



Adi Shankara

INSTITUTE OF ENGINEERING AND TECHNOLOGY, KALADY

Approved by AICTE & Affiliated to APJ Abdul Kalam Technological University

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B TECH ELECTRICAL AND ELECTRONICS ENGINEERING

2019 Scheme Syllabus- Course Outcomes

S1S2 B. Tech (2019) Syllabus

COURSE NAME	COURSE CODE	COURSE OUTCOME CODE	COURSE OUTCOME STATEMENTS
BASICS OF CIVIL & MECHANICAL ENGINEERING	EST 120	CO 1	Recall the role of civil engineer in society and to relate the various disciplines of Civil Engineering.
		CO 2	Explain different types of buildings, building components, building materials and building construction
		CO 3	Describe the importance, objectives and principles of surveying.
		CO 4	Summarize the basic infrastructure services MEP, HVAC, elevators, escalators and ramps
		CO 5	Discuss the Materials, energy systems, water management and environment for green buildings.
		CO 6	Analyze thermodynamic cycles and calculate its efficiency
		CO 7	Illustrate the working and features of IC Engines
		CO 8	Explain the basic principles of Refrigeration and Air Conditioning
		CO 9	Describe the working of hydraulic machines
		CO 10	Explain the working of power transmission elements
		CO 11	Describe the basic manufacturing, metal joining and machining processes
BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING	EST 130	CO 1	Apply fundamental concepts and circuit laws to solve simple DC electric circuits
		CO 2	Develop and solve models of magnetic circuits
		CO 3	Apply the fundamental laws of electrical engineering to solve simple ac circuits in steady state
		CO 4	Describe working of a voltage amplifier
		CO 5	Outline the principle of an electronic instrumentation system
		CO 6	Explain the principle of radio and cellular communication
CIVIL & MECHANICAL WORKSHOP	ESL 120	CO 1	Name different devices and tools used for civil engineering measurements
		CO 2	Explain the use of various tools and devices for various field measurements

		CO 3	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.
		CO 4	Choose materials and methods required for basic civil engineering activities like field measurements, masonry work and plumbing.
		CO 5	Compare different techniques and devices used in civil engineering measurements
		CO 6	Identify Basic Mechanical workshop operations in accordance with the material and objects
		CO 7	Apply appropriate Tools and Instruments with respect to the mechanical workshop trades
		CO 8	Apply appropriate safety measures with respect to the mechanical workshop trades
PROGRAMING IN C	EST 102	CO 1	Analyze a computational problem and develop an algorithm/flowchart to find its solution
		CO 2	Develop readable* C programs with branching and looping statements, which uses Arithmetic, Logical, Relational or Bitwise operators.
		CO 3	Write readable C programs with arrays, structure or union for storing the data to be processed
		CO 4	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
		CO 5	Write readable C programs which use pointers for array processing and parameter passing
		CO 6	Develop readable C programs with files for reading input and storing output
ELECTRICAL & ELECTRONICS WORKSHOP	ESL 130	CO 1	Demonstrate safety measures against electric shocks.
		CO 2	Identify the tools used for electrical wiring, electrical accessories, wires, cables, batteries and standard symbols
		CO 3	Develop the connection diagram, identify the suitable accessories and materials necessary for wiring simple lighting circuits for domestic buildings
		CO 4	Identify and test various electronic components
		CO 5	Draw circuit schematics with EDA tools
		CO 6	Assemble and test electronic circuits on boards
		CO 7	Work in a team with good interpersonal skills
ENGINEERING GRAPHICS	EST 110	CO 1	Draw the projection of points and lines located in different quadrants
		CO 2	Prepare multiview orthographic projections of objects by visualizing them in different positions
		CO 3	Draw sectional views and develop surfaces of a given object
		CO 4	Prepare pictorial drawings using the principles of isometric and perspective projections to visualize objects in three dimensions.
		CO 5	Convert 3D views to orthographic views
		CO 6	Obtain multiview projections and solid models of objects using CAD tools
	EST 100	CO 1	Recall principles and theorems related to rigid body mechanics

ENGINEERING MECHANICS		CO 2	Identify and describe the components of system of forces acting on the rigid body
		CO 3	Apply the conditions of equilibrium to various practical problems involving different force system.
		CO 4	Choose appropriate theorems, principles or formulae to solve problems of mechanics.
		CO 5	Solve problems involving rigid bodies, applying the properties of distributed areas and masses
ENGINEERING CHEMISTRY	CYT 100	CO 1	Apply the basic concepts of electrochemistry and corrosion to explore its possible applications in various engineering fields.
		CO 2	Understand various spectroscopic techniques like UV-Visible, IR, NMR and its applications.
		CO 3	Apply the knowledge of analytical method for characterizing a chemical mixture or a compound. Understand the basic concept of SEM for surface characterization of nanomaterials.
		CO 4	Learn about the basics of stereochemistry and its application. Apply the knowledge of conducting polymers and advanced polymers in engineering.
		CO 5	Study various types of water treatment methods to develop skills for treating wastewater.
ENGINEERING CHEMISTRY LAB	CYL 120	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 practical skill to use TLC for the identification of drugs
		CO 3	Develop the ability to understand and explain the use of modern spectroscopic techniques for analyzing and interpreting the IR spectra and NMR spectra of some organic compounds
		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
ENGINEERING PHYSICS	PHT100	CO1	Compute the quantitative aspects of waves and oscillations in engineering systems.
		CO2	Compute the quantitative aspects of waves and oscillations in engineering systems.
		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	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories

ENGINEERING PHYSICS LAB	PHL 120	CO2	Develop analytical/experimental skills and impart prerequisite hands on experience for engineering laboratories
		CO3	Understand the principle, concept, working and applications of relevant technologies and comparison of results with theoretical calculations
		CO4	Analyze the techniques and skills associated with modern scientific tools such as lasers and fiber optics
		CO5	Develop basic communication skills through working in groups in performing the laboratory experiments and by interpreting the results
LINEAR ALGEBRA AND CALCULUS	MAT 101	CO1	Solve systems of linear equations, diagonalize matrices and characterise quadratic forms
		CO2	Compute the partial and total derivatives and maxima and minima of multivariable functions
		CO3	Compute the partial and total derivatives and maxima and minima of multivariable functions
		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.
VECTOR CALCULUS, DIFFERENTIAL EQUATIONS AND TRANSFORMS	MAT 102	CO1	Compute the derivatives and line integrals of vector functions and learn their applications
		CO2	Compute the derivatives and line integrals of vector functions and learn their applications
		CO3	Solve homogeneous and non-homogeneous linear differential equation with constant coefficients
		CO4	Compute Laplace transform and apply them to solve ODEs arising in engineering
		CO5	Compute Laplace transform and apply them to solve ODEs arising in engineering
LIFE SKILLS	HUN 101	CO1	Define and identify different life skills required in personal and professional life
		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.
		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
PROFESSIONAL COMMUNICATION	HUN 102	CO1	Develop vocabulary and language skills relevant to engineering as a profession
		CO2	Analyze, interpret and effectively summarize a variety of textual content
		CO3	Create effective technical presentations
		CO4	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus

		CO5	Discuss a given technical/non-technical topic in a group setting and arrive at generalizations/consensus
		CO6	Create professional and technical documents that are clear and adhering to all the necessary conventions



2019 Scheme Syllabus- Course Outcomes

S3 S4 B. Tech (2019) Syllabus

COURSE NAME	COURSE CODE	COURSE OUTCOME CODE	COURSE OUTCOME STATEMENTS
CIRCUITS AND NETWORKS	EET201	CO 1	Apply circuit theorems to simplify and solve complex DC and AC electric networks.
		CO 2	Analyze dynamic DC and AC circuits and develop the complete response to excitations
		CO 3	Solve dynamic circuits by applying transformation to s-domain
		CO 4	Analyze three-phase networks in Y and Δ configurations.
		CO 5	Solve series /parallel resonant circuits.
		CO6	Develop the representation of two-port networks using network parameters and analyze
MEASUREMENTS AND INSTRUMENTATION	EET203	CO 1	Identify and analyze the factors affecting performance of measuring system
		CO 2	Choose appropriate instruments for the measurement of voltage, current in ac and dc measurements
		CO 3	Explain the operating principle of power and energy measurement
		CO 4	Outline the principles of operation of Magnetic measurement systems
		CO 5	Describe the operating principle of DC and AC bridges, transducers-based systems
		CO6	Understand the operating principles of basic building blocks of digital systems, recording and display units
ANALOG ELECTRONICS	EET205	CO 1	Design biasing scheme for transistor circuits.
		CO 2	Model BJT and FET amplifier circuit
		CO 3	Identify a power amplifier with appropriate specifications for electronic circuit applications

		CO4	Describe the operation of oscillator circuits using BJT
		CO5	Explain the basic concepts of Operational Amplifier (OP-AMP)
		CO6	Design and develop various OP-AMP application circuits.
CIRCUITS AND MEASUREMENTS LAB	EEL201	CO 1	Analyze voltage current relations of RLC circuits
		CO 2	Verify DC network theorems by setting up various electric circuits
		CO 3	Measure power in a single and three phase circuits by various methods
		CO 4	Calibrate various meters used in electrical systems
		CO 5	Determine magnetic characteristics of different electrical devices
		CO 6	Analyze the characteristics of various types of transducer systems
		CO7	Determine electrical parameters using various bridges
		CO8	Analyze the performance of various electronic devices for an instrumentation system and, to develop the team management and documentation capabilities
ANALOG ELECTRONICS LAB	EEL203	CO 1	Use the various electronic instruments and for conducting experiments.
		CO 2	Design and develop various electronic circuits using diodes and Zener diodes.
		CO 3	Design and implement amplifier and oscillator circuits using BJT and JFET
		CO 4	Design and implement basic circuits using IC (OPAMP and 555 timers).
		CO5	Simulate electronic circuits using any circuit simulation software
		CO6	Use PCB layout software for circuit design
DC MACHINES AND TRANSFORMERS	EET202	CO 1	Acquire knowledge about constructional details of DC machines
		CO 2	Describe the performance characteristics of DC generators
		CO 3	Describe the principle of operation of DC motors and select appropriate motor types for different applications
		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	Analyze the performance of transformers under various conditions
ELECTROMAGNETIC THEORY	EET204	CO 1	Apply vector analysis and coordinate systems to solve static electric and magnetic field problems.
		CO 2	Apply Gauss Law, Coulomb's law and Poisson's equation to determine electrostatic field parameters
		CO 3	Determine magnetic fields from current distributions by applying Biot-Savart's law and Amperes Circuital law
		CO 4	Apply Maxwell Equations for the solution of Time varying fields
		CO 5	Analyze electromagnetic wave propagation in different media
DIGITAL ELECTRONICS	EET206	CO 1	Identify various number systems, binary codes and formulate digital functions using Boolean algebra.
		CO 2	Design and implement combinational Logic circuits
		CO 3	Design and implement sequential logic circuits
		CO 4	Compare the operation of various analog to digital and digital to analog conversion circuits.
		CO 5	Explain the basic concepts of programmable logic devices and VHDL
ELECTRICAL MACHINES LAB I	EEL202	CO 1	Analyze the performance of DC motors and DC generators by performing load test.
		CO 2	Sketch the Open Circuit Characteristics of a self-excited DC shunt generator and check conditions of voltage build up by performing suitable experiment.
		CO 3	Develop equivalent circuit and predetermine their regulation and efficiency by performing OC & SC tests on transformer.
		CO4	Analyze the efficiency and regulation of the transformer by performing load test
		CO5	Analyze 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
DIGITAL ELECTRONICS LAB	EEL204	CO 1	Formulate digital functions using Boolean Algebra and verify experimentally.
		CO 2	Design and implement combinational logic circuits
		CO 3	Design and implement sequential logic circuits
		CO4	Design and fabricate a digital circuit using the knowledge acquired from the laboratory



2019 Scheme Syllabus- Course Outcomes

S5 S6 B. Tech (2019) Syllabus

COURSE NAME	COURSE CODE	COURSE OUTCOME CODE	COURSE OUTCOME STATEMENTS
POWER SYSTEMS I	EET301	CO 1	Identify the power generating system appropriate for a given area.
		CO 2	Evaluate the electrical performance of any transmission line.
		CO 3	Compute various physical characteristics of underground and overhead transmission systems.
		CO 4	Select appropriate switchgear for protection schemes
		CO 5	Design a simple electrical distribution system as per the standards.
MICROPROCESSORS AND MICROCONTROLLERS	EET303	CO 1	Describe the architecture and timing diagram of 8085 microprocessor
		CO 2	Develop assembly language programs in 8085 microprocessors
		CO 3	Identify the different ways of interfacing memory and I/O with 8085 microprocessors
		CO 4	Understand the architecture of 8051 microcontroller and embedded systems
		CO 5	Develop assembly level and embedded C programs in 8051 microcontrollers
		CO 6	Explain the architecture of DSP processor (TMS320C67xx) and the finite word length effects
SIGNALS AND SYSTEMS	EET305	CO 1	Explain the basic operations on signals and systems
		CO 2	Apply Fourier Series and Fourier Transform concepts for continuous time signals.

		CO 3	Analyse the continuous time systems with Laplace Transform.
		CO4	Analyse the discrete time system using Z Transform.
		CO5	Apply Fourier Series and Fourier Transform concepts for Discrete time domain.
		CO6	Describe the concept of stability of continuous time systems and sampled data systems.
SYNCHRONOUS AND INDUCTION MACHINES	EET307	CO 1	Analyse the performance of different types of alternators
		CO 2	Analyse the performance of a synchronous motor.
		CO 3	Analyse the performance of different types of induction motors.
		CO 4	Describe operating principle of induction machine as generator.
		CO 5	Explain the types of single-phase induction motors and their working principle.
MICROPROCESSORS AND MICROCONTROLLER S LAB	EEL331	CO 1	Develop and execute assembly language programs for solving arithmetic and logical problems using microprocessor/microcontroller.
		CO 2	Design and Implement systems with interfacing circuits for various applications
		CO 3	Execute projects as a team using microprocessor/microcontroller for real life applications.
ELECTRICAL MACHINES LAB II	EEL333	CO 1	Analyse the performance of single phase and three phase induction motors by conducting suitable tests.
		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
LINEAR CONTROL SYSTEMS	EET302	CO 1	Describe the role of various control blocks and components in feedback systems.
		CO 2	Analyse the time domain responses of the linear systems
		CO 3	Apply Root locus technique to assess the performance of linear systems
		CO 4	Analyse the stability of the given LTI systems
		CO 5	Analyse the frequency domain response of the given LTI systems
		CO6	Design compensators using time domain and frequency domain techniques
POWER SYSTEMS II	EET304	CO 1	Apply the per unit scheme for any power system network and compute the fault levels
		CO 2	Analyse the voltage profile of any given power system network using iterative methods.

		CO 3	Analyse the steady state and transient stability of power system network
		CO 4	Model the control scheme of power systems
		CO 5	Schedule optimal generation scheme.
POWER ELECTRONICS	EET306	CO 1	Explain the operation of modern power semiconductor devices and its characteristics.
		CO 2	Analyse the working of controlled rectifiers.
		CO 3	Explain the working of AC voltage controllers, inverters and PWM techniques.
		CO4	Compare the performance of different dc-dc converters
		CO5	Describe basic drive schemes for ac and dc motors.
COMPREHENSIVE COURSE WORK	EET308	CO 1	Apply the knowledge of circuit theorems to solve the problems in electrical networks
		CO 2	Evaluate the performance of DC machines and Transformers under different loading conditions
		CO 3	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
		CO5	Apply appropriate mathematical concepts to analyse continuous time and discrete time signals and systems
POWER SYSTEMS LAB	EEL332	CO 1	Develop mathematical models and conduct steady state and transient analysis of power system networks using standard software.
		CO 2	Develop a frequency domain model of power system networks and conduct the stability analysis.
		CO 3	Conduct appropriate tests for any power system component as per standards
		CO4	Conduct site inspection and evaluate performance ratio of solar power plant.
		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
		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.

POWER ELECTRONICS LAB	EEL334	CO6	Develop simulation models of dc-dc converters, rectifiers and inverters using modern simulation tools
INDUSTRIAL ECONOMICS & FOREIGN TRADE	HUT 300	CO1	Explain the problem of scarcity of resources and consumer behaviour, and to evaluate the impact of government policies on the general economic welfare.
		CO2	Take appropriate decisions regarding volume of output and to evaluate the social cost of production.
		CO3	Determine the functional requirement of a firm under various competitive conditions.
		CO4	Examine the overall performance of the economy, and the regulation of economic fluctuations and its impact on various sections in the society.
		CO5	Determine the impact of changes in global economic policies on the business opportunities of a firm.
DISASTER MANAGEMENT	MCN 301	CO1	Define and use various terminologies in use in disaster management parlance and organise each of these terms in relation to the disaster management cycle
		CO2	Distinguish between different hazard types and vulnerability types and do vulnerability assessment
		CO3	Identify the components and describe the process of risk assessment, and apply appropriate methodologies to assess risk
		CO4	Explain the core elements and phases of Disaster Risk Management and develop possible measures to reduce disaster risks across sector and community
		CO5	Identify factors that determine the nature of disaster response and discuss the various disaster response actions
		CO6	Explain the various legislations and best practices for disaster management and risk reduction at national and international level
BIOMEDICAL INSTRUMENTATION	EET312	CO1	Explain the basics of anatomy and physiology of human body
		CO2	Explain different techniques for the measurement of various physiological parameters
		CO3	Describe modern imaging techniques for medical diagnosis
		CO4	Describe modern imaging techniques for medical diagnosis
		CO5	Discuss the patient safety measures and recent advancements in medical field.
		CO1	Describe the environmental aspects of renewable energy resources

RENEWABLE ENERGY SYSTEMS	EET 322	CO2	Explain the operation of various renewable energy systems
		CO3	Design solar PV systems.
		CO4	Explain different emerging energy conversion technologies and storage



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2019 Scheme Syllabus- Course Outcomes

S7 S8 B. Tech (2019) Syllabus

COURSE NAME	COURSE CODE	COURSE OUTCOME CODE	COURSE OUTCOME STATEMENTS
ADVANCED CONTROL SYSTEMS	EET401	CO 1	Develop the state variable representation of physical systems
		CO 2	Analyse the performance of linear and nonlinear systems using state variable approach
		CO 3	Design state feedback controller for a given system
		CO 4	Explain the characteristics of nonlinear systems
		CO 5	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.
CONTROL SYSTEMS LAB	EEL411	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.
		CO4	Design controllers for physical systems to meet the desired specifications
SEMINAR	EEQ413	CO 1	Identify academic documents from the literature which are related to her/his areas of interest
		CO 2	Read and apprehend an academic document from the literature which is related to her/ his areas of interest
		CO 3	Prepare a presentation about an academic document
		CO4	Give a presentation about an academic document
		CO5	Prepare a technical report
PROJECT PHASE I	EED415	CO 1	Model and solve real world problems by applying knowledge across domains
		CO 2	Develop products, processes or technologies for sustainable and socially relevant applications

		CO 3	Function effectively as an individual and as a leader in diverse teams and to comprehend and execute designated tasks
		CO 4	Plan and execute tasks utilizing available resources within timelines, following ethical and professional norms
		CO 5	Identify technology/research gaps and propose innovative/creative solutions
		CO6	Organize and communicate technical and scientific findings effectively in written and oral forms
ILLUMINATION TECHNOLOGY	EET463	CO1	Explain the fundamental concepts of natural and artificial lighting schemes
		CO2	Design efficient indoor lighting systems
		CO3	Design efficient outdoor lighting systems
		CO4	Describe aesthetic and emergency lighting systems
SMART GRID TECHNOLOGIES	EET 434	CO1	Explain the basic concept of distributed energy resources, micro-grid and smart grid
		CO2	Choose appropriate Information and Communication Technology (ICT) in smart grid
		CO3	Select infrastructure and technologies for consumer domain of smart grid
		CO4	Select infrastructure and technologies for smart substation and distribution automation
		CO5	Formulate cloud computing infrastructure for smart grid considering cyber security
		CO6	Categorize power quality issues and appraise it in smart grid context
SPECIAL ELECTRICAL MACHINES	EET 426	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.
ENERGY STORAGE SYSTEMS	EET438	CO1	Identify the role of energy storage in power systems
		CO2	Classify thermal, kinetic and potential storage technologies and their applications
		CO3	Compare Electrochemical, Electrostatic and Electromagnetic storage technologies
		CO4	Illustrate energy storage technology in renewable energy integration
		CO5	Summarise energy storage technology applications for smart grids
ELECTRICAL SYSTEM DESIGN AND ESTIMATION	EET4 02	CO1	Explain the rules and regulations in the design of components for medium and high voltage installations
		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

ENERGY MANAGE MENT	EET 424	CO1	Analyse the significance of energy management and auditing
		CO2	Discuss the energy efficiency and management of electrical loads.
		CO3	Apply demand side management techniques.
		CO4	Explain the energy management opportunities in industries.
		CO5	Compute the economic feasibility of the energy conservation measures.
		CO6	Organize and communicate technical and scientific findings effectively in written and oral forms
PROJECT PHASE II	ECD4 16	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
		CO6	Organize and communicate technical and scientific findings effectively in written and oral forms