





CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307

COs OF ELECTRICAL AND ELECTRONICS ENGINEERING DEPARTMENT



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Sree Narayana Guru College of Engineering & Technology CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING COURSE OUT COME 2019 SCHEME

SL NO	SEMESTER	COUSRE CODE WITH NAME		COURSE OUT COMES
1			CO1	solve the system of linear equations, diagonalize matrices and characterise quadratic forms.
			CO2	compute the partial and total derivatives and maxima and minima of multivariable functions
		MAT101 LINEAR ALGEBRA AND	CO3	Compute multiple integrals and apply them to find areas and volumes of geometrical shapes, mass and centre of gravity of plane laminas
		CALCOLUS	CO4	Perform various tests to determine whether a given series is convergent, absolutely convergent or conditionally convergent
			CO5	Determine the Taylor and Fourier series expansion of functions and learn their applications.
			CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
	S1&S2	PHT100 ENGINEERING PHYSICS A	CO2	Apply the interaction of light with matter through interference, diffraction and identify these phenomena in different natural optical processes and optical instruments.
2			CO3	Analyze the behaviour of matter in the atomic and subatomic level through the principles of quantum mechanics to perceive the microscopic processes in electronic devices.
			CO4	Classify the properties of magnetic materials and apply vector calculus to static magnetic fields and use Maxwell's equations to diverse engineering problems
			CO5	Analyze the principles behind various superconducting applications, explain the working of solid state lighting devices and fibre optic communication system
			CO1	Construct free body diagram and calculate the reactions necessary to ensure static equilibrium.
	,		CO2	Study the effect of friction in static and dynamic conditions.
3	N	ESTI00 ENGINEERING	CO3	Understand the different properties of surfaces in relation to moment of inertia
	V	MECHANICS	CO4	Analyse and solve different problems of kinematics and kinetics.
	Dr. LEE	NA A.V.	CO5	Analyse and solve with and without damping of SODF.
	SREE NARAYANA ENGINEERING & TEO KAN	GURU COLLEGE OF CHNOLOGY, PAYYANUR		AD Culos

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			CO1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
1			CO2	Explain different types of buildings, building components, building materials and building construction
			CO3	Describe the importance, objectives and principles of surveying.
			CO4	Summarise the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
		EST120	CO5	Discuss the Materials, energy systems, water management and environment for green buildings.
4		BASICS OF CIVIL & MECHANICAL	CO6	Analyse thermodynamic cycles and calculate its efficiency C
		ENGINEERING	C07	Illustrate the working and features of IC Engines
			CO8	Explain the basic principles of Refrigeration and Air Conditioning
			CO9	Describe the working of hydraulic machinesh graphical representations as per standards.
			CO10	Explain the working of power transmission elements
			CO11	Describe the basic manufacturing, metal joining and machining processes enable the student to effectively communicate basic designs throug
	S1&S2		CO1	Define and Identify different life skills required in personal and professional life
	5 HUN 101 LIFE SKILLS		CO2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress
			CO3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
3		CO4	Take part in group discussions	
			CO5	Use appropriate thinking and problem solving techniques to solve new problems
			CO6	Understand the basics of teamwork and leadership
			CO1	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
			CO2	Understand the need for precise measurement practices for data recording
6		PHL 120 ENGINEERING	CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
		store	CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
	X		CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results

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			CO1	Name different devices and tools used for civil engineering measurements
	•		CO2	Explain the use of various tools and devices for various field measurements
			CO3	Demonstrate the steps involved in basic civil engineering activities like plot measurement, setting out operation, evaluating the natural profile of land, plumbing and undertaking simple construction work.
7		ESL 120 CIVIL & MECHANICAL WORKSHOP	CO4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
			CO5	Compare different techniques and devices used in civil engineering measurements
			CO6	Identify Basic Mechanical workshop operations in accordance with the material and objects
			C07	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
			CO8	Apply appropriate safety measures with respect to the mechanical workshop trades
]	MAT 102 VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORM	CO1	Compute the derivatives and line integrals of vector functions and learn their applications
	S1&S2		CO2	Evaluate surface and volume integrals and learn their inter-relations and applications
8			CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
			CO4	compute Laplace transforms and apply them to solve problems arising in engineering
			CO5	Determine the Fourier transforms of functions and apply them to solve problems
			CO1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields
			CO2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
9		CYT 100 ENGINEERING CHEMISTRY	CO3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterisation of nanomaterials.
			CO4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
and to			CO5	Study various types of water treatment methods to develop skills for treating wastewater.

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			CO 1	Draw the projection of points and lines located in different quadrants
	CO2 Prepare multiv	Prepare multiview orthographic projections of objects by visualizing them in different positions		
		EST 110 ENGINEERING	CO3	Draw sectional views and develop surfaces of a given object
10		GRAPHICS	CO4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimension
			CO5	Convert 3D views to orthographic views
			CO6	Obtain multiview projections and solid models of objects using CAD tools
			CO1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
		EST 130 BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	CO2	Develop and solve models of magnetic circuits
			CO3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
	51&52		CO4	Describe working of a voltage amplifier
			CO5	Outline the principle of an electronic instrumentation system
			CO6	Explain the principle of radio and cellular communication
			CO1	Develop vocabulary and language skills relevant to engineering as a profession
			CO2	Analyze, interpret and effectively summarize a variety of textual content
10		HUN 102 PROFESSIONAL	CO3	Create effective technical presentations
12		COMMUNICATION	CO4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
			CO5	Identify drawbacks in listening patterns and apply listening techniques for specific needs
			CO6	Create professional and technical documents that are clear and adhering to all the

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			CO1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
			CO2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
			CO3	Write readable C programs with arrays, structure or union for storing the data to be processed
13		EST 102 PROGRAMING IN C	CO4	Divide a given computational problem into a number of modules and develop a readable multi-function C program by using recursion if required, to find the solution to the computational problem
			CO5	Write readable C programs which use pointers for array processing and parameter passing
			CO6	Develop readable C programs with files for reading input and storing output
			CO 1	Understand and practice different techniques of quantitative chemical analysis to generate experimental skills and apply these skills to various analyses
	CO 2 Develop skills relevant to synthesize organic polymers and acquire the practice	Develop skills relevant to synthesize organic polymers and acquire the practical skill to use TLC for the identification of drugs		
14	14 S1&S2	CYL 120 ENGINEERING CHEMISTRY LAB	CO 3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analysing and interpreting the IR spectra and NMR spectra of some organic compounds
14			CO 4	Acquire the ability to understand, explain and use instrumental techniques for chemical analysis
			CO 5	Learn to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
			CO 6	Function as a member of a team, communicate effectively and engage in further learning. Also understand how chemistry addresses social, economical and environmental problems and why it is an integral part of curriculum
			COI	Demonstrate salety measures against electric shocks.
			CO2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols.
16		ESL 130 ELECTRICAL &	CO3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings.
15		ELECTRONICS WORKSHOP	CO4	The student will be able to ruentify and test various electronic components
			CO5	The student will be able to Draw circuit schematics with EDA tools
			CO6	The student will be able to Assemble and test electronic circuits on boards

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			CO1	Understand the concept and the solution of partial differential equation.
			CO2	Analyse and solve one dimensional wave equation and heat equation.
16		MAT 201 COURSE NAME PARTIAL DIFFERENTIAL	CO3	Understand complex functions, its continuity differentiability with the use of CauchyRiemann equations.
		EQUATIONS AND COMPLEX ANALYSIS	CO4	Evaluate complex integrals using Cauchy's integral theorem and Cauchy's integral formula, understand the series expansion of analytic function
			CO5	Understand the series expansion of complex function about a singularity and Apply residue theorem to compute several kinds of real integrals.
	17 EETZ		CO1	Apply circuit theorems to simplify and solve complex DC and AC electric networks.
			CO2	Analyse dynamic DC and AC circuits and develop the complete response to excitations.
17		EET201 CIRCUITS AND NETWORKS	CO3	Solve dynamic circuits by applying transformation to s-domain.
	55		CO4	Analyse three-phase networks in Y and Δ configurations.
			CO5	Solve series /parallel resonant circuits.
			CO6	Develop the representation of two-port networks using network parameters and analyse.
			CO 1	Identify and analyse the factors affecting performance of measuring system
Non-See			CO 2	Choose appropriate instruments for the measurement of voltage, current in ac and dc measurements
18		EET203 MEASUREMENTS	CO 3	Explain the operating principle of power and energy measurement
		AND INSTRUMENTATION	CO 4	Outline the principles of operation of Magnetic measurement systems
			CO 5	Describe the operating principle of DC and AC bridges, transducersbased systems.
			CO 6	Understand the operating principles of basic building blocks of digital systems, recording and display units

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			CO1	Design biasing scheme for transistor circuits.
Lines and			CO2	Model BJT and FET amplifier circuits.
19		EET205 ANALOG	CO3	Identify a power amplifier with appropriate specifications for electronic circuit applications.
		ELECTRONICS	CO4	Describe the operation of oscillator circuits using BJT.
			CO5	Explain the basic concepts of Operational amplifier (OPAMP)
			CO6	Design and develop various OPAMP application circuits and 555 timer circuits
		HUT 200 Professional Ethics	CO1	Understand the core values that shape the ethical behaviour of a professional.
	S 3		CO2	Adopt a good character and follow an ethical life.
20			CO3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics
			CO4	Solve moral and ethical problems through exploration and assessment by established experiments.
a services			CO5	Apply the knowledge of human values and social values to contemporary ethical values and global issues
			CO1	Understand the relevance and the concept of sustainability and the global initiatives in this direction
			CO2	Explain the different types of environmental pollution problems and their sustainable solutions
21		MCN201 SUSTAINABLE ENGINEERING	CO3	Discuss the environmental regulations and standards
			CO4	Outline the concepts related to conventional and non-conventional energy
			CO5	Demonstrate the broad perspective of sustainable practices by utilizing engineering knowledge and principles

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			CO1	Analyse voltage current relations of RLC circuits		
			CO2	Verify DC network theorems by setting up various electric circuits		
			CO3	Measure power in a single and three phase circuits by various methods Calibrate various meters used in electrical systems		
		EEL201 CIRCUITS AND	CO4	Calibrate various meters used in electrical systems		
22		MEASUREMENTS LAB	CO5	Determine magnetic characteristics of different electrical devices		
			CO6	Analyse the characteristics of various types of transducer systems		
	53		C07	Determine electrical parameters using various bridges		
	55		CO8	Analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.		
		EEL203 ANALOG ELECTRONICSLAB	CO1	Use the various electronic instruments and for conducting experiments.		
			CO2	Design and develop various electronic circuits using diodes and Zener diodes		
23			CO3	Design and implement amplifier and oscillator circuits using BJT and JFET.		
23			CO4	Design and implement basic circuits using IC (OPAMP and 555 timers).		
Sec. 10.			CO5	Simulate electronic circuits using any circuit simulation software.		
			CO6	Use PCB layout software for circuit design		
			CO1	Understand the concept, properties and important models of discrete random variables and, using them, analyse suitable random phenomena.		
		MAT 204 COURSE NAME	CO2	Understand the concept, properties and important models of continuous random variables and, using them, analyse suitable random phenomena.		
24	S4	PROBABILITY, RANDOM PROCESSES AND	CO3	Analyse random processes using autocorrelation, power spectrum and Poisson process model as appropriate.		
		NUMERICAL METHODS	CO4	Compute roots of equations, evaluate definite integrals and perform interpolation on given numerical data using standard numerical techniques		
		1	CO5	Apply standard numerical techniques for solving systems of equations, fitting curves on given numerical data and solving ordinary differential equations		
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			CO1	Acquire knowledge about constructional details of DC machines
			CO2	Describe the performance characteristics of DC generators
25		EET202 DC MACHINES AND	CO3	Describe the principle of operation of DC motors and select appropriate motor types for different applications
23		TRANSFORMERS	CO4	Acquire knowledge in testing of DC machines to assess its performance
			CO5	Describe the constructional details and modes of operation of single phase and three phase transformers
			CO6	Analyse the performance of transformers under various conditions
			CO1	Apply vector analysis and coordinate systems to solve static electric and magneticfield problems. Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters
26		EET204 ELECTROMAGNETIC THEORY	CO2	Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law.
	S4		CO3	Apply Maxwell Equations for the solution of timevarying fields
			CO4	Analyse electromagnetic wave propagation in different media
		EET206 DIGITAL ELECTRONICS	CO1	Identify various number systems, binary codes and formulate digital functions using Boolean algebra.
			CO2	Design and implement combinational logic circuits.
27			CO3	Design and implement sequential logic circuits.
			CO4	Compare the operation of various analog to digital and digital to analog conversion circuits.
			CO5	Explain the basic concepts of programmable logic devices and VHDL.
			CO1	Explain the different concepts and principles involved in design engineering.
28		EST 200 DESIGN AND ENGINEERING	CO2	Apply design thinking while learning and practicing engineering.
		ENGINEEKING	CO3	Develop innovative, reliable, sustainable and economically viable designs incorporating knowledge in engineering.

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			CO1	Explain the background of the present constitution of India and features.
29			CO2	Utilize the fundamental rights and duties.
		MCN202 COURSE NAME	CO3	Understand the working of the union executive, parliament and judiciary.
		CONSTITUTION OF INDIA	CO4	Understand the working of the state executive, legislature and judiciary.
			CO5	Utilize the special provisions and statutory institutions.
			CO6	Show national and patriotic spirit as responsible citizens of the country
			CO1	Analyse the performance of DC motors and DC generators by performing load test.
	S4	EEL202 ELECTRICAL MACHINES LAB I	CO2	Sketch the Open Circuit Characteristics of a self excited DC shunt generator and check conditions of voltage build up by performing suitable experiment.
			CO3	Develop equivalent circuit and predetermine their regulation and efficiency by performing OC & SC tests on transformer.
30			CO4	Analyse the efficiency and regulation of the transformer by performing load test.
			CO5	Analyse the efficiency of a DC machine when working as motor and generator by conducting suitable test.
			CO6	Examine the efficiency by performing Sumpner's test on two similar transformers
			CO1	Formulate digital functionsusing Boolean Algebra and verify experimentally
		EL204 DIGITAL	CO2	Design and implement combinational logic circuits
31		ELECTRONICS LAB	CO3	Design and implement sequential logic circuits
			CO4	Design and fabricate a digital circuit using the knowledge acquired from the laboratory

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			CO1	Identify the power generating system appropriate for a given area
			CO2	Evaluate the electrical performance of any transmission line
32		EET301 POWER SYSTEMS I	CO3	Compute various physical characteristics of underground and overhead transmission systems
			CO4	Select appropriate switchgear for protection schemes
			CO5	Design a simple electrical distribution system as per the standards.
			CO1	Describe the architecture and timing diagram of 8085 microprocessor.
F.		EET303 MICROPROCESSORS CO2 Develop assembly language programs in 8085 microprocessor. CO3 Identify the different ways of interfacing memory and I/O with 8085 microprocessor. CO4 Understand the architecture of 8051 microcontroller and embedded systems. CO5 Develop assembly level and embedded C programs in 8051 microcontroller.	Develop assembly language programs in 8085 microprocessor.	
33	65		CO3	Identify the different ways of interfacing memory and I/O with 8085 microprocessor.
	55		CO4	Understand the architecture of 8051 microcontroller and embedded systems.
			CO5	Develop assembly level and embedded C programs in 8051 microcontroller.
		EET305 SIGNALS AND	CO1	The student will be able to explain the basic operations on signals and systems.
			CO2	The student will be able to apply Fourier Series and Fourier Transform concepts for continuous time signals & The student will be able to Analyze the
34			CO3	The student will be able to analyze various system models and response.
		SISIEMS	CO4	The student will be able to analyze the discrete time system using Z Transform and sampling.
			CO5	The student will be able to apply fourier series and fourier transform concepts for discrete time domain and sampled data systems.

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			CO1	Analyse the performance of different types of alternators.
			CO2	Analyse the performance of a synchronous motor.
35		EET307 SYNCHRONOUS AND INDUCTION MACHINES	CO3	Analyse the performance of different types of induction motors.
			CO4	Describe operating principle of induction machine as generator.
			CO5	Explain the types of single phase induction motors and their working principle.
	S5	EEL331 MICROPROCESSORS AND MICROCONTROLLERS LAB	CO1	Develop and execute assembly language programs for solving arithmetic and logical problems using microprocessor/microcontroller.
36			CO2	Design and Implement systems with interfacing circuits for various applications.
			CO3	Execute projects as a team using microprocessor/microcontroller for real life applications.
			CO 1	Analyse the performance of single phase and three phase induction motors by conducting suitable tests.
37		MACHINES LAB II	CO 2	Analyse the performance of three phase synchronous machine from V and inverted V curves.
			CO 3	Analyse the performance of a three phase alternator by conducting suitable tests.

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•	S 6	EET302 LINEAR CONTROL SYSTEMS	CO1	Describe the role of various control blocks and components in feedback systems.
			CO2	Analyse the time domain responses of the linear systems.
38			CO3	Apply Root locus technique to assess the performance of linear systems and design compensators using time domain techniques.
			CO4	Analyse the stability of the given LTI systems.
			CO5	Analyse the frequency domain response of the given LTI systems and design compensators using time domain and frequency domain techniques
39		EET304 POWER SYSTEMS II	CO1	Apply the per unit scheme for any power system network and compute the fault levels.
			CO2	Analyse the voltage profile of any given power system network using iterative methods
			CO3	Analysethe steady state and transient stability of power system networks
			CO4	Model the control scheme of power systems.
			CO5	Schedule optimal generation scheme.
		EET306 POWERELECTRONICS	CO1	Explain the operation of modern power semiconductor devices and its characteristics.
40			CO2	Design Analyse the working of controlled rectifiers.
			CO3	Explain the working of AC voltage controllers, inverters and PWM techniques.
			CO4	Compare the performance of different dc-dc converters.
Astro			CO5	Describe basic drive schemes for ac and dc motors.

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		EET312 BIOMEDICAL INSTRUMENTATION	CO1	Explain the basics of anatomy and physiology of human body.
			CO2	Explain different techniques for the measurement of various physiological parameters
41			CO3	Describe modern imaging techniques for medical diagnosis
			CO4	Identify the various therapeutic equipments used in biomedical field
			CO5	Discuss the patient safety measures and recent advancements in medical field
		EET308 COMPREHENSIVE COURSE WORK	CO1	Apply the knowledge of circuit theorems to solve the problems in electrical networks
			CO2	Evaluate the performance of DC machines and Transformers under different loadingconditions
42			CO3	Identify appropriate digital components to realise any combinational or sequential logic.
			CO4	Apply the knowledge of Power generation, transmission and distribution to select appropriate components for power system operation.
	S 6		CO5	Apply appropriate mathematical concepts to analyse continuous time and discrete time signals and systems
		EEL332 POWER SYSTEMS LAB	CO1	Develop mathematical models and conduct steady state and transient analysis of power system networks using standard software.
			CO2	Develop a frequency domain model of power system networks and conduct the stability analysis.
43			CO3	Conduct appropriate tests for any power system component as per standards.
a an an			CO4	Conduct site inspection and evaluate performance ratio of solar power plant.
		EEL334 POWER ELECTRONICS LAB	CO1	Determine the characteristics of SCR and design triggering circuits for SCR based circuits.
			CO2	Design, set up and analyse single phase AC voltage controllers.
44			CO3	Design, set up and test suitable gate drives for MOSFET/IGBT.
			CO4	Design, set up and test basic inverter topologies.
			CO5	Design and set up dc-dc converters.

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	•	EET401 ADVANCED CONTROL SYSTEMS	CO1	Develop the state variable representation of physical systems
			CO2	Analyse the performance of linear and nonlinear systems using state variable approach
			CO3	Design state feedback controller for a given system
45			CO4	Explain the characteristics of nonlinear systems
			CO5	Apply the tools like describing function approach or phase plane approach for assessing the performance of nonlinear systems
			CO6	Apply Lyapunov method for the stability analysis of physical systems.
	S 7	EET463 ILLUMINATION TECHNOLOGY	CO 1	Explain the fundamental concepts of natural and artificial lighting schemes
			CO 2	Design efficient indoor lighting systems
46			CO 3	Design efficient outdoor lighting systems
			CO 4	Describe aesthetic and emergency lighting systems
	1		CO1	Describe the theories of accident causation and preventive measures of industrial accidents. (Cognitive Knowledge level: Understand)
		MCN401 INDUSTRIAL SAFETY ENGINERING	CO2	Explain about personal protective equipment, its selection, safety performance & indicators and importance of housekeeping. (Cognitive Knowledge level: Understand)
47			CO3	Explain different issues in construction industries. (Cognitive Knowledge level: Understand)
			CO4	Describe various hazards associated with different machines and mechanical material handling. (Cognitive Knowledge level: Understand)
			CO5	Utilise different hazard identification tools in different industries with the knowledge of different types of chemical hazards. (Cognitive Knowledge level: Apply)

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48	\$7	EEL411 CONTROL SYSTEMS LAB	CO 1	Demonstrate the knowledge of simulation tools for control system design.
			CO 2	Develop the mathematical model of a given physical system by conducting appropriate experiments.
			CO 3	Analyse the performance and stability of physical systems using classical and advanced control approaches.
			CO 4	Design controllers for physical systems to meet the desired specifications.
49		EEQ413 SEMINAR	CO1	Identify academic documents from the literature which are related to her/his areas of interest (Cognitive knowledge level: Apply).
			CO2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest (Cognitive knowledge level: Analyze).
			CO3	Prepare a presentation about an academic document (Cognitive knowledge level: Create).
			CO4	Give a presentation about an academic document (Cognitive knowledge level: Apply).
			CO5	Prepare a technical report (Cognitive knowledge level:Create).
		EED415 PROJECT PHASE I	CO1	Model and solve real world problems by applying knowledge across domains.
			CO2	Develop products, processes or technologies for sustainable and socially relevant applications.
			CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
			CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms
			CO5	Identify technology/research gaps and propose innovative/creative solutions

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53	58	EET426 SPECIAL ELECTRICA MACHINES	CO1	Analyse the performance of different types of permanent magnet motors.
			CO2	Analyse the performance of a stepper motor
			CO3	Analyse the performance of different types of reluctance motors.
			CO4	Explain the construction and principle of operation of servo motors, single phase motors and linear motors.
			CO5	Analyse the performance of linear induction motors.
54		EET418 ELECTRIC AND HYBRID VEHICLES	CO1	Explain the basic concepts of Conventional, Electric, Hybrid EV and Autonomous Vehicles
			CO2	Describe different configurations of electric and hybrid electric drive trains
			CO3	Discuss the propulsion unit for electric and hybrid vehicles
			CO4	Compare various energy storage and EV charging systems
			CO5	Select drive systems and various communication protocols for EV
		EED416 PROJECT PHASE II	CO1	Model and solve real world problems by applying knowledge across domains (Cognitive knowledge level: Apply).
			CO2	Develop products, processes or technologies for sustainable and socially relevant applications (Cognitive knowledge level: Apply).
			CO3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks (Cognitive knowledge level: Apply).
			CO4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms (Cognitive knowledge level: Apply).
			CO5	Identify technology/research gaps and propose innovative/creative solutions (Cognitive knowledge level: Analyze).
			CO6	Organize and communicate technical and scientific findings effectively in written and oral forms (Cognitive knowledge level: Apply).

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50		S7 CST476 MOBILE COMPUTING	CO1	Explain the various mobile computing applications, services, design considerations and architectures
	F		CO2	Describe the various technology trends for next generation cellular wireless networks and use the spreading concept on data transmission
	S 7		CO3	Summarize the architecture of various wireless LAN technologies
			CO4	Identify the functionalities of mobile network layer and transport layer
			CO5	Explain the features of Wireless Application Protocol
			CO6	Interpret the security issues in mobile computing and next generation technologies
51		EET402 ELECTRICAL SYSTEM DESIGN AND ESTIMATION	CO1	Explain the rules and regulations in the design of components for medium and high voltage installations.
	S 8		CO2	Design lighting schemes for indoor and outdoor applications.
			CO3	Design low/medium voltage domestic and industrial electrical installations.
			CO4	Design, testing and commissioning of 11 kV transformer substation.
			CO5	Design electrical installations in high rise buildings.
		EET455 ENERGY MANAGEMENT	CO 1	Explain the significance and procedure for energy management and audit.
			CO 2	Discuss the energy efficiency and management of electrical loads.
			CO 3	Discuss the energy efficiency in boilers and furnaces.
			CO 4	Explain the energy management opportunities in HVAC systems
			CO 5	Compute the economic feasibility of the energy conservation measures.

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