S.N.	Name of Faculty	Name of Course	Innovation in Teaching Learning
1	Dr. Pankaj Thote	Elements of Electromagnetics	Activity based learning on Demonstration of Coulomb's Law
			Creative Assignment: Perform the following operations on the given vectors using Python Programming: i) Addition ii) Subtraction iii) Dot Product iv) Cross Product
			Demonstration Model: Use of demonstration model of Spherical Co-ordinate system while teaching
2	Dr. Chandrakant Rathore	Linear Electric Circuits	Skill set training through simulation software: • Determination of node voltages and loop currents for a given elementary circuit using MATLAB. • Determination of time constant and time
			Learning through activity based on: • Application & verification of superposition theorem to linear circuits and validation of computation by measurement. • Application & verification of Thevenin's theorem to linear circuits and validation of computation by measurement.
			Industry expert assessment quizzes on Topics taught in class.
			Learning through creative assignment: Simulate the circuit using simulation software and sketch the voltage across the capacitor for both the cases.
		Signal Processing	Learning through activity based on: Design a single-phase & three- phase rectifier on MATLAB, measure its source current for different types of load (such as resistive, inductive and others) and determine the THD with the help FFT tool.

			Learning through activity based on : Design a single-phase rectifier, measure its source current for different types of loads (such as resistive, inductive, and other) with the help of a current clamp meter and capture the waveform on DSO. Determine the THD with the help of MATLAB software tool.
			Skill set training through simulation software: • Practical exposure to generation and visualization of common electrical signals through software. • Exposure of software tools to carry out frequency analysis of continuous time signals using Fourier Transform. • Exposure to visualization of discrete time signals and its frequency analysis using simulation software platform. • Realization of sampling theorem through software tools considering practical situations.
			Learning through creative assignment on: • Develop a MATLAB code to generate (discrete- time signal) and perform time folding operation. • Develop a MATLAB code to generate (continuous-time signal) to determine Nyquist rate and Nyquist interval for different conditions
		Electrical Power System-I	Industry expert assessment quizzes on Topics taught in class.
			Learning through activity based on: · Develop a programming code to determine (a) the voltage at the sending-end (b) the power factor at the sending-end of a given system. · Develop a programming code to determine the current
			Learning through creative assignment on: Develop a MATLAB/Python code to determine the inductance per unit length on each side of the given line and total inductance of the given line.
		Electrical Power	Industry expert assessment quizzes on Topics taught in class.

		System-II	Skill set training through simulation software: · Exposure of software tools to carry out unsymmetrical fault analysis on Transmission line · Exposure of software tools to carry out stability study · Exposure of software tools to carry out power flow analysis
			Learning through activity based on: · Design a model on MATLAB Simulink software to simulate different types of faults on transmission line and measure the values of currents and voltages.
			Learning through creative assignment on: · With the help of suitable programming software develop a code to determine the symmetrical components of a set of unbalanced currents · With the help of suitable programming software develop a code to determine YBUS for the 4-bus system
3	Vishant G. Naik	Electrical Engineering	Activity based learning: • To measure resistance, voltage (DC) and check continuity of a given element using Multimeter. • To determine the value of resistance by its color coding and verify it by multimeter • To check phase and neutral in wall socket using tester • Making of test Lamp • To construct the given series and parallel electrical circuit and analyze the voltages across the elements.(on Breadboard) • Built an electromagnet using dc source
		Electrical Machines-I	Experiential Learning Assessment (Activity Based Learning): Modeling of Permanent Magnet in Finite Element Method Magnetics Software
			Industry Expert Assessment quiz on course topics with consultation from industry person of M/s Bharat Electronics ltd.
			Technical Poster on course related topics
		Electrical Machines-II	Experiential Learning Assessment (Case Study) on course related topics

			Industry Expert Assessment quiz on course topics with consultation from industry person of M/s Bharat Electronics ltd
			Creative Assignment on Voltage regulation and induced EMF in synchronous generator
4	Abhishek Junghare	Power Electronics	Activity Based Learning: Design a circuit to operate an IGBT as a switch.
			Industry Expert Assessment quiz on Power Electronics
			Creative Assignment on chopper based problem
		Electric Vehicles & Mobility	Activity Based Learning: Design a battery pack for the voltage rating of 18 Volts.
			Industry Expert Assessment quiz on Electric Vehicles
			Case study on Different EV topics
		Electric Utilities Fundamental and Futures	Activity Based Learning: Estimate the wattage of rooftop solar power plant for your home
			Industry Expert Assessment quiz on Electric Utilities Fundamental and Futures
5	Priya Keshkar	Non- Conventional Energy Sources	Case Study on course related topics
			Industry Expert Assessment on course contents.
			Technical Poster on course related topics
6	Saurabh Singh	Motor and Motor Control Circuit	Learning through Activity based on: Real world applications of DC motor and stepper motor control circuits Real world applications

			Industry Expert Assessment quiz on course topics with consultation from industry person of M/s Bharat Electronics ltd.
7	Mohammad Ashar	Electrical Installation Design	Activity Based Learning: Exposure to live testing of cables through digital meggar
			Activity Based Learning: Design of comprehensive Electrical Installation for a given Industry with SLD, details of switchgears along with their specifications.
8	Akshay Deshmukh	Solar Photovoltaic Systems	Activity Based Learning: Design and analysis of grid connected Solar PV system
		Electrical Measurement & Instrumentation	Poster Design: Advance medical instrumentation systems
		Electrical Energy Conservation and audit	Industry Expert Assessment: Energy audit questionnaire in line with BEE Certification Exam.
9	Arpita Fusey	Solar Energy & Electrical System Design	Industry Expert Assessment quiz on Micro-grid Technologies and renewable energy policies
			Learning through Activity based on -Estimation of residential roof top wattage using PV-SOL online software.
10	Nighar Sheikh	Utilization of Electrical Energy	**CASE STUDIES:** Application of Fans and blowers, Centrifugal Blowers, Types of Industrial Fans, Types of Residential Fans, Centrifugal Pumps, Boiler Feed Pump (BFP),Efficiency and Performance evaluation of Pumps, Improving Fan System Performance, energy conservation of pumps used in thermal power plants
			Creative Assignment: Develop a python code to generate number of lamps required of small assembly shop, illuminated level of 200 lux UF & MF is 0.74,0.8 respectively, assume output of lamp is your birth year in lumens.
11	Afsar Khan	Analog Electronics	Activity Based Learning: Analyze behavior of diode in forward and reverse biased mode.

			Industry Expert Assessment based on Quiz
		Digital Electronics & Microprocessor	Activity Based Learning: 1. NAND Gate as a Universal Gate: Design an experimental set up to realize the basic logic gates using NAND gate. 2. Electronic Eye: Design an automatic guest indicator (electronic eye) using NOT logic gate. 3. Staircase light Control: Design an XOR gate Based Staircase-Light Control. 4. Traffic Light System: Design a timer-based electronic traffic light system for indication of different colors as signals to control Traffic. 5. Logic Gate Processor: Design a simple logic gate processor to realize the operation of AND, OR, NOT (invert) logic gates. 6. Full Adder simulation: Design and verify the operation of a full adder circuit using logic gates. 7. J-K flipflop Simulation: Design and verify the operation of J-K flipflop through simulation using i) logic gates and ii) J-K flip flop IC 8. 3-bit up counter simulation: Design and verify the operation of 3-bit up counter through simulation using J-K flip flop. 9. Displaying a Message on Seven Segments Display with 8051 microcontroller: Display a message HELLO EE on a seven-segment display with 8051 through EdSim 51 Simulator. 10. Displaying a Message on LCD with 8051 microcontroller: Display a message HELLO EE on an LCD with 8051 through EdSim 51 Simulator.
			Industry Expert Assessment based on Quiz
		Industrial Instrumentation & Automation	Case Study: Develop a Case Study on Industry 4.0

		Control System	Activity Based Learning: 1. To obtain the unit step response curves of the tachometer feedback control syste through MATLAB. 2. For each of the following second order systems below, determine ξ, ω_n, T_s, T_p, T_r, % M_p, and plot the step response using MATLAB for given equation. 3. Obtain its transfer function for the simple mass-spring-damper system and PID Tuner in MATLAB to obtain the desired time domain specifications. 4. Plot the root loci for the system and unit step response using MATLAB 5. Write a program in MATLAB for the unity feedback system with G(s) = K/(s(s+3)(s+12)) so that the value of gain K can be input. Display the Bode plots of a system for the input value of K. Determine and display the gain and phase margin for the input value of K. 6. Design a suitable compensator for the given system. 7. Design and illustrate the open loop and closed loop control systems. For open loop: Use an LED, push button and Arduino. For closed loop: Use an LDR light sensor and Arduino.
			Industry expert assessment on Unit 1 to 5
		Advanced Industrial Automation	**Activity Based Learning** 1. Servo Motor Control through Arduino. 2. Stepper Motor Control through Arduino. 3. Servo Motor Control through Arduino and Potentiometer. **Case Studies:** 4. Case study on PUMA 560 Robot. 5. Case study on Industrial Automation. 6. Develop a Case study on Industry 4.0 and Industrial Internet of Things.
			Industry expert assessment on Unit 1 to 5

		Programming with IoT Boards	Activity Based Learning: 1. Connect LEDs and Switches with Arduino and develop the programs to perform the following operations: i) Blinking Two LED's alternately without any switch. ii) Switching LED ON & OFF with Push Button switch. iii) Controlling brightness of LED. iv)Switching LED ON & OFF with light sensor LDR. 2. Connect the following temperature and humidity sensor with Arduino and develop the programs to display the temperature and humidity on serial monitor: i) Analog Temperature Sensor (Analog IC-LM35). ii) Digital Humidity and Temperature Sensor (Digital IC- DHT11). 3. Monitor the data from any one of the sensors listed below on your Things peak channel. i) Analog Temperature Sensor (Analog IC-LM35). ii) Digital Humidity and Temperature Sensor (Digital IC- DHT11). iii) Ultrasonic distance measurement. iv) Any other sensor apart from the above.
		Interfacing with the Raspberry Pi	Activity Based Learning: 1. Interface the push button with Raspberry Pi 4 and develop the python program to turn ON and OFF an LED with the push button. 2. Interface an LDR with Raspberry Pi 4 and develop the python to turn ON and OFF a lamp depending upon the light intensity.
		Electrical Measurement and Instrumentation	Poster Presentation: Make A Poster Of "Conventional Symbols With Their Meaning Specified On Analog Measuring Instruments"
			Activity Based Learning: Design A System To Analyze The Thermoelectric Effect (Thermocouple Function)