vehicle
		CO3	Analyzethe intricacies of integrating HV and LV components of vehicle
		CO4	Understand the overview of system engineering/system validation
21IE2040	SOCIAL INTERNSHIP	CO1	Remember the fundamentals of the science of water cycle along with powerful tools that students can use to diagnose the health of the local water cycle as well as develop targeted action plans to restore the local natural water cycle and bring water prosperity

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		CO2	Remember the water sustainability and water resilience of village, city, residential facilities and households using multi-level water scorecards
		CO3	Apply the design thinking positive action plan for a village, campus, residential facility and community neighbourhood.
		CO4	Applying the water positive solutions within an urban watershed, a rural watershed, residential institutional and corporate community
21IE2046E	Project Based Learning-1	CO1	Apply Arduino Programming to interface IO devices
		CO2	Build arduino controlled electrical circuits
		CO3	Build arduino basedelectrical machine speed control system
		CO4	Build arduino based applied electromagnetic systems
21IE2047E	PROJECT BASED LEARNING-2	CO1	Able to understand Sensor Selection and integration to IoT boards
		CO2	Able to apply embedded programming in IoT boards for data acquisition and control of sensors and actuators
		CO3	Able to apply cloud based functionalities and Kodular tools for android application development
		CO4	Analyze end to end application performance on PCB
21IE3044	MID GRAD CAPSTONE PROJECT-I	CO1	The main component of this course is the completion of an independent development or research project. Students will work either individually or in small teams to complete a project of their choosing over the semester (indeed, students' projects must be chosen and approved by the time the course begins)
		CO2	Project Planning and Requirements Gathering, Design and Architecture, Development Tools and Technologies, Implementation and Coding
		CO3	User Experience and Interface Development, Integration and Testing, Documentation and Presentation, Project Deployment and Evaluation
21UC0010	UNIVERSAL HUMAN VALUES & PROFESSIONAL ETHICS	CO1	Realize and Understand the basic aspiration, harmony in the human being.
		CO2	Envisage the roadmap to fulfill the basic aspiration of human beings.
		CO3	Understanding the society and nature with the view of human values
		CO4	Understand the profession and his role in this existence.
21UC2103	ESSENTIAL SKILLS FOR EMPLOYABILITY	CO1	Developing basic grammar
		CO2	Discovering and practicing functional grammar
		CO3	Developing Intrapersonal skills
		CO4	Developing Speaking and Writing Skills
21UC2204	CORPORATE READINESS SKILLS	CO1	Extend word power for developing effective speaking and writing skills
		CO2	Interpret Interpersonal Skills
		CO3	Differentiate critical and general reading skills
		CO4	Demonstrate necessary skills to be employable

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21UC3105	PROBLEM SOLVING SKILLS - I	CO1	Understand the concepts of Linear Equations, concepts of Ratios, Averages, Partnership, Percentages and Interest to solve the problems related to Ages, Ratio & Proportion, Variation& Partnership, Percentages, Profit, Loss& Discounts, Simple & Compound Interest, Averages & Allegations or Mixtures.
		CO2	Understand the concepts of Co-primes, Divisibility rules, LCM & HCF concepts to solve problems in Numbers, Apply the concepts of Algebra to solve the problems based on Sets, Relations, Functions, Surds & Indices, Logarithms, Quadratic Equations, Inequalities & Progressions
		CO3	Understand Venn diagrams and other applicable diagrams to solve questions in Syllogism, Logical Venn Diagrams, Cubes & Dice. Understand the principles used in forming Number& letter series, Number, letter & word Analogy, Odd man out, coding & decoding
		CO4	Understand the underlying assumptions in the arguments presented in the topics: Statements & conclusions, statements & Arguments (Critical Reasoning), statements & Assumptions, logical connectives, Binary logic
OEGN0007	ACTING SKILLS	CO1	To understand the origin and fundamentals in acting
		CO2	Applying the structure and learning to breakdown a screenplay
		CO3	Analyzing the characteristics of Navarasalu to perform Navarasalu in acting
		CO4	Evaluating great films of Hollywood, Bollywood and Tollywood
		CO5	Creating a scene and acting within
UC0014	ACTIVITY BASED LEARNING	CO1	Review principles of activity-based learning and explain why can it be a disruptive innovation by participating in an activity-based learning exercise.
		CO2	Identify the technical and professional competencies and skills that students can learn through activity-based learning.
		CO3	Explain the benefits of activity-based learning for the various stakeholder groups: faculty, students, and the education community at large.
		CO4	Analyze the challenges of activity-based learning and evaluate means by which to address these challenges.
		CO5	Identify the process of establishing partnerships and mechanisms to successfully design and evaluate an activity-based learning course.
20UC1101	Integrated Professional English	CO1	Understand the concepts of grammar to improve communication, reading, and writing skills
		CO2	Demonstrate required knowledge over Dos and Don'ts of speaking in the corporate context . Demonstrate ability to face formal situations / interactions.
		CO3	Understand the varieties of reading and comprehend the tone and style of the author. Skim and scan effectively and appreciate rhetorical devices

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		CO4	Apply the concepts of writing to draft corporate letters, emails and memos
20UC1202	English Proficiency	CO1	Demonstrating different interpersonal skills for employability.
		CO2	Distinguishing Business essential skills
		CO3	Classifying social media and corporate communication skills.
		CO4	Applying analytical thinking skills.
21UC2103	Essential Skills for Employability	CO1	Demonstrating different interpersonal skills for employability.
		CO2	Distinguishing Business essential skills
		CO3	Classifying social media and corporate communication skills.
		CO4	Applying analytical thinking skills.
20UC0007	Indian Heritage and Culture	CO1	Familiarizing students with various aspects of Indian culture and how they contribute to the concept of Indian culture
		CO2	Understand the beginnings of Indian History and the developments
		CO3	Understand the developments in India during the Medieval Age along with how they contributed to Indian civilization
		CO4	Understand the reasons for colonial rule over India and how independence was achieved from British rule
20UC0008	Indian Constitution	CO1	To acquire knowledge of the historical developments that culminated in the drafting of the Indian Constitution.
		CO2	To understand the basic features of the Indian Constitution.
		CO3	To understand the structure of the Federal government as defined by the Indian Constitution.
		CO4	To understand the Indian Judicial system and election commission of india
20UC0009	Ecology & Environment	CO1	Understand the Basic concepts of environment
		CO2	understand the concepts of ecosystems and learn methods for conservation of habitats and biodiversity
		CO3	Understand the concepts of environmental degradation in context of species
		CO4	Understand the various forms of pollution and its impact
21UC0011	Gender Sensitization	CO1	Students will have developed a better understanding of important issues related to gender in contemporary India
		CO2	Students will be sensitized to basic dimensions of the biological, sociological, psychological and legal aspects of gender. This will be achieved through group discussions.
		CO3	Students will attain a finer grasp of how gender discrimination works in our society and how to counter it.
		CO4	Students will acquire insight into the gendered division of labour and its relation to politics and economics.
21UC0012	Innovation Management	CO1	Cultivate essential attributes to become an entrepreneur or Intrapreneur and demonstrate skills such as problem-solving, team building, creativity and leadership.

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		CO2	Comprehend the process of opportunity identification through design thinking, and identify market potential and customers while developing a compelling value proposition solution
		CO3	Analyse and refine business models to ensure sustainability and profitability
		CO4	Build a validated MVP of their practice venture idea & solutions
21UC0013	GLOBAL LOGIC BUILDING CONTEST PRACTICUM	CO5	AT CODER CONTEST
21UC0014	GLOBAL LOGIC BUILDING CONTEST PRACTICUM	CO5	AT CODER CONTEST
20MT1101	Mathematics for Computing	CO1	Model a system of equations for real world applications in engineering, physical and biological sciences, computer science, finance, economics and solve them through matrix algebra
		CO2	Model basic and computational techniques on discrete structures like relations, orders, functions & FSM, Lattices, and propositional &predicate logic
		CO3	Model real world structures and their related applications using advanced discrete structures like graphs and trees.
		CO4	Model the given Statistical data for real world applications in Engineering science, Economics and Management.
		CO5	Demonstrate the Aptitude and Reasoning skills (Tests in skilling hours)
21MT2102	Mathematics for Engineers	CO1	Apply differential, integral and vector calculus to find maxima & minima of functions, evaluate the integrals and also decompose the matrices.
		CO2	Apply the first and second order ordinary differential equations for engineering problem including the Laplace transforms.
		CO3	Apply the probability distributions and Morkov process to predict the output, describe the solutions of first order partial differential equations and Fourier series.
		CO4	Apply the complex variables for flow problems and demonstrate the Algebraic structures.
21UC1203	Design Thinking and Innovation	CO1	Apply differential, integral and vector calculus to find maxima & minima of functions, evaluate the integrals and also decompose the matrices.
		CO2	Apply the first and second order ordinary differential equations for engineering problem including the Laplace transforms.
		CO3	Apply the probability distributions and Morkov process to predict the output, describe the solutions of first order partial differential equations and Fourier series.
		CO4	Apply the complex variables for flow problems and demonstrate the Algebraic structures.

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21PH1008	Physics for Electronic Engineering	CO1	Understand the structure of solids and classification of solids based on their Energy Bands.
		CO2	Understand the conducting and semiconducting properties of solids at the microscopic level.
		CO3	Understand the dielectric properties of materials at the microscopic level and their applications.
		CO4	Understand the magnetic interactions in materials and applications.
		CO5	Apply the knowledge on the structure and properties of materials while executing related experiments
21EE2103	Electromagnetic Fields and Engineering Materials	CO1	Apply Coulomb's and Gauss's laws to different electrostatic field distributions
		CO2	Apply Biot-Savart's and Ampere's laws to different magnetic field distributions
		CO3	Understand force existence in different field distributions, inductance and capacitance phenomenon
		CO4	Understand the properties of Engineering materials
21SC1101	Computational Thinking for Structured Design	CO1	Design Basic and Complex Building Blocks for real world problems using structured programming paradigm
		CO2	Apply Computational Thinking for designing solutions to real world problems
		CO3	Develop and Analyze CRUD operations on arrays
		CO4	Develop and Analyze CRUD operations on Linear Data Structures
		CO5	Apply the structured programming paradigm with logic building skills on Basic and Linear Data Structures for solving real world problems
		CO6	Skill the students in such a way that students will be able to develop logic that help them to create programs as well as applications in C
20ME1103	Design Tools Workshop – I	CO1	Understand the concept of Engineering Design Process, Visualize and complete his/her innovative design by final drafting using 3D modeling in Auto Desk Fusion 360
		CO2	Understand the concept of web page, web browser, web server, and able to create Static webpages. Apply the HTML5 and CSS knowledge in building static web pages. Introduction to building social profiles through web blogging and video blogging.
		CO3	Understand the concept of report writing using a markup language Latex. Build reports using Latex and apply templates and Bibliography in latex for various documentation purposes.
		CO4	Understand the concept of data visualization and apply visualization techniques in creating data visualization dashboards with tools like Power BI.
21SC1209	Design Tools Workshop – II	CO1	Understand 3D printing and 3D scanning techniques
		CO2	Visualize the design ideology by incorporating VR technique, AR technique and Hologram

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		CO3	Apply the concepts of various sensors in modelling tool
		CO4	Build different sensors interfacing with Arduino board
21SC1202	Data Structures	CO1	Understand various sorting algorithms and analyze the efficiency of the algorithms
		CO2	Implement and evaluate Linear Data Structures and Demonstrate their applications.
		CO3	Implement and evaluate tree data structures and Understand hashing techniques
		CO4	Understand graph data structures and apply graphs to solve problems
		CO5	Design, Develop and evaluate common practical applications for linear and nonlinear data structures.
		CO6	Apply & Analyze the Techniques of Data Structures in the Real Time Problems.
21EC1202	Computer Organization & Architecture	CO1	Understand the functionality of CPU functional units - control unit, registers, the arithmetic and logic unit, instruction execution unit
		CO2	Understand the concepts of CPU and the operation of main, cache and virtual memory organizations
		CO3	Understand the concepts of the different types of I/O modules and I/O transfer techniques in computer modules
		CO4	Apply the concept of pipelining in instruction execution and design issues of RISC, CISC and parallel computing architectures
20EC1101	Digital Logic & Processors	CO1	Understand the functionality of CPU functional units - control unit, registers, the arithmetic and logic unit, instruction execution unit
		CO2	Understand the concepts of CPU and the operation of main, cache and virtual memory organizations
		CO3	Understand the concepts of the different types of I/O modules and I/O transfer techniques in computer modules
		CO4	Apply the concept of pipelining in instruction execution and design issues of RISC, CISC and parallel computing architectures
21EE3101	Control Systems	CO1	Model physical systems and control system components
		CO2	Analyse the control systems under time domain and stability analysis.
		CO3	Analyse the control systems under frequency domain analysis.
		CO4	Analyse the state space models of LTI systems
		CO5	Test the principles of control systems using software & prototype models
21EE3202	Power System Protection and Control	CO1	Understand the principle of protective relays & circuit breakers
		CO2	Apply overcurrent, distance and differential schemes for the protection of power system equipment
		CO3	Analyze over voltage protection and economic operation of power system

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		CO4	Apply automatic generation control and voltage regulators to improve the power system efficiency
		CO5	Test the characteristics of power system protective relays and Operation of power systems through programming/simulation
21EE3102	Measurements and Instrumentation	CO1	To understand the concepts of Fundamentals of electrical and electronic
		CO2	To apply instruments for the measurement of voltage, current in ac and dc measurements
		CO3	To apply the various bridge circuits used with measuring instruments, working of sensors and transducers and their applications.
		CO4	Ability to understand the concept of digital instrumentation and virtual instrumentation.
21EE3104	Embedded Controllers & Applications	CO1	Apply the architectural features of 8086 microprocessor and its programming concepts
		CO2	Apply the architectural features of 8051 Microcontroller and its programming concepts.
		CO3	Analyze the Interfacing of Peripherals to the 8051 Microcontroller through programming. Understand the basic architectures of PIC and ARM 7 microcontrollers.
		CO4	Understand the basic concepts of CORTEX STM-32 microcontroller and RTOS.
		CO5	Analyze the applications of programming with 8051 on hardware/software and 8086 on software.
21EE3201	AI Techniques for Electrical Engineering	CO1	Understand the neural network models, different architectures with different learning types
		CO2	Apply ANN paradigms in Electrical Engineering
		CO3	Apply the fuzzy logic concept, fuzzy sets, with suitable membership function with proper de-fuzzification methods Electrical Engineering
		CO4	Apply the different cross over methods and their elitism, convergence of algorithm Electrical Engineering
		CO5	Apply AI Technique Tools for Electrical Engineering problems
21EE3222	Wind and Energy Storage Technologies	CO1	Interpret principles and control of Wind Energy Conversion
		CO2	Model and Select Solar Wind energy conversion system components
		CO3	Interpret and Model Electro-chemical energy storage components
		CO4	Interpret and Model Mechanical energy storage components
21EE3223	ENERGY MANGEMENT AND GREEN BUILDINGS	CO1	Apply energy audit for energy management in buildings
		CO2	Interpret energy conservation opportunities in electrical systems
		CO3	Identify energy management strategies for energy efficiency
		CO4	Identify practices for energy efficiency green buildings
21EE3233	Energy Management Systems and SCADA	CO1	Understand SCADA and its architecture.
		CO2	Understand the application of SCADA in various utilities.

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		CO3	Apply the knowledge in analyzing various real time applications on transmission side.
		CO4	Apply the knowledge in analyzing various real time applications on distribution side.
22EE4131	Smart Grid Communication and Cybersecurity	CO1	Understand the communication technologies for smart grid
		CO2	Analyze the information security of smart grid and measurement technologies
		CO3	Understand the substation standards for communication
		CO4	Analyze the hacking and cybersecurity aspects in smart grids
21EE4132	INTERNET OF THINGS AND SMART GRID ANALYTICS	CO1	Understand network protocols and standards
		CO2	Analyze IoT architecture and data analytics archeitecture
		CO3	Anderstand various applications of IoT to to Smart Grids
		CO4	Analyze the Big Data Analytics
21EE4141	POWER TRAIN DESIGN FOR ELECTRIC VEHICLE	CO1	Understand the History, Economics, Environmental issues and power train of Electric Vehicles
		CO2	Analyze the dynamics of EV
		CO3	Select and size the power train for 2W
		CO4	Select and size the power train for 4W
21EE3242	BATTERY STATE ESTIMATION ALGORITHMS FOR ELECTRIC VEHICLE	CO1	Understand the specifications and Li-ion chemistry
		CO2	Understand the key functions of Battery management systems
		CO3	Develop Enhanced Self Correcting (ESC) Model of battery
		CO4	Develop Algorithms for SOC estimation of battery
21EE3243	CHARGING STATION FOR ELECTRIC VEHICLE	CO1	Interpret Power electronic converters for electric vehicle charging
		CO2	Develop control algorithms for various electric vehicle charging modes
		CO3	Demonstrate charging station infrastructure
		CO4	Demonstrate installation of charging station
21EE4141	AI and IOT FOR EV	CO1	Understand various AI open source tools
		CO2	Understand various IOT open source tools
		CO3	Apply AI and IOT for EV performance management
		CO4	Apply AI and IOT for online vehicle assistance
21EE4142	Communication protocols and Testing of EV	CO1	Understand the communication protocols used in Electric Vehicles
		CO2	Apply the communication protocols for fault diagnostics of Electric Vehicle
		CO3	Analyzethe intricacies of integrating HV and LV components of vehicle
		CO4	Understand the overview of system engineering/system validation
21EE4121	AI and IoT for Green Energy Integration	CO1	Understand various AI open source tools
		CO2	Understand various IoT open source tools
		CO3	Apply AI and IoT for PV energy prediction
		CO4	Apply AI and IoT for Wind Energy Prediction

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21EE4122	Grid Integration of Renewable Energy Sources	CO1	Understand Grid code for integrating PV and Wind power
		CO2	Identify topologies and interpret control of PV integration to grid
		CO3	Identify topologies and interpret control of Wind power integration to grid
		CO4	Identify issues and Model active gird management for renewable integration
21IE3043	Term paper	CO1	Literature Review
		CO2	Problem Identification
		CO3	Methodology
		CO4	Implementation
21IE3045	Midgrade Capstone Project – II	CO1	The main component of this course is the completion of an independent development or research project. Students will work either individually or in small teams to complete a project of their choosing over the semester (indeed, students' projects must be chosen and approved by the time the course begins)
		CO2	Project Planning and Requirements Gathering, Design and Architecture, Development Tools and Technologies, Implementation and Coding
		CO3	User Experience and Interface Development, Integration and Testing, Documentation and Presentation, Project Deployment and Evaluation
21IE4048	CAPSTONE Project-1	CO1	The main component of this course is the completion of an independent development or research project. Students will work either individually or in small teams to complete a project of their choosing over the semester (indeed, students' projects must be chosen and approved by the time the course begins)
		CO2	Project Planning and Requirements Gathering, Design and Architecture, Development Tools and Technologies, Implementation and Coding
		CO3	User Experience and Interface Development, Integration and Testing, Documentation and Presentation, Project Deployment and Evaluation
21IE4049	CAPSTONE Project-2	CO1	Exercise to acquire knowledge within the chosen area of technology for project development.
		CO2	Identify, discuss and justify the technical aspects of the chosen area for problem analysis
		CO3	Reproduce, improve and refine technical aspects for chosen problem
		CO4	Communicate and report effectively project related activities and findings.

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