DEPARTMENT OF EEE
COURSE OUTCOME
2021 REGULATION

SEMESTER	THEORY /PRACTICAL	COURSE CODE	COURSE NAME	COURSE OUTCOME
I	THEORY	HS3151	Professional English - I	CO1. To listen and comprehend complex academic texts CO2. To read and infer the denotative and connotative meanings of technical texts CO3.To write definitions, descriptions, narrations and essays on various topics CO4.To speak fluently and accurately in formal and informal communicative contexts CO5 To express their opinions effectively in both oral and written medium of communication
	THEORY	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.
	THEORY	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.
	THEORY	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 Nano science and nanotechnology in designing the synthesis of nano materials 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.
	THEORY	GE3151	Problem Solving and Python Programming	CO1: Develop algorithmic solutions to simple computational problems. CO2: Develop and execute simple Python programs. CO3: Write simple Python programs using conditionals and looping 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.
	THEORY	GE3152	Scientific Thoughts in Tamil	
	PRACTICAL	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.
	PRACTICAL	BS3171	Physics and Chemistry Laboratory Physics Chemistry	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. CO6. To analyze the quality of water samples with respect to

				their acidity, alkalinity, hardness and DO. CO7. To determine the amount of metal ions through volumetric and spectroscopic techniques CO8. To analyse and determine the composition of alloys. CO9. To learn simple method of synthesis of nanoparticles CO10. To quantitatively analyse the impurities in solution by electro analytical techniques
	PRACTICAL	GE3172	English Laboratory	.
II	THEORY	HS3251	Professional English - II	CO1. To compare and contrast products and ideas in technical texts. CO2. To identify cause and effects in events, industrial processes through technical texts CO3. To analyse problems in order to arrive at feasible solutions and communicate them orally and in the written format. CO4. To report events and the processes of technical and industrial nature. CO5. To present their opinions in a planned and logical manner, and draft effective resumes in context of job search.
	THEORY	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.

	THEORY	PH3202	Physics for Electrical Engineering	CO1. Know basics of dielectric materials and insulation. 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 nano devices.
	THEORY	BE3255	Basic Civil and Mechanical Engineering	CO1: Understanding profession of Civil and Mechanical engineering. CO2: Summarise the planning of building, infrastructure and working of Machineries. CO3: Apply the knowledge gained in respective discipline CO4: Illustrate the ideas of Civil and Mechanical Engineering applications. CO5: Appraise the material, Structures, machines and energy.
	THEORY	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.
	THEORY	EE3251	Electric Circuit Analysis	CO1: Explain circuit's behavior using circuit laws. CO2: Apply mesh analysis/ nodal analysis / network theorems to determine behavior of the given DC and AC circuit CO3: Compute the transient response of first order and second order systems to step and sinusoidal input CO4: Compute power, line/ phase voltage and currents of the given three phase circuit CO5: Explain the frequency response of series and parallel RLC circuits

				CO6: Explain the behavior of magnetically coupled circuits
	THEORY	GE3252	Heritage of Tamils	
	PRACTICAL	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
	PRACTICAL	EE3271	Electric Circuits Laboratory	CO1. Use simulation and experimental methods to verify the fundamental electrical laws for the given DC/AC circuit (Ex 1) CO2. Use simulation and experimental methods to verify the various electrical theorems (Superposition, Thevenin , Norton and maximum power transfer) for the given DC/AC circuit (Ex 2-5) CO3. Analyze transient behavior of the given RL/RC/RLC circuit using simulation and experimental methods (Ex 6) CO4. Analyze frequency response of the given series and parallel RLC circuit using simulation and experimentation methods (Ex 7-8) CO5. Analyze the performance of the given three-phase circuit using simulation and experimental methods (Ex 9)

	PRACTICAL	GE3272	Communication Laboratory / Foreign Language$	
III	THEORY	MA3303	Probability and Complex Functions	CO1: Understand the fundamental knowledge of the concepts of probability and have knowledge of standard distributions which can describe real life phenomenon. CO2: Understand the basic concepts of one and two dimensional random variables and apply in engineering applications. CO3: To develop an understanding of the standard techniques of complex variable theory in particular analytic function and its mapping property. CO4: To familiarize the students with complex integration techniques and contour integration techniques which can be used in real integrals. CO5: To acquaint the students with Differential Equations which are significantly used in engineering problems.
	THEORY	EE3301	Electromagnetic Fields	CO1: Explain Gradient, Divergence, and Curl operations on electromagnetic vector fields. CO2: Explain electrostatic fields, electric potential, energy density and their applications. CO3: Calculate magneto static fields, magnetic flux density, vector potential CO4: Explain different methods of emf generation and Maxwell's equations CO5: Explain the concept of electromagnetic waves and characterizing parameters
	THEORY	EE3302	Digital Logic Circuits	CO1: Explain various number systems and characteristics of digital logic families CO2: Apply K-maps and Quine McCluskey methods to simplify the given Boolean expressions CO3: Explain the implementation of combinational circuit such as multiplexers

				and de multiplexers - code converters, adders, subtractors, Encoders and Decoders CO4: Design various synchronous and asynchronous circuits using Flip Flops CO5: Explain asynchronous sequential circuits and programmable logic devices CO6: Use VHDL for simulating and testing RTL, combinatorial and sequential circuits
	THEORY	EC3301	Electron Devices and Circuits	CO1: Explain the structure and operation of PN junction devices (diode, Zener diode, LED and Laser diode) CO2: Design clipper, clamper, half wave and full wave rectifier, regulator circuits using PN junction diodes CO3: Analyze the structure and characteristics BJT, FET, MOSFET, UJT, Thyristor and IGBT CO4: Analyze the performance of various configurations of BJT and MOSFET based amplifier CO5: Explain the characteristics of MOS based cascade and differential amplifier CO6: Explain the operation of various feedback amplifiers and oscillators
	THEORY	EE3303	Electrical Machines - I	CO1: Apply the laws governing the electromechanical energy conversion for singly and multiple excited systems. CO2: Explain the construction and working principle of DC machines. CO3: Interpret various characteristics of DC machines. CO4: Compute various performance parameters of the machine, by conducting suitable tests. CO5: Draw the equivalent circuit of transformer and predetermine the efficiency and regulation. CO6: Describe the working principle of auto transformer, three phase transformer with different types of connections.
	THEORY	CS3354	Data Structures and OOPS	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.
	PRACTICAL	EC3311	Electronic Devices and Circuits Laboratory	CO1: Analyze the characteristics of PN, Zener diode and BJT in CE,CC,CB configurations experimentally CO2: Analyze the characteristics of JFET and UJT experimentally CO3: Analyze frequency response characteristics of a Common Emitter amplifier experimentally CO4: Analyze the characteristics of RC phase shift and LC oscillators experimentally CO5: Analyze the characteristics of half-wave and full-wave rectifier with and without filters experimentally CO6: Analyze the characteristics of FET based differential amplifier experimentally CO7: Calculate the frequency and phase angle using CRO experimentally CO8: Analyze the frequency response characteristics of passive filters experimentally
	PRACTICAL	EE3311	Electrical Machines Laboratory – I	CO1: Construct the circuit with appropriate connections for the given DC machine/transformer. CO2: Experimentally determine the characteristics of different types of DC machines. CO3: Demonstrate the speed control techniques for a DC motor for industrial applications. CO4: Identify suitable methods for testing of transformer and DC machines. CO5: Predetermine the performance parameters of transformers and DC motor. CO6: Understand DC motor starters and 3-phase transformer

				connections.
	PRACTICAL	CS3363	Data Structures and OOPS Laboratory	CO1 Write functions to implement linear and non-linear data structure operations. CO2 Suggest appropriate linear / non-linear data structure operations for solving a given problem. CO3 Appropriately use the 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 Ability to apply Sorting and searching Algorithms for give application
IV	PRACTICAL	GE3361	Professional Development	
	THEORY	GE3451	Environmental Sciences and Sustainability	CO1. Environmental Pollution or problems cannot be solved by mere laws. Public participation is an important aspect which serves the environmental Protection. One will obtain knowledge on the following after completing the course. CO2. Public awareness of environmental is at infant stage. CO3. Ignorance and incomplete knowledge has lead to misconceptions CO4. Development and improvement in std. of living has lead to serious environmental disasters
	THEORY	EE3401	Transmission and Distribution	CO1: Understand the structure of power system, computation of transmission line parameter for different configurations and the impact of skin and proximity effects. CO2: Model the transmission lines to determine the line performance and to understand the impact of Ferranti effect and corona on line performance. CO3: Do Mechanical design of transmission lines, grounding and to understand about the insulators in transmission system. CO4: Design the underground cables and understand the performance analysis of underground cable. CO5: Understand the modelling, performance analysis and modern trends in distribution system.

	THEORY	EE3402	Linear Integrated Circuits	CO1. Explain monolithic IC fabrication process CO2. Explain the fabrication of diodes, capacitance, resistance, FETs and PV Cell. CO3.Analyze the characteristics and basic applications (inverting/non-inverting amplifier, summer, differentiator, integrator, V/I and I/V converter) of Op-Amp CO4. Explain circuit and applications of op-amp based instrumentation amplifier, log/antilog amplifier, analog multiplier /divider, active filters, comparators, waveform generators, A/D and D/A converters CO5.Explain Functional blocks, characteristics and applications of Timer, PLL, analog multiplier ICs. CO6.Explain the applications of ICs in Instrumentation amplifier, fixed and variable voltage regulator, SMPS and function generator
	THEORY	EE3403	Measurements and Instrumentation	CO1: Ability to understand the fundamental art of measurement in engineering. CO2: Ability to understand the structural elements of various instruments. CO3: Ability to understand the importance of bridge circuits. CO4: Ability to understand about various transducers and their characteristics by experiments. CO5: Ability to understand the concept of digital instrumentation and virtual instrumentation by experiments.
	THEORY	EE3404	Microprocessor and Microcontroller	CO1: Ability to write assembly language program for microprocessor and microcontroller CO2: Ability to design and implement interfacing of peripheral with microprocessor and microcontroller CO3: Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring. CO4: Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring. CO5: Ability to understand and appreciate advanced

				architecture evolving microprocessor field.
	THEORY	EE3405	Electrical Machines - II	CO1: Ability to understand the construction and working principle of Synchronous generator CO2: Ability to understand the construction and working principle of Synchronous Motor CO3: Ability to understand the construction and working principle of Three Phase Induction Motor CO4: Acquire knowledge about the starting and speed control of induction motors. CO5: To gain knowledge about the basic principles and working of Single phase induction motors and Special Electrical Machines.
	PRACTICAL	EE3411	Electrical Machines Laboratory - II	CO1: Ability to understand and analyze EMF and MMF methods CO2: Ability to analyze the characteristics of V and Inverted V curves CO3: Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of Synchronous machines CO4: Acquire hands on experience of conducting various tests on alternators and obtaining their performance indices using standard analytical as well as graphical methods. to understand the importance of single and three phase Induction motors CO5: Ability to acquire knowledge on separation of losses
	PRACTICAL	EE3412	Linear and Digital Circuits Laboratory	CO1: Ability to understand and implement Boolean Functions. CO2: Ability to understand the importance of code conversion CO3: Ability to Design and implement circuits with digital ICs like decoders, multiplexers, register. CO4: Ability to acquire knowledge on Application of Op-Amp CO5: Ability to Design and implement counters using analog ICs like timers, VCOs and digital ICs like Flip-flops and counters.

	PRACTICAL	EE3413	Microprocessor and Microcontroller laboratory	CO1: Ability to design and implement combinational logic circuits and to analysis simple sequential logic circuits. CO2: Ability to write assembly language program for microprocessor and microcontroller CO3: Ability to design and implement interfacing of peripheral with microprocessor and microcontroller CO4: Ability to analyze, comprehend, design and simulate microprocessor based systems used for control and monitoring.. CO5: Ability to analyze, comprehend, design and simulate microcontroller based systems used for control and monitoring.