



Gnanamani College of Technology
Namakkal - 637 018
Department of Electrical and Electronics Engineering



GNANAMANI COLLEGE OF TECHNOLOGY

Department of Electrical and Electronics Engineering

3.1.1. Course Outcomes (COs)

(Document included course outcomes of all courses from each semester of study)

BATCH: 2017-2021



Year/ SEM	Course	Course Outcomes	
II	C101 - Communicative English	C101.1	Understand articles of a general kind in magazines and newspapers.
		C101.2	Take part effectively in informal conversations; introduce themselves and their friends and express opinion in English.
		C101.3	Develop conversational and short talks in English
		C101.4	Create short essays of a general kind, personal letters and emails in English.
		C101.5	Classify the tense forms for better understanding.
II	C102 - Engineering Mathematics - I	C102.1	Summarize the basic explanation of limit function, continuity and derivatives.
		C102.2	Apply differentiation rules in Euler's theorem, Jacobians and total derivatives.
		C102.3	Solve integration of rational functions and irrational functions using the definite and indefinite integrals.
		C102.4	Examine the change of order of integration in Cartesian and polar co-ordinates.
		C102.5	Solve the higher order linear differential equation with constant co-efficients.
II	C103 - Engineering Physics	C103.1	Outline the properties of materials and its applications.
		C103.2	Develop knowledge on concept of waves and optical devices.
		C103.3	Explain the thermal conductivity of materials.
		C103.4	Utilize the basic concepts of quantum theory in electron microscopes.
		C103.5	Compare the structures of various crystals and explain its synthesis techniques.



Year/ SEM	Course	Course Outcomes	
I/I	C104 - Engineering Chemistry	C104.1	Identify the hardness of water and suitable methods of soften.
		C104.2	Explain the concepts of adsorption, catalysis of various substances and its applications.
		C104.3	Illustrate the phase transitions of various component systems and alloys.
		C104.4	Analyze the combustion mechanisms of various fuels.
		C104.5	Explain different energy sources and storage devices.
I/I	C105 - Problem Solving and Python Programming	C105.1	Develop algorithmic solutions to simple computational problems.
		C105.2	Demonstrate programs using simple Python statements and expressions.
		C105.3	Develop the control flow and functions concept in Python for solving problems.
		C105.4	Implement the Python data structures – lists, tuples & dictionaries for representing compound data.
		C105.5	Construct the files, exception, modules and packages in Python for solving problems.
I/I	C106 - Engineering Graphics	C106.1	Construct free hand sketching of basic geometrical constructions and multiple views of objects.
		C106.2	Compare projection of points, lines and plane surfaces.
		C106.3	Analyze the projection of solids with various methods.
		C106.4	Examine the solids by cutting plane.
		C106.5	Create isometric view of a solids and frustum objects and develop perspective views of simple solids.



Year/ SEM	Course	Course Outcomes	
I/I	C107 - Problem Solving and Python Programming Laboratory	C107.1	Test and debug the simple python programs
		C107.2	Develop the python programs with conditionals and looping
		C107.3	Develop the python programs step-wise by defining functions and calling them
		C107.4	Build Python list, tuples, dictionaries for representing compound data
		C107.5	Build the data from/to files in python.
I/I	C108 - Physics and Chemistry Laboratory	C108.1	Examine the rigidity and young's modulus of the materials.
		C108.2	Experiment with thermal conductivity of the materials.
		C108.3	Determine the compressibility of liquid and wavelength of spectrum.
		C108.4	Analyze the water quality parameters.
		C108.5	Measure the pH and conductance of the given sample.
I/II	C109 - Technical English	C109.1	Explain technical texts and illustrate area specific texts effortlessly.
		C109.2	Illustrate charts in their area of specialization successfully.
		C109.3	Explain and describe process in varied informal and informal contexts.
		C109.4	Develop report, winning job applications and analytical essays.
		C109.5	Build technical presentations and prepare minutes of a meeting effectively.



Year/ SEM	Course	Course Outcomes	
I / II	C110 - Engineering Mathematics - II	C110.1	Apply matrix algebra techniques for practical applications.
		C110.2	Explain the gradient, divergence and curl of a vector point function and related identities.
		C110.3	Apply the line, surface and volume integrals in Gauss, Stokes and Greens theorem.
		C110.4	Analyze the function and conformal mappings using complex integration.
		C110.5	Solve the differential equation with constant co-efficient using Laplace transform.
I / II	C111 - Physics for Electronics Engineering	C111.1	Classify the materials based on classical and quantum electron theory.
		C111.2	Explain the basics of semiconductor physics and its applications.
		C111.3	List out the various magnetic and dielectric properties of materials.
		C111.4	Explain the function of optical materials in optoelectronics.
		C111.5	Identify the fundamental concept of quantum structures.
I / II	C112 - Basic Civil and Mechanical Engineering	C112.1	Compare the scope and overview of the mechanical and civil engineering.
		C112.2	Discuss the various surveying for various construction areas and various construction materials.
		C112.3	Build a various civil engineering structures and foundations.
		C112.4	Design and classify the internal combustion engine, power plant and pumps.
		C112.5	Design and compare the working principle of refrigeration and air-conditioning system.



Year/ SEM	Course	Course Outcomes	
I/II	C113- Circuit Theory	C113.1	Apply Kirchhoff's current and voltage law to simple circuits and Solve complex circuits using Mesh & Nodal Methods.
		C113.2	Apply Network theorems to solve simple and complex linear circuits.
		C113.3	Explain three phase balanced and unbalanced star, delta network.
		C113.4	Develop the Transient response of RLC circuits using Laplace Transform, explain the characteristics of two port networks
		C113.5	Solve the Series and Parallel resonance circuit; analyze the performance of single & double tuned circuits.
I/II	C114 - Environmental Science and Engineering	C114.1	Explain the various ecosystem and biodiversity.
		C114.2	Classify the environmental pollution, related problems and control methods.
		C114.3	Identify the natural resources and the effects of its over exploitation.
		C114.4	List out the fundamental social issues and sustainable development of public.
		C114.5	Illustrate population, environmental health issues and its awareness.
I/II	C115 - Engineering Practices Laboratory	C115.1	Analyze and construct the electrical wiring
		C115.2	Analyze the different Electrical quantities with measuring equipments
		C115.3	Apply the concept of electronic components and design logic circuits under study state.
		C115.4	Design and generate the clock signal.
		C115.5	Apply the concept of soldering and design the rectifiers.



Year/SEM	Course	Course Outcomes	
I/II	C116 -Electric Circuits Laboratory	C116.1	Understand and verify the entire circuit theorem.
		C116.2	Analyze the mesh and nodal methods.
		C116.3	Analyze the frequency response in AC circuits
		C116.4	Analyze the measurement of inductance of a coil.
		C116.5	Determine the transient responses of RL and RC circuits



Year/SEM	Course	Course Outcomes	
II / III	C201 - Transforms And Partial Differential Equations	C201.1	Under stand the partial differential equations of homogeneous and non homogeneous equations.
		C201.2	Solve differential equations using Fourier series.
		C201.3	Apply Fourier series techniques to solve one and two dimensional heat flow and wave phenomena.
		C201.4	Solve the mathematical principles of Fourier transforms.
		C201.5	Apply Z-transform techniques in partial differential equations.
II / III	C202 – Digital Logic Circuits	C202.1	Analysis of digital logic families with logical expressions
		C202.2	Construct and implementation of combinational logic circuits
		C202.3	Construct various synchronous Sequential circuits.
		C202.4	Construct various asynchronous Sequential circuits and PLCs.
		C202.5	Develop digital simulation for application oriented logic circuits.
II / III	C203 – Electromagnetic Theory	C203.1	Apply the mathematical concepts in electromagnetic vector fields.
		C203.2	Analyze the concepts of electrostatics, electrical potential, energy density and their applications
		C203.3	Impart knowledge on magneto statics, magnetic flux density and vector potential.
		C203.4	Apply and Analyze the Faraday's law and Maxwell's equations for electromagnetic fields
		C203.5	Apply the Pointing vector to analyze the electromagnetic waves.



Year/SEM	Course	Course Outcomes	
II / III	C205-Electrical Machines - I	C204.1	Analyze the magnetic Circuits and magnetic materials.
		C204.2	Familiarize the Construction and performance of transformers.
		C204.3	Apply the Concept of Electromechanical energy Conversion in Rotating machines.
		C204.4	Demonstrate the construction of DC Machines and to analyze the Performance Characteristics of DC generators.
		C204.5	Evaluate the Characteristics and testing of DC Motors.
II / III	C205 –Electron Devices and Circuits	C205.1	Interpret the structure and characteristics of PN Junction Devices.
		C205.2	Analyze the performance characteristics of transistors and thyristors.
		C205.3	Modeling of small signal amplifiers and to analyze the high frequency signals.
		C205.4	Explore the characteristics of amplifier gain and frequency response.
		C205.5	Design and analysis of feedback amplifiers and oscillators.
II / III	C206 – Power Plant Engineering	C206.1	Apply the concept of coal based thermal power plant
		C206.2	Apply the concept of diesel, gas turbine and combined cycle power plant
		C206.3	Infer the functions and safety measures of nuclear power plant
		C206.4	Analyze the power from renewable energy
		C206.5	Analyze and solve energy and economic related issues in power sectors



Year/SEM	Course	Course Outcomes	
II / III	C207 – Electronic Laboratory	C207.1	Design the electronic circuits and analyze the characteristics of electronic switches
		C207.2	Design and analyze the characteristics of amplifiers and oscillators
		C207.3	Apply the concept of rectifiers with filters in the electronic devices
		C207.4	Analyze the CRO under steady state
		C207.5	Modeling and design of multivibrators
II / III	C208 – Electrical Machines Laboratory - I	C208.1	Calculate the critical speed and critical resistance in dc shunt generator also construct the load characteristics of generators
		C208.2	Demonstrate the various relations characteristics of DC motors and analyze the efficiency of the DC motors by conducting load tests
		C208.3	Calculate the efficiency of the transformer by conduct direct and indirect load tests
		C208.4	Analyze the efficiency of the DC machines by conduct indirect tests
		C208.5	Impart the types of DC motor starters and three phase transformer connections
II / IV	C209 – Numerical Methods	C209.1	Solve a set of algebraic representing steady state models formed in engineering problems.
		C209.2	Examine the interpolation and approximation for the applications of finite elements analysis.
		C209.3	Explain the discrete data set through numerical differentiation and summary information through numerical integration.
		C209.4	Solve the ODEs modeling in the system.
		C209.5	Solve PDE representing spatial and temporal variations in physical systems through numerical methods



Year/SEM	Course	Course Outcomes	
II / IV	C210 – Electrical Machines - II	C210.1	Illustrate the Constructional details and performance characteristics of synchronous generator
		C210.2	Infer the principle of operation and explain the performance of the synchronous motor.
		C210.3	Analyze the construction, principle of operation and evaluate the performance of the induction machines.
		C210.4	Analyze the starting methods and describe the speed control of three phase induction motors.
		C210.5	Analyze the performance of single phase induction motor and special machines.
II / IV	C211 – Transmission and Distribution	211.1	Apply the basic concept in electric power transmission, distribution, EHVAC, FACTS devices and HVDC systems.
		C211.2	Analyze the line parameters of various transmission lines.
		C211.3	Model and Analyze the performance of transmission lines.
		C211.4	Analyze the voltage distribution in insulators, cables and methods to improve the same.
		C211.5	Design of transmission lines, substations, and grounding systems.
II / IV	C212 – Measurements and Instrumentations	C212.1	Acquire knowledge on functional elements of instrumentation.
		C212.2	Analyze the performance of electrical and electronic instruments.
		C212.3	Design a Bridge circuit for the measurement of passive elements and comparative methods of measurement.
		C212.4	Import knowledge on storage and display devices.
		C212.5	Analyze the performance of transducers and Data Acquisition System for various applications.



Year/SEM	Course	Course Outcomes	
II / IV	C213 – Linear Integrated Circuits and Applications	C213.1	Apply the knowledge of the basic concept in IC fabrication
		C213.2	Analyze the characteristics of different types of operation amplifier
		C213.3	Categorize the applications of operation amplifier
		C213.4	Construct the special ICs of operation amplifier
		C213.5	Construct the application ICs of operation amplifier
II / IV	C214 – Control Systems	C214.1	Analyze the transfer functions of electro-mechanical systems.
		C214.2	Design the controllers and analyze the time response and root locus of the system.
		C214.3	Analyze the performance of the open-loop and closed-loop frequency responses of systems.
		C214.4	Explore the stability analysis and to design the compensators.
		C214.5	Apply the concept of state variable to analyze the state model
II / IV	C215 – Electrical Machines Laboratory II	C215.1	Demonstrate the importance of voltage regulation of AC generator.
		C215.2	Analyze the performance characteristic, losses and efficiency of AC motors under various load conditions.
		C215.3	Analyze the performance of synchronous motors.
		C215.4	Compute the equivalent circuit model of induction motors.
		C215.5	Demonstrate the importance of induction motor starters.



Year/SEM	Course	Course Outcomes	
III / IV	C216 - Linear & Digital Integrated Circuits Laboratory	C216.1	Design of oscillators and amplifiers using operational amplifiers.
		C216.2	Design of filters using Op amp and perform experiment on frequency response.
		C216.3	Analyze the working of PLL and use PLL as frequency multiplier.
		C216.4	Design of DC power supply using ICs.
		C216.5	Analyze the performance of oscillators and multivibrators using SPICE
III / IV	C217 – Technical Seminar	C217.1	Prepare and present the seminar in the field of electrical and electronics engineering
		C217.2	Analyze the objective type questions in the field of electrical and electronics engineering
		C217.3	Apply the knowledge to present the seminar
		C217.4	Review prepare and present technological developments
		C217.5	Prepare and attend the technical placement interview effectively



Year/SEM	Course	Course Outcomes	
III / V	C301 – Power System Analysis	C301.1	Analyze the study state operation and form the bus matrix of the power system
		C301.2	Develop the power flow equation and analyze the power system parameters by using various iterative methods
		C301.3	Model and analyze the transmission lines parameters under symmetrical fault condition.
		C301.4	Model and analyze the transmission lines parameters under unsymmetrical fault condition.
		C301.5	Evaluate the transient stability of the power system by using various methods
III / V	C302 – Microprocessor and Microcontrollers	C302.1	Explain the architecture and addressing modes of 8086.
		C302.2	Explain the concept of system bus structure and different modes of 8086 processor.
		C302.3	Analyze the various I/O interfacing techniques of 8086 microprocessor.
		C302.4	Explain the architecture and addressing modes of 8051.
		C302.5	Analyze the various interfacing techniques and applications of 8051 microprocessor.
III / V	C303 – Power Electronics	C303.1	Import the switching characteristics of power semiconductor devices and to design the driver and snubber circuit.
		C303.2	Analyze the performance parameters of phase controlled converters.
		C303.3	Design of DC to DC converter and to apply the controlled strategies in DC to DC converters for various application.
		C303.4	Interpret the various modulation techniques for PWM Inverters.
		C303.5	Explore the operation of AC to AC converters and to Analyze the performance parameters for various configurations



Year/SEM	Course	Course Outcomes	
III / V	C304 – Digital Signal Processing	C304.1	Analyze the signals and systems using continuous-discrete time signal
		C304.2	Apply z-transform and inverse Z transform and Analyze the discrete time systems
		C304.3	Apply the various transformation techniques and the computation of Discrete Fourier Transform
		C304.4	Analyze and construct the filters for digital implementation.
		C304.5	Infer the different types of digital signal processor and quantization effects.
III / V	C305- Object Oriented Programming	C305.1	Outline OOP principles such as objects, classes, encapsulation, inheritance and polymorphism and associate those principles in java language
		C305.2	Design algorithms and develop programs using the concept of Inheritance and Interfaces.
		C305.3	Examine the exception handling concepts and develop I/O streams for reading and writing files.
		C305.4	Develop programs that run in the same instant using multithreading and multitasking concepts and utilize the power of generic programming in java for robust programming
		C305.5	Design and develop applications in java using forms, AWT, and swing.
III / V	C306 – Basic Biomedical Instrumentation	C306.1	Illustrate the different biopotential and its propagation
		C306.2	Analyze the different electrode placement for various physiological recording
		C306.3	Design a bio amplifier for various physiological recording
		C306.4	Analyze the diagnostic procedure using non electrical parameter measurements
		C306.5	Understand the different biomedical measurement



Year/SEM	Course	Course Outcomes	
III / V	C307 – Control and Instrumentation Laboratory	C307.1	Analyze the characteristics of P, PI and PID controllers and the stability of the control system using MATLAB
		C307.2	Draw and design the modeling of transfer function for machines and compensators
		C307.3	Draw the transient response characteristics of position control system
		C307.4	Analyze the characteristics of AC and DC bridges to determine electrical parameters and dynamics of sensors and transducers
		C307.5	Analyze the signal conditioning units and examine the power and energy for single phase systems with various loads
III / V	C308 – Professional Communication	C308.1	Develop communicative competence in English with specific reference to listening and speaking.
		C308.2	Evaluate the learners' ability in reading and writing to communicate effectively.
		C308.3	Improve the prospects of the learners for success in competitive examinations.
		C308.4	Examine the learners' ability clearly to shine in the interviews.
		C308.5	Improve soft skills, creative thinking, team work and sustainability in workplace.
III / V	C309-Object Oriented Programming Laboratory	C309.1	Design and implement the C++ program for manipulating functions and pointers
		C309.2	Develop C++ programs for object oriented concepts using polymorphisms
		C309.3	Develop C++ programs for file handling and exceptions handling.
		C309.4	Apply the OOPS concepts using java in packages and treading.
		C309.5	Design and implement the exception handling mechanisms in java



Year/SEM	Course	Course Outcomes	
III / VI	C310 – Solid State Drives	C310.1	Analyze the steady state operation and the transient dynamics of motor load system.
		C310.2	Design the various converter topologies and control strategies for DC drive applications.
		C310.3	Analyze the performance of induction motor drives by using various converters and control strategies
		C310.4	Acquire knowledge of synchronous motor drives.
		C310.5	Analyze and design the various controllers for closed loop DC drives.
III / VI	C311 – Protection and Switchgear	C311.1	Analyze the effect of fault current and importance of protection in power system.
		C311.2	Analyze the performance of electromagnetic relays.
		C311.3	Categorize the protection schemes for apparatus.
		C311.4	Analyze the performance of static and numerical relays in various fault conditions
		C311.5	Impart knowledge on rating and testing of various circuit breakers
III / VI	C312 – Embedded Systems	C312.1	Interpret the concept of the building blocks of embedded systems
		C312.2	Impart the knowledge on embedded networking.
		C312.3	Acquire the knowledge of embedded firmware development.
		C312.4	Design an embedded system using real time operating systems.
		C312.5	Develop the embedded systems concept for various applications.



Year/SEM	Course	Course Outcomes	
III / VI	C313-Design of Electrical Machines	C313.1	Interpret electrical engineering materials, heat dissipation, insulating materials and standard specifications for electrical apparatus.
		C313.2	Design the armature and field systems for DC machines.
		C313.3	Design the core, yoke, winding and cooling system of transformers.
		C313.4	Design the stator and rotor of induction machines.
		C313.5	Design the stator and rotor of synchronous machine and analyze the turbo alternators.
III / VI	C314 – Special Electrical Machines	C314.1	Analyze the performance of stepper motor.
		C314.2	Demonstrate the construction and principle operation of switched reluctance motor and analyze the performance motor controller circuits.
		C314.3	Analyze the various performance characteristics of permanent magnet brushless D.C. motors
		C314.4	Draw the Construction, principle of operation and performance of permanent magnet synchronous motors.
		C314.5	Analyze the performance characteristics of hysteries and induction motor
III / VI	C315 – Power Electronics and Drives Laboratory	C315.1	Analyze the VI characteristics of SCR and TRIAC
		C315.2	Analyze the characteristics of MOSFET and IGBT
		C315.3	Construct single and three phase AC to DC half and fully controlled converter
		C315.4	Analyze the output response of step down and step up chopper and draw the output waveform of single phase IGBT based PWM inverter.
		C315.5	Observe the response of IGBT based three phase PWM inverter and resonant DC-DC converter.



Year/SEM	Course	Course Outcomes	
III / VI	C316 – Microprocessors and Microcontrollers lab	C316.1	Demonstrate the ALP programs in 8086.
		C316.2	Apply the Arithmetic & logical operations in 8086 microprocessor.
		C316.3	Experiment with A/D & D/A, stepper motor, traffic light Interfacing with 8086 Microprocessor.
		C316.4	Demonstrate the ALP Programs in 8051.
		C316.5	Compile the programs using MASM Software
III / VI	C317 – Mini Project	C317.1	Apply practical knowledge within the chosen area of expertise for project development
		C317.2	Identify, Analyze and Design the prototype projects with a complete and organized approach
		C317.3	Contribute as an individual or in a team in development of technical projects
		C317.4	Develop effective communication skills for presentation of project related activities and prepare mini project reports and examination



Year/SEM	Course	Course Outcomes	
IV / VII	C401 – High Voltage Engineering	C401.1	Interpret the causes of over voltage in power system and its protection methods
		C401.2	Classify the breakdown mechanisms in solid, liquid, gases and composite dielectrics
		C401.3	Analyze the different type of impulse voltages and currents Generation
		C401.4	compute the over voltages and currents in power system
		C401.5	Analyze the power apparatus and insulation coordination
IV / VII	C402 – Power System Operation and Control	C402.1	Analyze the load curve characteristics and importance of load forecasting in the power system
		C402.2	Modeling of static and dynamic analysis of frequency controller for single and multi area system
		C402.3	Modeling of Automatic voltage regulator and function of FACTS devices
		C402.4	Analyze the unit commitment and economic dispatch in the power system
		C402.5	Apply SCADA tools and to analyze the electrical parameters in the power system.
IV / VII	C403 – Renewable Energy System	C403.1	Analyze the challenges and problems associated with the use of various energy sources, including fossil fuels, with regard to future supply and the environment
		C403.2	Formulate the power in wind energy, classify the types of WPPs, select the site for WPPs and analyze the grid integration issues of WPPs
		C403.3	Apply the knowledge of engineering for harnessing thermal and electrical energy from solar energy.
		C403.4	Apply the knowledge of engineering for harnessing electrical energy from biomass, geothermal and hydro power energy.
		C403.5	Apply the knowledge of engineering for harnessing electrical energy from ocean energy, fuel cell, hybrid energy systems and production with storage of the hydrogen



Year/SEM	Course	Course Outcomes	
III / VI	C404- Introduction C Programming	C404.1	Understand basic concepts of C
		C404.2	Develop application using arrays
		C404.3	Develop application using strings
		C404.4	Develop application using functions
		C404.5	Develop application using structures
IV / VII	C405-Fiber Optics and Laser Instrumentation	C405.1	Analyze the characteristics of optical fibers and working the light through the fiber
		C405.2	Apply the gained knowledge of optical fibers and application of the fiber in industries for measurement system and units
		C405.3	Analyze the fundamentals concepts of laser operation and its characteristics of various types of lasers
		C405.4	Analyze the application of lasers in industrials for various units and working methods
		C405.5	Apply the level of laser in hologram and medical application
IV / VII	C406-Power System Transients	C406.1	Interpret the concept of transients and Compute the solution.
		C406.2	Apply the importance of switching transients.
		C406.3	Analyze the mechanism of lightning strokes and the production of lightning surges.
		C406.4	Apply the concept of propagation, reflection and refraction of travelling waves.
		C406.5	Infer the concept of transients in integrated power system.



Year/SEM	Course	Course Outcomes	
IV / VII	C407 – Power System Simulation Laboratory	C407.1	Evaluate the V-I characteristics and efficiency of the solar PV with stand alone and grid connected system
		C407.2	Analyze the performance of micro wind energy generator
		C407.3	Evaluate the performance of solar-wind hybrid system
		C407.4	Analyze the performance assessment of Hydel power and Fuel cell
		C407.5	Demonstrate the various types of Intelligent controller for hybrid system
IV / VII	C407 – Renewable Energy Systems Laboratory	C408.1	Evaluate the V-I characteristics and efficiency of the solar PV with stand alone and grid connected system
		C408.2	Analyze the performance of micro wind energy generator
		C408.3	Evaluate the performance of solar-wind hybrid system
		C408.4	Analyze the performance assessment of Hydel power and Fuel cell
		C408.5	Demonstrate the various types of Intelligent controller for hybrid system
IV / VIII	C409 – Electric Energy Generation, Utilization and Conservation	C409.1	Apply the knowledge of mathematics to evaluate the illumination level and power consumption by applying laws of illumination
		C409.2	Analyze the various types of air conditioning system and to choose the energy efficient motors for air conditioning and refrigeration system
		C408.3	Apply the engineering knowledge for different types of heating and welding used in the industry and Evaluate the energy consumption of electric furnaces.
		C408.4	Apply the knowledge of mathematics to evaluate the energy consumption of different traction services and analyze the different traction motor control.
		C408.5	Analyze the different domestic utilization of electric energy and the power quality aspects.



Year/SEM	Course	Course Outcomes	
IV / VII	C406 – Microcontroller Based System Design	C410.1	Illustrate the Architecture of PIC microcontroller
		C410.2	Acquire the knowledge of interrupts and timer
		C410.3	Interpret the knowledge of peripheral devices for data communication and basics of sensor interfacing
		C410.4	Illustrate the Architecture of ARM processor
		C410.5	Develop simple applications by using ARM processor
IV / VIII	C412 – Project Work	C411.1	Apply the fundamentals of mathematics, science and engineering knowledge to identify, formulate the design and investigate complex engineering problem of electrical and electronics engineering and allied applications.
		C411.2	Apply appropriate techniques and modern engineering hardware and software tools in electrical and electronics engineering and allied applications.
		C411.3	Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues with societal and environmental context, applying ethical principles in the field of electrical and electronics engineering and allied application.
		C411.4	Analyze the Function effectively as an individual and as a member or leader in diverse teams in multidisciplinary settings and make effective presentation, and communicate effectively.
		C411.5	Demonstrate the understanding of the engineering and management principles in multidisciplinary environments to engage in lifelong learning in the broadest context of technological change.



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3.1.2. CO-PO matrices of course in 3.1.1 (Semester from 1st to 8th semester)

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Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
I/I	C101 - Communicative English	C101.1	-	-	-	-	-	-	-	-	-	3	-	3	-	-	
		C101.2	-	-	-	-	-	-	-	-	-	3	3	-	3	-	2
		C101.3	-	-	-	-	-	-	-	-	-	-	3	-	2	-	2
		C101.4	-	-	-	-	-	-	-	-	-	-	3	-	2	-	-
		C101.5	-	-	-	-	-	-	-	-	-	-	3	-	3	-	-
		C101	-	-	-	-	-	-	-	-	-	3	3	-	2.6	-	2
I/I	C102 - Engineering Mathematics - I	C102.1	3	3	2	-	3	-	-	-	-	3	-	-	-	2	
		C102.2	3	3	2	-	1	-	-	-	-	-	-	-	-	2	
		C102.3	3	3	2	-	1	-	-	-	-	-	-	-	-	2	
		C102.4	3	3	2	2	2	-	-	-	-	-	-	-	-	2	
		C102.5	3	3	2	2	2	-	-	-	-	-	-	-	-	2	
		C102	3	3	2	2	1.8	-	-	-	-	-	3	-	-	-	2
I/I	C103 - Engineering Physics	C103.1	3	3	2	-	-	-	-	-	-	-	-	-	-	2	
		C103.2	3	3	2	-	-	-	-	-	-	2	-	2	-	2	
		C103.3	3	3	2	-	-	-	-	-	-	-	-	-	2	-	2
		C103.4	3	3	2	-	-	-	-	-	-	-	-	-	3	-	2
		C103.5	3	3	2	-	-	-	-	-	-	-	-	-	3	-	2
		C103	3	3	2	-	-	-	-	-	-	-	2	-	2.5	-	2



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO 9	PO 10	PO11	PO12	PSO1	PSO2
I/I	C104 - Engineering Chemistry	C104.1	3	3	2	-	-	-	-	2	-	-	-	3	-	2
		C104.2	3	3	-	-	-	-	-	-	-	-	-	2	-	2
		C104.3	3	2	-	-	2	-	-	-	-	-	-	2	-	2
		C104.4	3	3	-	-	-	-	-	-	-	-	-	2	-	2
		C104.5	3	-	-	-	-	-	-	-	-	-	-	1	-	2
		C104	3	2.75	2	-	2	-	-	2	-	-	-	2	-	2
I/I	C105 - Problem Solving and Python Programming	C105.1	3	3	3	-	0	1	-	-	-	-	-	2	-	2
		C105.2	3	3	3	-	2	1	-	-	-	-	-	2	-	2
		C105.3	3	3	2	-	2	2	-	-	-	-	-	3	-	-
		C105.4	3	3	3	-	2	2	-	-	-	-	-	3	-	-
		C105.5	3	3	3	-	2	2	-	-	-	-	-	3	-	-
		C105	3	3	2.8	-	2	1.6	-	-	-	-	-	2.6	-	2
I/I	C106 - Engineering Graphics	C106.1	3	-	-	-	2	-	-	-	-	3	-	3	-	2
		C106.2	3	-	-	-	2	-	-	-	-	3	-	3	-	2
		C106.3	3	-	-	-	2	-	-	-	-	3	-	3	-	2
		C106.4	3	-	-	-	2	-	-	-	-	3	-	3	-	2
		C106.5	3	-	-	-	2	-	-	-	-	3	-	3	-	2
		C106	3	-	-	-	2	-	-	-	-	3	-	3	-	2



Gnanamani College of Technology
 Namakkal - 637 018
 Department of Electrical and Electronics Engineering



Year/ SEM	Course		PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO8	PO9	PO 10	PO1 1	PO1 2	PSO 1	PSO 2
I/I	C107 – Problem Solving and Python Programming Lab	C107.1	3	3	3	-	3	1	-	3	3	3	-	1	-	2
		C107.2	3	3	3	-	3	1	-	2	2	3	-	2	-	2
		C107.3	3	3	3	-	3	1	-	2	3	1	-	3	-	2
		C107.4	3	2	3	-	2	1	-	3	3	2	-	3	-	-
		C107.5	3	2	2	1	2	1	-	3	2	3	-	2	-	-
		C107	3	2.6	2.8	1	2.6	1	-	2.6	2.6	2.4	-	2.2	-	2
I/I	C108 – Physics and Chemistry Laboratory	C108.1	3	3	-	-	-	2	2	2	3	3	-	2	-	2
		C108.2	3	3	-	-	-	2	2	2	3	-	-	2	-	2
		C108.3	-	-	-	-	-	-	-	2	3	-	-	2	-	2
		C108.4	-	-	-	-	-	-	-	2	3	-	-	2	-	2
		C108.5	-	-	-	-	-	-	-	2	3	-	-	2	-	2
		C108	3	3	-	-	-	2	2	2	3	3	-	2	-	2
I/II	C109 – Technical English	C109.1	-	-	-	-	-	-	-	-	2	3	-	2	-	2
		C109.2	-	-	-	-	-	-	-	-	-	3	-	2	-	-
		C109.3	-	-	-	2	-	-	-	-	-	3	-	2	-	-
		C109.4	-	-	-	2	-	-	-	-	-	3	-	2	-	-
		C109.5	-	-	-	-	-	-	-	-	-	3	-	2	-	2
		C109	-	-	-	2	-	-	-	-	-	3	-	2	-	2



Gnanamani College of Technology
 Namakkal - 637 018
 Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	
I/II	C110 - Engineering Mathematics - II	C110.1	3	3	3	2	2	-	-	-	-	2	-	-	-	2	
		C110.2	3	3	2	2	2	-	-	-	-	-	-	-	-	-	2
		C110.3	3	3	2	3	1	-	-	-	-	-	-	-	-	-	2
		C110.4	3	2	2	3	2	-	-	-	-	-	-	-	-	-	2
		C110.5	3	2	3	3	2	-	-	-	-	-	-	-	-	-	2
		C110	3	2.8	2.4	2.6	1.8	-	-	-	-	-	-	-	-	-	-
I/ II	C111 - Physics for Electronics Engineering	C111.1	3	3	2	-	-	-	-	-	-	-	-	2	-	2	
		C111.2	3	3	2	-	-	-	-	-	-	-	-	2	-	2	
		C111.3	3	3	2	-	-	-	-	-	-	-	-	2	-	2	
		C111.4	3	3	2	-	-	-	-	-	-	2	-	2	-	2	
		C111.5	3	3	2	-	-	-	-	-	-	-	-	2	-	2	
		C111	3	3	2	-	-	-	-	-	-	-	2	-	2	-	2
I/II	C112 - Basic Civil and Mechanical Engineering	C112.1	3	3	3	-	3	3	-	2	-	3	-	-	-	-	
		C112.2	3	3	3	-	3	3	3	-	-	-	-	3	-	-	
		C112.3	3	3	3	2	3	3	3	2	-	-	-	-	-	-	
		C112.4	3	3	3	2	3	3	3	2	-	3	-	-	-	-	
		C112.5	3	3	3	-	3	3	-	-	-	-	-	-	-	-	
		C112	3	3	3	2	3	3	3	2	-	-	3	-	3	-	-



Gnanamani College of Technology
 Namakkal - 637 018
 Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
I/II	C113 - Circuit Theory	C113.1	3	3	3	2	-	-	-	-	-	-	3	3	3	2
		C113.2	3	3	3	2	-	-	-	-	-	-	3	3	3	2
		C113.3	3	3	3	2	-	-	-	-	-	-	3	3	3	2
		C113.4	3	3	3	2	-	-	-	-	-	-	2	3	3	2
		C113.5	3	3	3	2	-	-	-	-	-	-	2	3	3	2
		C113	3	3	3	2	-	-	-	-	-	-	-	2.6	3	3
I/II	C114 - Environmental Science and Engineering	C114.1	3	-	-	-	-	2	2	2	-	-	-	3	-	2
		C114.2	3	-	-	-	-	2	2	2	-	-	-	3	-	2
		C114.3	3	-	-	-	-	2	2	2	-	-	-	3	-	2
		C114.4	3	-	-	-	-	2	2	-	-	-	-	2	-	2
		C114.5	3	1	-	-	-	2	2	-	-	2	-	2	-	2
		C114	3	1	-	-	-	2	2	2	-	2	-	2.6	-	2
I/II	C115 - Engineering Practices Laboratory	C115.1	3	-	-	-	2	-	-	-	-	-	-	3	3	2
		C115.2	3	-	-	-	2	-	-	-	-	-	-	3	3	2
		C115.3	3	-	-	-	2	-	-	-	-	-	-	3	3	2
		C115.4	-	-	-	-	-	-	-	-	-	-	-	-	3	2
		C115.5	-	-	-	-	-	-	-	-	-	-	-	-	3	2
		C115	3	-	-	-	2	-	-	-	-	-	-	-	3	3



Gnanamani College of Technology
Namakkal - 637 018
Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
I/II	C116 - Electric Circuits Laboratory	C116.1	3	2	-	-	-	-	-	-	-	-	-	-	3	2	
		C116.2	3	2	-	-	-	-	-	-	-	-	-	-	-	3	2
		C116.3	2	-	1	2	-	-	-	-	-	-	-	-	-	3	2
		C116.4	2	-	-	-	-	-	-	-	-	-	-	-	-	3	2
		C116.5	1	-	-	-	-	-	-	-	-	-	-	-	-	3	2
		C116	2.2	2	1	2	-	-	-	-	-	-	-	-	-	3	2



Year/S EM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
II / III	C201 - Transforms And Partial Differential Equations	C201.1	2	3	-	-	2	-	-	-	-	-	-	-	2	2	
		C201.2	3	3	2	2	3	2	-	-	-	-	-	2	2	2	
		C201.3	2	2	-	-	2	-	-	-	-	-	-	-	2	3	
		C201.4	3	3	2	1	3	1	-	-	-	-	-	-	2	2	
		C201.5	3	2	3	2	3	2	-	-	-	-	-	2	2	2	
		C201	2.6	2.6	2.33	1.67	2.6	1.67	-	-	-	-	-	2	2	2.2	
II / III	C202 – Digital Logic Circuits	C202.1	3	2	-	2	3	-	-	-	-	-	-	2	3	2	
		C202.2	3	2	-	2	3	-	-	-	-	-	-	2	3	2	
		C202.3	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
		C202.4	3	2	3	2	3	-	-	-	-	-	-	2	3	2	
		C202.5	3	2	3	2	3	-	-	-	-	-	3	2	3	2	
		C202	3	2	3	2	3	-	-	-	-	-	3	2	3	2	
II / III	C203 – Electromagnetic Theory	C203.1	2	3	3	2	-	-	-	-	-	-	2	3	3	2	
		C203.2	3	3	2	2	-	-	-	-	-	-	2	3	3	2	
		C203.3	2	3	3	2	-	-	-	-	-	-	2	3	3	2	
		C203.4	3	3	2	2	-	-	-	-	-	-	2	2	3	3	2
		C203.5	3	3	3	2	-	-	-	-	-	-	2	2	3	3	2
		C203	2.6	3	2.6	2	-	-	-	-	-	-	2	2	3	3	2



Gnanamani College of Technology
 Namakkal - 637 018
 Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	
II / III	C204 - Electrical Machines - I	C204.1	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		C204.2	3	3	2	2	-	-	-	-	-	-	-	2	3	2	
		C204.3	3	3	2	-	-	-	-	-	-	-	-	2	3	2	
		C204.4	3	3	2	2	-	-	-	-	-	-	-	2	3	2	
		C204.5	3	3	2	2	2	2	-	-	-	-	-	2	2	3	2
		C204	3	3	2	2	2	2	-	-	-	-	-	2	2	3	2
II / III	C205 - Electron Devices and Circuits	C205.1	3	2	-	-	2	-	-	-	-	2	-	-	3	2	
		C205.2	3	3	3	2	2	2	-	-	-	-	-	3	3	2	
		C205.3	3	3	3	2	-	-	-	-	-	-	-	-	3	2	
		C205.4	3	3	3	2	3	-	-	-	-	-	-	3	3	2	
		C205.5	3	3	3	2	3	-	-	-	-	-	-	3	3	2	
		C205	3	2.8	3	2	2.5	2	-	-	-	-	2	-	3	3	2
II / III	C206 – Power Plant Engineering	C206.1	3	3	2	-	-	-	-	-	-	-	-	-	3	2	
		C206.2	3	3	3	-	2	-	2	-	-	-	-	3	3	2	
		C206.3	3	3	2	-	-	-	-	-	-	-	-	-	3	2	
		C206.4	3	3	3	2	-	-	3	-	-	-	-	3	3	2	
		C206.5	3	2	2	3	2	-	3	-	-	-	-	3	3	2	
		C206	3	2.8	2.4	2.5	2	-	2.67	-	-	-	-	3	3	2	



Gnanamani College of Technology
Namakkal - 637 018
Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO 7	PO8	PO9	PO1 0	PO1 1	PO1 2	PS O1	PSO 2
II / III	C207 - Electronics Laboratory	C207.1	3	-	3	2	3	-	-	-	-	-	3	3	3	3
		C207.2	3	3	3	2	3	-	-	-	-	-	3	3	3	2
		C207.3	3	3	3	2	3	-	-	-	-	-	3	3	3	3
		C207.4	3	3	3	3	3	-	-	-	-	-	3	3	3	2
		C207.5	3	3	3	3	3	-	-	-	-	-	3	3	3	3
		C207	3	3	3	2.4	3	-	-	-	-	-	3	3	3	2.6
II / IV	C208 - Electrical Machines Laboratory - I	C208.1	3	3	3	-	2	-	-	-	-	-	-	3	3	2
		C208.2	3	3	3	-	2	-	-	-	-	-	-	3	3	2
		C208.3	3	3	3	-	2	-	-	-	-	-	-	3	3	2
		C208.4	3	3	3	-	2	-	-	-	-	-	-	3	3	2
		C208.5	3	3	3	-	2	-	-	-	-	-	-	3	3	2
		C208	3	3	3	-	2	-	-	-	-	-	-	3	3	2



Year/SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
II / IV	C209 - Numerical Methods	C209.1	3	2	-	2	2	3	-	-	-	2	-	1	-	2
		C209.2	3	2	-	2	2	3	-	-	-	2	-	1	-	2
		C209.3	3	2	-	2	2	3	-	-	-	2	-	1	-	2
		C209.4	3	2	-	2	2	3	-	-	-	2	-	1	-	2
		C209.5	3	2	-	2	2	3	-	-	-	2	-	1	-	2
		C209	3	2	-	2	2	3	-	-	-	2	-	1	-	2
II / IV	C210 - Electrical Machines – II	C210.1	3	3	3	2	2	-	-	-	-	-	2	3	3	-
		C210.2	3	3	3	2	2	-	-	-	-	-	2	3	3	-
		C210.3	3	3	3	2	2	-	-	-	-	-	2	3	3	2
		C210.4	3	3	3	2	2	-	-	-	-	-	2	3	3	-
		C210.5	3	3	3	2	2	-	-	-	2	-	2	3	3	2
		C210	3	3	3	2	2	-	-	-	2	-	2	3	3	2
II / IV	C211 - Transmission and Distribution	C211.1	3	3	-	-	2	2	2	-	2	-	-	3	3	2
		C211.2	3	3	2	3	3	2	2	-	-	-	-	3	3	2
		C211.3	3	3	3	3	3	2	2	-	2	-	-	3	3	2
		C211.4	3	3	-	-	2	3	3	-	-	-	-	3	3	2
		C211.5	3	3	3	3	2	3	3	-	2	-	-	3	3	2
		C211	3	3	2.67	3	2.4	2.4	2.4	-	2	-	-	3	3	2



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	
II / IV	C212 - Measurements and Instrumentation	C212.1	3	2	-	-	2	-	-	-	-	-	2	2	3	2	
		C212.2	3	-	-	-	-	-	-	-	-	-	-	2	2	3	2
		C212.3	3	3	2	-	3	-	-	-	-	-	-	2	2	3	2
		C212.4	3	-	-	-	-	-	-	-	-	-	-	2	2	3	2
		C212.5	3	2	-	-	2	-	-	-	-	-	-	2	2	3	2
		C212	3	2,3 3	2	-	2,3 3	-	-	-	-	-	-	2	2	3	2
II / IV	C213 - Linear Integrated Circuits and Applications	C213.1	3	-	-	-	2	-	-	-	-	-	-	-	3	2	
		C213.2	3	2	-	-	2	-	-	-	-	-	-	-	3	2	
		C213.3	3	-	3	3	2	-	-	-	-	-	-	-	3	2	
		C213.4	3	-	3	-	2	-	-	-	-	-	3	3	3	3	2
		C213.5	3	-	3	-	2	-	-	-	-	-	3	3	3	3	2
		C213	3	2	3	3	2	-	-	-	-	-	3	3	3	3	3
II / IV	C214 – Control System	C214.1	3	3	2	2	2	-	-	-	-	-	2	2	2	-	
		C214.2	3	3	2	2	3	-	-	-	-	-	2	2	3	3	2
		C214.3	3	3	3	2	3	-	-	-	-	-	3	3	3	3	2
		C214.4	3	3	2	3	3	-	-	-	-	-	3	3	3	3	2
		C214.5	3	3	3	2	3	-	-	-	-	-	2	3	3	3	2
		C214	3	3	2.4	2.2	2.8	-	-	-	-	-	2.4	2.6	2.8	2.8	2



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
II / IV	C215 Electrical Machines Laboratory II	C215.1	3	3	3	-	2	-	-	-	2	-	-	3	3	2
		C215.2	3	3	3	-	2	-	-	-	2	-	-	3	3	2
		C215.3	3	3	3	-	2	-	-	-	2	-	-	3	3	2
		C215.4	3	3	3	-	2	-	-	-	2	-	-	3	3	2
		C215.5	3	3	3	-	2	-	-	-	2	-	-	3	3	2
		C215	3	3	3	-	2	-	-	-	2	-	-	3	3	2
II / IV	C216- Linear and Digital Integrated Circuits Laboratory	C216.1	2	3	2	3	2	-	-	-	-	-	-	3	-	2
		C216.2	3	2	3	2	3	-	-	3	-	-	-	3	3	-
		C216.3	3	2	2	2	3	-	-	-	-	-	-	3	3	-
		C216.4	2	3	3	3	2	-	-	-	-	-	-	3	3	2
		C216.5	3	2	3	3	3	-	-	-	-	-	-	3	3	2
		C216	2.6	2.4	2.6	2.6	2.6	-	-	3	-	-	-	3	3	2
II / IV	C217- Technical Seminar	C216.1	3	2	-	-	-	-	-	-	2	2	-	2	3	2
		C216.2	3	2	-	-	-	-	-	2	2	2	-	2	3	2
		C216.3	3	2	-	-	-	-	-	2	-	3	-	2	-	2
		C216.4	2	2	-	-	-	-	-	2	-	3	-	2	-	2
		C216.5	3	2	-	-	-	-	-	-	2	3	1	2	-	2
		C216	2.8	2	-	-	-	-	-	2	2	2.6	1	2	3	2



Year/ SEM	Course	CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	
III / V	C301 - Power System Analysis	C301.1	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
		C301.2	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
		C301.3	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
		C301.4	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
		C301.5	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
		C301	3	3	3	3	3	-	-	-	-	-	2	2	3	2	
III / V	C302 - Microprocessors and Microcontrollers	C302.1	3	2	-	-	-	-	-	-	-	-	-	-	3	3	-
		C302.2	-	2	3	3	3	-	-	3	-	-	-	-	3	-	2
		C302.3	2	2	-	-	-	-	-	-	-	-	-	-	3	3	-
		C302.4	3	2	3	2	3	-	-	-	-	-	-	-	3	3	2
		C302.5	2	2	3	3	-	-	-	-	-	-	-	-	3	3	2
		C302	2.5	2	3	2.6 7	3	-	-	3	-	-	-	-	3	3	2
III / V	C303 - Power Electronics	C303.1	3	3	3	2	2	-	-	-	2	2	2	2	2	3	2
		C303.2	3	3	3	3	3	-	-	-	2	2	2	2	2	3	2
		C303.3	3	3	3	3	3	-	-	-	2	2	2	2	2	3	3
		C303.4	3	3	3	3	3	-	-	-	2	2	2	2	2	3	3
		C303.5	3	3	3	3	3	-	-	-	2	2	2	2	2	3	-
		C303	3	3	3	2.8	2.8	-	-	-	2	2	2	2	2	3	2.5



Year/ SEM	Course	CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
III / V	307 - Control and Instrumentation Laboratory	C307.1	3	3	2	-	2	2	-	-	-	-	2	-	3	2
		C307.2	3	3	2	-	2	2	-	-	-	-	2	-	3	2
		C307.3	3	3	2	-	2	2	-	-	-	-	2	-	3	2
		C307.4	3	3	2	-	-	2	-	-	-	-	2	-	3	2
		C307.5	3	3	2	-	-	2	-	-	-	-	2	-	3	2
		C307	3	3	2	-	2	2	-	-	-	-	2	-	3	2
III / V	C308 - Professional Communication	C308.1	-	-	-	-	-	-	-	-	3	3	-	-	-	2
		C308.2	-	-	-	-	-	-	-	-	-	3	-	-	-	2
		C308.3	-	-	-	-	-	-	-	-	-	3	-	-	-	2
		C308.4	-	-	-	-	-	-	-	-	-	3	-	-	-	2
		C308.5	-	-	-	-	-	-	-	-	3	3	-	-	-	2
		C308	-	-	-	-	-	-	-	-	3	3	-	-	-	2
III / V	C309 - Object Oriented Programming Laboratory	C309.1	3	3	2	-	3	2	-	2	3	3	-	2	-	-
		C309.2	3	3	3	-	2	2	-	2	2	3	-	2	-	-
		C309.3	3	3	3	-	2	2	-	3	3	3	-	2	-	-
		C309.4	3	3	3	-	3	3	-	3	3	3	-	2	-	-
		C309.5	3	3	3	-	3	3	-	3	3	3	-	2	-	-
		C309	3	3	2.8	-	2.6	2.4	-	2.6	2.8	3	-	2	-	-



Year/ SEM	Course	CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2	
III / VI	C310 - Solid State Drives	C310.1	3	3	3	3	3	-	-	-	2	2	2	2	3	-	
		C310.2	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3
		C310.3	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3
		C310.4	3	3	3	2	2	-	-	-	-	-	-	-	3	3	-
		C310.5	3	3	3	3	3	2	2	2	2	2	2	2	2	3	3
		C310	3	3	3	2.8	2.8	2	2	2	2	2	2	2	2	2.20	3
III / VI	C311 - Protection and Switchgear	C311.1	3	3	2	-	-	-	-	-	-	2	2	2	2	3	3
		C311.2	3	3	2	-	-	-	-	-	-	2	2	2	2	3	3
		C311.3	3	3	3	2	2	2	2	2	2	2	2	2	2	3	3
		C311.4	3	3	3	3	3	2	2	2	2	2	2	2	3	3	3
		C311.5	3	3	2	2	2	2	2	2	2	0	0	0	3	3	2
		C311	3	3	2.4	2.3	2.3	2	2	2	2	2	2	2	2	2.4	3
III / VI	C312 - Embedded Systems	C312.1	3	3	-	-	-	-	-	-	-	-	-	-	3	3	2
		C312.2	3	3	-	-	3	-	-	-	-	-	-	2	3	3	2
		C312.3	3	3	-	-	3	-	-	-	-	-	-	2	3	3	2
		C312.4	3	3	3	-	3	-	-	-	-	-	-	2	3	3	2
		C312.5	3	3	3	-	3	-	-	-	-	-	-	2	3	3	2
		C312	3	3	3	-	3	-	-	-	-	-	-	2	3	3	2



Year/ SEM	Course	CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
III / VI	C313 - Design of Electrical Machines	C313.1	3	3	3	3	-	-	-	-	-	-	-	-	3	-
		C313.2	3	3	3	3	-	-	-	-	-	-	2	-	3	-
		C313.3	3	3	3	3	-	-	-	-	-	-	2	-	3	-
		C313.4	3	3	3	3	-	-	-	-	-	-	2	-	3	-
		C313.5	3	3	3	3	-	-	-	-	-	-	2	-	3	-
		C313	3	3	3	3	-	-	-	-	-	-	2	-	3	-
III / VI	C314 - Special Electrical Machines	C314.1	3	3	2	-	2	-	-	-	-	-	-	-	3	2
		C314.2	3	3	2	-	2	-	-	-	-	-	2	-	3	2
		C314.3	3	3	2	-	2	-	-	-	-	-	-	-	3	2
		C314.4	3	3	2	-	2	-	-	-	-	-	2	-	3	2
		C314.5	3	3	2	-	2	-	-	-	-	-	-	-	3	2
		C314	3	3	2	-	2	-	-	-	-	-	2	-	3	2
III / VI	C315 - Power Electronics and Drives Laboratory	C315.1	3	2	3	-	3	-	-	-	-	-	3	-	3	2
		C315.2	3	2	3	-	3	-	-	-	-	-	3	-	3	2
		C315.3	3	2	3	-	3	-	-	-	-	-	3	-	3	2
		C315.4	3	2	3	-	3	-	-	-	-	-	3	-	3	2
		C315.5	3	2	3	-	3	-	-	-	-	-	3	-	3	2
		C315	3	2	3	-	3	-	-	-	-	-	3	-	3	2



Year/ SEM	Course	CO/PO	PO1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O1	PSO2	
III / VI	C316 - Microprocessors and Microcontrollers Laboratory	C316.1	3	-	-	-	-	-	-	3	-	-	-	3	3	2	
		C316.2	2	2	-	-	-	-	-	-	3	-	-	-	3	3	2
		C316.3	3	3	3	3	-	-	-	-	3	-	-	3	3	3	2
		C316.4	3	-	-	-	-	-	-	-	3	-	-	-	3	3	2
		C316.5	2	-	-	2	3	-	-	-	3	-	-	-	3	3	2
		C316	2.6	2.5	3	2.5	3	-	-	-	3	-	-	3	3	3	2
III / VI	C317 -Mini Project	C317.1	3	2	-	2		-		-	-	2	2	2	3	2	
		C317.2	3	2	2	2		-		-	-	2	2	2	3	2	
		C317.3	3	2	2	2		-		-	-	2	2	2	3	2	
		C317.4	3	2	2	2		-		-	-	2	-	-	3	2	
		C317.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		C317	3	2	2	2		-		-	-	2	2	2	3	2	



Gnanamani College of Technology
Namakkal - 637 018
Department of Electrical and Electronics Engineering



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PSO 1	PSO2	
IV/ VII	C401 - High Voltage Engineering	C401.1	3	3	3	3	-	2	2	2	2	2	2	3	3	3	
		C401.2	3	3	3	-	-	-	-	-	-	-	-	2	3	3	
		C401.3	3	3	3	3	-	-	-	-	-	-	-	3	3	3	3
		C401.4	3	3	2	2	-	-	-	-	-	-	-	2	3	3	3
		C401.5	3	3	3	3	-	2	2	2	2	2	2	2	3	3	3
		C401	3	3	2.8	2.75	-	2	2	2	2	2	2	2.25	2.8	3	3
IV/ VII	C402 - Power System Operation and Control	C402.1	3	3	3	2	2	2	2	-	-	-	-	2	3	2	
		C402.2	3	3	3	3	2	2	2	-	-	-	-	3	3	2	
		C402.3	3	3	3	3	2	2	2	-	2	2	2	3	3	2	
		C402.4	3	3	3	2	2	-	-	-	-	-	-	2	3	2	
		C402.5	3	3	2	2	3	2	2	-	2	2	2	2	3	3	2
		C402	3	3	2.8	2.4	2.2	2	2	-	2	2	2	2	2.6	3	2
IV/ VII	C403 - Renewable Energy Systems	C403.1	3	3	-	-	-	-	3	3	-	-	-	3	3	3	
		C403.2	3	3	-	-	3	-	3	3	-	-	-	3	3	3	
		C403.3	3	2	-	-	3	-	3	3	-	-	-	3	3	3	
		C403.4	3	3	-	-	-	-	3	3	-	-	-	3	3	3	
		C403.5	3	3	-	-	-	-	3	3	-	-	-	3	3	3	
		C403	3	3	-	-	3	-	3	3	-	-	-	3	3	3	



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2	PS O1	PS O2
IV/ VII	C404 - Introduction C Programming	C404.1	3	3	3	2	2	1	-	-	1	-	2	3	3	3
		C404.2	3	3	3	2	3	1	-	-	1	-	3	3	3	3
		C404.3	3	3	3	2	3	1	-	-	1	-	3	3	3	3
		C404.4	3	3	3	2	3	1	-	-	1	-	3	3	3	3
		C404.5	3	3	3	2	3	1	-	-	1	-	3	3	3	3
		C404	3	3	3	2	2.8	1	-	-	1	-	2.8	3	3	3
IV/ VII	C405 - Fiber Optics and Laser Instrumentation	C405.1	3	-	-	-	-	-	-	-	-	-	-	-	2	-
		C405.2	3	2	2	2	-	-	-	-	-	-	-	-	2	-
		C405.3	3	2	-	-	-	-	-	-	-	-	-	-	2	-
		C405.4	3	-	-	-	-	-	-	-	-	-	-	-	2	-
		C405.5	3	2	2	2	-	-	-	-	-	-	-	-	2	-
		C405	3	2	2	2	-	-	-	-	-	-	-	-	2	-
IV/ VII	C406 - Power Systems Transients	C406.1	3	3	2	-	-	2	2	-	-	-	-	3	3	-
		C406.2	3	3	3	-	-	2	2	-	-	-	2	3	3	2
		C406.3	3	3	2	-	-	2	2	-	-	-	2	3	3	2
		C406.4	3	3	2	-	2	2	2	-	-	-	-	3	3	-
		C406.5	3	3	3	-	2	2	2	-	-	-	2	3	3	-
		C406	3	3	2.4	-	2	2	2	-	-	-	2	3	3	2



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO 6	PO 7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
IV / VII	C407 - Power System Simulation Lab	C407.1	3	3	3	3	3	-	-	-	-	2	2	2	3	2
		C407.2	3	3	3	3	3	-	-	-	-	2	2	2	3	2
		C407.3	3	3	3	3	3	-	-	-	-	2	2	2	3	2
		C407.4	3	3	3	3	3	-	-	-	-	2	2	2	2	2
		C407.5	3	3	3	3	3	-	-	-	-	2	2	2	3	2
		C407	3	3	3	3	3	-	-	-	-	2	2	2	2.8	2
IV / VII	C408 – Renewable Energy Systems Laboratory	C408.1	3	3	3	3	3	-	3	3	3	-	-	3	3	3
		C408.2	3	3	3	3	3	-	3	3	3	-	-	3	3	3
		C408.3	3	3	3	3	3	-	3	3	3	-	-	3	3	3
		C408.4	3	3	3	3	3	-	3	3	3	-	-	3	3	3
		C408.5	3	3	3	3	3	-	3	3	3	-	-	3	3	3
		C408	3	3	3	3	3	-	3	3	3	-	-	3	3	3



Year/ SEM	Course	CO/PO	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO1 0	PO1 1	PO1 2	PSO 1	PSO 2
IV/ VIII	C409 - Electric Energy Generation, Utilization and Conservation	C409.1	3	3	3	2	-	2	2	-	-	-	-	2	2	2
		C409.2	3	3	3	2	-	2	2	-	-	-	-	2	2	2
		C409.3	3	3	2	0	-	2	2	-	-	-	-	2	2	2
		C409.4	3	3	3	2	2	2	2	-	-	-	-	2	2	2
		C409.5	3	3	3	3	2	2	2	-	-	-	-	2	2	2
		C409	3	3	2.85	2.25	2	2	2	-	-	-	-	2	2	2
IV/ VIII	C410 - Micro Controller based System Design	C410.1	3	-	3	2	2	-	2	-	-	-	-	2	3	2
		C410.2	3	-	3	2	2	-	2	-	-	-	2	2	3	2
		C410.3	3	-	3	2	2	-	2	-	-	2	2	2	3	2
		C410.4	3	-	3	2	2	-	2	-	-	2	-	2	3	2
		C410.5	3	-	-	2	2	-	2	-	-	2	-	2	3	2
		C410	3	-	3	2	2	-	2	-	-	2	2	2	3	2
IV/ VIII	C411 - PROJECT WORK	C411.1	3	3	2	3	3	2	3	2	2	2	3	3	3	3
		C411.2	3	3	2	3	3	2	3	2	2	2	3	3	3	3
		C411.3	3	3	2	3	3	2	3	2	2	2	3	3	3	3
		C411.4	3	3	2	3	3	2	3	3	3	3	3	3	3	3
		C411.5	3	3	2	3	3	2	3	3	3	3	3	3	3	3
		C411	3	3	2	3	3	2	3	2.4	2.4	2.4	3	3	3	3



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Namakkal - 637 018
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