

INFO INSTITUTE OF ENGINEERING, COIMBATORE

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

PROGRAM OUTCOMES

1.Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

2.Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

3.Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

4.Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

5.Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

6.The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

7.Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

8.Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

9.Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

10.Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and

write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAMME EDUCATIONAL OBJECTIVES

PEO I	To provide the students with a strong foundation in the required sciences in order to pursue studies in Electronics and Communication Engineering.
PEO II	To gain adequate knowledge to become good professional in electronic and communication engineering associated industries, higher education and research.
PEO III	To develop attitude in lifelong learning, applying and adapting new ideas and technologies as their field evolves.
PEO IV	To prepare students to critically analyze existing literature in an area of specialization and ethically develop innovative and research oriented methodologies to solve the problems identified.
PEO V	To inculcate in the students a professional and ethical attitude and an ability to visualize the engineering issues in a broader social context.

PROGRAM SPECIFIC OUTCOMES

- Design, develop and analyze electronic systems through application of relevant electronics, mathematics and engineering principles.
- Design, develop and analyze communication systems through application of fundamentals from communication principles, signal processing, and RF System Design & Electromagnetics.
- Adapt to emerging electronics and communication technologies and develop innovative solutions for existing and newer problems

COURSE OUTCOMES

Regulation 2021 Anna University Chennai

SUBJECT	COs
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I Semester		
HS3152 Professional English - I	CO1	To use appropriate words in a professional context.
	CO2	To gain understanding of basic grammatic structures and use them in right context
	CO3	To read and infer the denotative and connotative meanings of technical texts.
	CO4	To write definitions, descriptions, narrations and essays on various topics
MA3151 Matrices and Calculus	CO1	Use the matrix algebra methods for solving practical problems.
	CO2	Apply differential calculus tools in solving various application problems.
	CO3	Able to use differential calculus ideas on several variable functions.
	CO4	Apply different methods of integration in solving practical problems
	CO5	Apply multiple integral ideas in solving areas, volumes and other practical problems.
PH3151 Engineering Physics	CO1	Understand the importance of mechanics
	CO2	Express their knowledge in electromagnetic waves.
	CO3	Demonstrate a strong foundational knowledge in oscillations, optics and lasers
	CO4	Understand the importance of quantum physics.
	CO5	Comprehend and apply quantum mechanical principles towards the formation of energy bands.
CY3151 Engineering Chemistry	CO1	To infer the quality of water from quality parameter data and propose suitable treatment methodologies to treat water
	CO2	To identify and apply basic concepts of nanoscience and nanotechnology in designing the synthesis of nanomaterials for engineering and technology applications.
	CO3	To apply the knowledge of phase rule and composites for material selection requirements.
	CO4	To recommend suitable fuels for engineering processes and applications.
	CO5	To recognize different forms of energy resources and apply them for suitable applications in energy sectors
GE3151 Problem Solving and Python	CO1	Develop algorithmic solutions to simple computational problems
	CO2	Develop and execute simple Python programs

Programming	CO3	Write simple Python programs using conditionals and loops for solving problems.
	CO4	Decompose a Python program into functions.
	CO5	Represent compound data using Python lists, tuples, dictionaries etc.
	CO6	Read and write data from/to files in Python programs
GE3171 Problem Solving and Python Programming Laboratory	CO1	Develop algorithmic solutions to simple computational problems
	CO2	Develop and execute simple Python programs
	CO3	Implement programs in Python using conditionals and loops for solving problems.
	CO4	Deploy functions to decompose a Python program.
	CO5	Process compound data using Python data structures
	CO6	Utilize Python packages in developing software applications.
BS3171 Physics and Chemistry Laboratory	Physics Laboratory	
	CO1	Understand the functioning of various physics laboratory equipment.
	CO2	Use graphical models to analyze laboratory data.
	CO3	Use mathematical models as a medium for quantitative reasoning and describing physical reality
	CO4	Access, process and analyze scientific information.
	CO5	Solve problems individually and collaboratively.
	Chemistry Laboratory	
	CO1	To analyse the quality of water samples with respect to their acidity, alkalinity, hardness and DO
	CO2	To determine the amount of metal ions through volumetric and spectroscopic techniques
	CO3	To analyse and determine the composition of alloys.
	CO4	To learn simple method of synthesis of nanoparticles
	CO5	To quantitatively analyse the impurities in solution by electroanalytical techniques
	GE3172 English Laboratory	CO1
CO2		To listen to and understand different points of view in a discussion
CO3		To speak fluently and accurately in formal and informal communicative contexts
CO4		To describe products and processes and explain their uses and purposes clearly and accurately
CO5		To express their opinions effectively in both formal and informal discussions

II Semester

HS3252 Professional English - II	CO1	To compare and contrast products and ideas in technical texts
	CO2	To identify and report cause and effects in events, industrial processes through technical texts.
	CO3	To analyse problems in order to arrive at feasible solutions and communicate them in the written format.
	CO4	To present their ideas and opinions in a planned and logical manner
	CO5	To draft effective resumes in the context of job search.
MA3251 Statistics And Numerical Methods	CO1	Apply the concept of testing of hypothesis for small and large samples in real life problems.
	CO2	Apply the basic concepts of classifications of design of experiments in the field of agriculture.
	CO3	Appreciate the numerical techniques of interpolation in various intervals and apply the numerical techniques of differentiation and integration for engineering problems.
	CO4	Understand the knowledge of various techniques and methods for solving first and second order ordinary differential equations.
	CO5	Solve the partial and ordinary differential equations with initial and boundary conditions by using certain techniques with engineering applications.
PH3254 Physics For Electronics Engineering	CO1	Know basics of crystallography and its importance for varied materials properties.
	CO2	Gain knowledge on the electrical and magnetic properties of materials and their applications.
	CO3	Understand clearly of semiconductor physics and functioning of semiconductor devices
	CO4	Understand the optical properties of materials and working principles of various optical devices
	CO5	Appreciate the importance of nanotechnology and nanodevices.
BE3254 Electrical and Instrumentation Engineering	CO1	Explain the working principle of electrical machines
	CO2	Analyze the output characterizes of electrical machines.
	CO3	Choose the appropriate electrical machines for various applications
	CO4	Explain the types and operating principles of measuring instruments.
	CO5	Explain the basic power system structure and protection schemes.
GE3251 Engineering Graphics	CO1	Use BIS conventions and specifications for engineering drawing.
	CO2	Construct the conic curves, involutes and cycloid
	CO3	Solve practical problems involving projection of lines
	CO4	Draw the orthographic, isometric and perspective projections of simple solids.

	CO5	Draw the development of simple solids
EC3251 Circuit Analysis	CO1	Apply the basic concepts of circuit analysis such as Kirchoff's laws, mesh current and node voltage method for analysis of DC and AC circuits.
	CO2	Apply suitable network theorems and analyze AC and DC circuits.
	CO3	Analyze steady state response of any R, L and C circuits
	CO4	Analyze the transient response for any RC, RL and RLC circuits and frequency response of parallel and series resonance circuits.
	CO5	Analyze the coupled circuits and network topologies.
GE3271 Engineering Practices Laboratory	CO1	Draw pipe line plan; lay and connect various pipe fittings used in common household plumbing work; Saw; plan; make joints in wood materials used in common household wood work.
	CO2	Wire various electrical joints in common household electrical wire work.
	CO3	Weld various joints in steel plates using arc welding work; Machine various simple processes like turning, drilling, tapping in parts; Assemble simple mechanical assembly of common household equipments; Make a tray out of metal sheet using sheet metal work.
	CO4	Solder and test simple electronic circuits; Assemble and test simple electronic components on PCB.
EC3271 Circuit Analysis Laboratory	CO1	Design RL and RC circuits
	CO2	Verify Thevinin & Norton theorem KVL & KCL, and Super Position Theorems.
GE3272 Communication Laboratory	CO1	Speak effectively in group discussions held in formal/semi formal contexts.
	CO2	Discuss, analyse and present concepts and problems from various perspectives to arrive at suitable solutions
	CO3	Write emails, letters and effective job applications
	CO4	Write critical reports to convey data and information with clarity and precision
	CO5	Give appropriate instructions and recommendations for safe execution of tasks

III Semester		
MA3355 Random Processes And Linear Algebra	CO1	Explain the fundamental concepts of advanced algebra and their role in modern mathematics and applied contexts.
	CO2	Demonstrate accurate and efficient use of advanced algebraic techniques.
	CO3	Apply the concept of random processes in engineering disciplines..
	CO4	Understand the fundamental concepts of probability with a thorough knowledge of standard distributions that can describe certain real-life phenomenon.
	CO5	Understand the basic concepts of one and two dimensional random variables and apply them to model engineering problems.
CS3353 C Programming and Data Structures	CO1	Develop C programs for any real world/technical application
	CO2	Apply advanced features of C in solving problems
	CO3	Write functions to implement linear and non-linear data structure operations.
	CO4	Suggest and use appropriate linear/non-linear data structure operations for solving a given problem.
	CO5	Appropriately use sort and search algorithms for a given application.
	CO6	Apply appropriate hash functions that result in a collision free scenario for data storage and retrieval.
EC3354 Signals and Systems	CO1	Determine if a given system is linear/causal/stable.
	CO2	Determine the frequency components present in a deterministic signal
	CO3	Characterize continuous LTI systems in the time domain and frequency domain
	CO4	Characterize discrete LTI systems in the time domain and frequency domain
	CO5	Compute the output of an LTI system in the time and frequency domains
EC3353 Electronic Devices and Circuits	CO1	Explain the structure and working operation of basic electronic devices.
	CO2	Design and analyze amplifiers.
	CO3	Analyze frequency response of BJT and MOSFET amplifiers
	CO4	Design and analyze feedback amplifiers and oscillator principles
	CO5	Design and analyze power amplifiers and supply circuits.
EC3351 Control Systems	CO1	Compute the transfer function of different physical systems.
	CO2	Analyse the time domain specification and calculate the steady state error.
	CO3	Illustrate the frequency response characteristics of open loop and closed loop system response
	CO4	Analyse the stability using Routh and root locus techniques.
	CO5	Illustrate the state space model of a physical system and discuss the concepts of sampled data control system.

EC3352 Digital Systems Design	CO1	Use Boolean algebra and simplification procedures relevant to digital logic.
	CO2	Design various combinational digital circuits using logic gates.
	CO3	Analyse and design synchronous sequential circuits.
	CO4	Analyse and design asynchronous sequential circuits. .
	CO5	Build logic gates and use programmable devices
EC3361 Electronic Devices and Circuits Laboratory	CO1	Characteristics of PN Junction Diode and Zener diode.
	CO2	Design and Testing of BJT and MOSFET amplifiers.
	CO3	Operation of power amplifiers.
CS3362 C Programming and Data Structures Laboratory	CO1	Use different constructs of C and develop applications
	CO2	Write functions to implement linear and non-linear data structure operations
	CO3	Suggest and use the appropriate linear / non-linear data structure operations for a given problem
	CO4	Apply appropriate hash functions that result in a collision free scenario for data storage and Retrieval
	CO5	Implement Sorting and searching algorithms for a given application
GE3361 Professional Development	CO1	Use MS Word to create quality documents, by structuring and organizing content for their day to day technical and academic requirements
	CO2	Use MS EXCEL to perform data operations and analytics, record, retrieve data as per requirements and visualize data for ease of understanding
	CO3	Use MS PowerPoint to create high quality academic presentations by including common tables, charts, graphs, interlinking other elements, and using media objects.

IV Semester		
EC3452 Electromagnetic Fields	CO1	Relate the fundamentals of vector, coordinate system to electromagnetic concepts
	CO2	Analyze the characteristics of Electrostatic field
	CO3	Interpret the concepts of Electric field in material space and solve the boundary conditions
	CO4	Explain the concepts and characteristics of Magneto Static field in material space and solve boundary conditions.
	CO5	Determine the significance of time varying fields
EC3401 Networks and Security	CO1	Explain the Network Models, layers and functions.
	CO2	Categorize and classify the routing protocols.
	CO3	List the functions of the transport and application layer
	CO4	Evaluate and choose the network security mechanisms
	CO5	Discuss the hardware security attacks and countermeasures.
EC3451 Linear Integrated Circuits	CO1	Design linear and nonlinear applications of OP – AMPS
	CO2	Design applications using analog multiplier and PLL
	CO3	Design ADC and DAC using OP – AMPS
	CO4	Generate waveforms using OP – AMP Circuits
	CO5	Analyze special function ICs
EC3492 Digital Signal Processing	CO1	Apply DFT for the analysis of digital signals and systems
	CO2	Design IIR and FIR filters
	CO3	Characterize the effects of finite precision representation on digital filters
	CO4	Design multirate filters
	CO5	Apply adaptive filters appropriately in communication systems
EC3491 Communication Systems	CO1	Gain knowledge in amplitude modulation techniques
	CO2	Understand the concepts of Random Process to the design of communication systems
	CO3	Gain knowledge in digital techniques
	CO4	Gain knowledge in sampling and quantization
	CO5	Understand the importance of demodulation techniques
GE3451 Environmental Sciences and Sustainability	CO1	To recognize and understand the functions of environment, ecosystems and biodiversity and their conservation.
	CO2	To identify the causes, effects of environmental pollution and natural disasters and contribute to the preventive measures in the society.
	CO3	To identify and apply the understanding of renewable and non-renewable resources and contribute to the sustainable measures to preserve them for future generations.
	CO4	To recognize the different goals of sustainable development and apply them for suitable technological advancement and societal development

	CO5	To demonstrate the knowledge of sustainability practices and identify green materials, energy cycles and the role of sustainable urbanization.
EC3461 Communication Systems Laboratory	CO1	Design AM, FM & Digital Modulators for specific applications.
	CO2	Compute the sampling frequency for digital modulation
	CO3	Simulate & validate the various functional modules of Communication system
	CO4	Demonstrate their knowledge in base band signaling schemes through implementation of digital modulation schemes.
	CO5	Apply various channel coding schemes & demonstrate their capabilities towards the improvement of the noise performance of Communication system
EC3462 Linear Integrated Circuits Laboratory	CO1	Analyze various types of feedback amplifiers
	CO2	Design oscillators, tuned amplifiers, wave-shaping circuits and multivibrators
	CO3	Design and simulate feedback amplifiers, oscillators, tuned amplifiers, wave-shaping circuits and multivibrators, filters using SPICE Tool.
	CO4	Design amplifiers, oscillators, D-A converters using operational amplifiers
	CO5	Design filters using op-amp and perform an experiment on frequency response

V Semester		
EC3501 Wireless Communication	CO1	Understand The Concept And Design Of A Cellular System.
	CO2	Understand Mobile Radio Propagation And Various Digital Modulation Techniques
	CO3	Understand The Concepts Of Multiple Access Techniques And Wireless Networks
	CO4	Characterize a wireless channel and evolve the system design specifications
	CO5	Design a cellular system based on resource availability and traffic demands.
EC3552 VLSI and Chip Design	CO1	In depth knowledge of MOS technology
	CO2	Understand Combinational Logic Circuits and Design Principles
	CO3	Understand Sequential Logic Circuits and Clocking Strategies
	CO4	Understand Memory architecture and building blocks
	CO5	Understand the ASIC Design Process and Testing.
EC3551 Transmission Lines and RF Systems	CO1	Explain the characteristics of transmission lines and its losses
	CO2	Calculate the standing wave ratio and input impedance in high frequency transmission lines.
	CO3	Analyze impedance matching by stubs using Smith Charts.
	CO4	Comprehend the characteristics of TE and TM waves
	CO5	Design a RF transceiver system for wireless communication
EC3561 VLSI Laboratory	CO1	Write HDL code for basic as well as advanced digital integrated circuit
	CO2	Import the logic modules into FPGA Boards
	CO3	Synthesize Place and Route the digital Ips
	CO4	Design, Simulate and Extract the layouts of Digital & Analog IC Blocks using EDA tools
	CO5	Test and Verification of IC design
CEC366 Image Processing	CO1	Know and understand the basics and fundamentals of digital image processing, such as digitization, sampling, quantization, and 2D-transforms.
	CO2	Operate on images using the techniques of smoothing, sharpening and enhancement.
	CO3	Understand the restoration concepts and filtering techniques
	CO4	Learn the basics of segmentation, features extraction, compression and recognition methods for color models.
	CO5	Comprehend image compression concepts.
CBM368 Therapeutic Equipment	CO1	Suggest suitable therapeutic devices for ailments related to cardiology, pulmonology, neurology, etc
	CO2	Comprehend the principles of bodycare equipment
	CO3	Understand the operation of dental care equipment
	CO4	Analyze the different types of therapies for suitable applications.
	CO5	Appreciate the application of lasers in biomedical applications.

CEC345 Optical Communication & Networks	CO1	Realize Basic Elements In Optical Fibers, Different Modes And Configurations
	CO2	Analyze The Transmission Characteristics Associated With Dispersion And Polarization Techniques.
	CO3	Design Optical Sources And Detectors With Their Use In Optical Communication System
	CO4	Construct Fiber Optic Receiver Systems, Measurements And Techniques.
	CO5	Design Optical Communication Systems And Its Networks.
MX3084 Disaster Risk Reduction and Management	CO1	To impart knowledge on the concepts of Disaster, Vulnerability and Disaster Risk reduction (DRR)
	CO2	To enhance understanding on Hazards, Vulnerability and Disaster Risk Assessment prevention and risk reduction
	CO3	To develop disaster response skills by adopting relevant tools and technology
	CO4	Enhance awareness of institutional processes for Disaster response in the country
	CO5	Develop rudimentary ability to respond to their surroundings with potential Disaster response in areas where they live, with due sensitivity
MX3082 Elements of Literature	CO1	Students will be able to understand the relevance of literature in human life and appreciate its aspects in developing finer sensibilities.

VI Semester		
ET3491 Embedded Systems and IOT Design	CO1	Explain the architecture and features of 8051.
	CO2	Develop a model of an embedded system.
	CO3	List the concepts of real time operating systems.
	CO4	Learn the architecture and protocols of IOT.
	CO5	Design an IOT based system for any application.
CS3491 Artificial Intelligence and Machine Learning	CO1	Use appropriate search algorithms for problem solving
	CO2	Apply reasoning under uncertainty
	CO3	Build supervised learning models
	CO4	Build ensembling and unsupervised models
	CO5	Build deep learning neural network models
OEE351 Renewable Energy System	CO1	Attained knowledge about various renewable energy technologies
	CO2	Ability to understand and design a PV system.
	CO3	Understand the concept of various wind energy system
	CO4	Gained knowledge about various possible hybrid energy systems
	CO5	Attained knowledge about various application of renewable energy technologies
OCE351 Environmental and Social Impact Assessment	CO1	Carry out scoping and screening of developmental projects for environmental and social assessments
	CO2	Explain different methodologies for environmental impact prediction and assessment
	CO3	Plan environmental impact assessments and environmental management plans
	CO4	Evaluate environmental impact assessment reports
CEC335 Antenna Design	CO1	Describe the basics of phased array antennas
	CO2	Understand random process and its application in Smart antennas
	CO3	Estimate the weights of the antenna array based on the angle of arrival
	CO4	Analyze the fixed weight beamforming in smart antennas
	CO5	Analyze adaptive beamforming in smart antennas
CEC352 Satellite Communication	CO1	Identify the satellite orbits
	CO2	Analyze the satellite subsystems
	CO3	Evaluate the satellite link power budget
	CO4	Identify access technology for satellite
	CO5	Design various satellite applications
CEC368 Iot Based Systems Design	CO1	Articulate the main concepts, key technologies, strength and limitations of IoT.
	CO2	Identify the architecture, infrastructure models of IoT.

	CO3	Analyze the networking and how the sensors are communicated in IoT .
	CO4	Analyze and design different models for IoT implementation.
	CO5	Identify and design the new models for market strategic interaction.
CEC341 MICs and RF System Design	CO1	Apply knowledge of S parameter theory to any RF active component design circuit for obtaining performance measure.
	CO2	Analyze microwave circuits for filters design
	CO3	Evaluate the performance of any practical Microwave integrated circuits
	CO4	Create communication circuits and subsystems with practical design parameters for non-reciprocal components in MICs.
	CO5	Design microwave integrated antenna design circuit for the required Performance using professional software tools.
MX3089 Industrial Safety	CO1	Understand the basic concept of safety
	CO2	Obtain knowledge of Statutory Regulations and standards.
	CO3	Know about the safety Activities of the Working Place.
	CO4	Analyze on the impact of Occupational Exposures and their Remedies
	CO5	Obtain knowledge of Risk Assessment Techniques.

VII Semester		
GE3751 Principles of Management	CO1	Upon completion of the course, students will be able to have clear understanding of managerial functions like planning, organizing, staffing, leading & controlling.
	CO2	Have same basic knowledge on international aspect of management.
	CO3	Ability to understand management concept of organizing.
	CO4	Ability to understand management concept of directing.
	CO5	Ability to understand management concept of controlling
OIE352 Resource Management Techniques	CO1	Understand to formulate linear programming problems and solve LPP using simple algorithm
	CO2	Understand to solve networking problems
	CO3	Understand to formulate and solve integer programming problems
	CO4	Understand to solve Non Linear programming problems
	CO5	Understand to understand and solve project management problems
AI3021 IT in Agricultural System	CO1	The students shall be able to understand the applications of IT in remote sensing applications such as Drones etc.
	CO2	The students will be able to get a clear understanding of how a greenhouse can be automated and its advantages
	CO3	The students will be able to apply IT principles and concepts for management of field operations
	CO4	The students will get an understanding about weather models, their inputs and applications.
	CO5	The students will get an understanding of how IT can be used for e-governance in agriculture.
OHS351 English For Competitive Examinations	CO1	Expand their vocabulary and gain practical techniques to read and comprehend a wide range of texts with the emphasis required
	CO2	Identify errors with precision and write with clarity and coherence
	CO3	Understand the importance of task fulfilment and the usage of task-appropriate vocabulary
	CO4	Communicate effectively in group discussions, presentations and interviews
	CO5	Write topic based essays with precision and accuracy
OMG352 NGOs and Sustainable Development	CO1	Have a thorough grounding on the issues and challenges being faced in attaining sustainable development
	CO2	Have a knowledge on the role of NGOs towards sustainable development
	CO3	Present strategies for NGOs in attaining sustainable development
	CO4	Recognize the importance of providing energy, food security and health equity to all members of the society without damaging the environment
	CO5	Understand the environmental legislations
CBM356 Medical Informatics	CO1	Explain the structure and functional capabilities of Hospital Information System.
	CO2	Describe the need of computers in medical imaging and automated

		clinical laboratory
	CO3	Articulate the functioning of information storage and retrieval in computerized patient record system
	CO4	Apply the suitable decision support system for automated clinical diagnosis.
	CO5	Discuss the application of virtual reality and telehealth technology in medical industry
OBT356 Lifestyle Diseases	CO1	To know the details of Lifestyle Diseases
	CO2	Understand about cancer types and its causes
	CO3	Describe cardiovascular diseases and its treatment methods.
	CO4	Basic knowledge about diabetes and obesity
	CO5	Discuss respiratory diseases and its causes.

VIII Semester

EC3811 Project Work/ Internship	CO1	Formulate and analyze problem / create a new product/ process
	CO2	Design and conduct experiments to find solution
	CO3	Analyze the results and provide solution for the identified problem, prepare project report and make presentation.