GATES INSTITUTE OF TECHNOLOGY
(Approved by A.I.C.T.E, New Delhi & Affiliated to JNTUA)

Department of Electrical and Electronics Engineering

Syllabus Regulation: R19

Year & Sem	Course Code	Course Name	Course Outcomes
II-I	19A54302	COMPLEX VARIABLES AND TRANSFORMS	CO1: Understand the analyticity of complex functions and conformal mappings. CO2: Apply Cauchy's integral formula and Cauchy's integral theorem to evaluate improper integrals along contours. CO3: Understand the usage of Laplace Transforms, Fourier Transforms. Z transforms. CO4: Understand the usage of Z transforms. CO5: Evaluate the Fourier series expansion of periodic functions.
II-I	19A02301T	BASIC ELECTRICAL CIRCUITS	CO1: Given a network, find the equivalent impedance by using network reduction techniques. CO2: Determine the current through any element and voltage across and power through any element. CO3: Given a circuit and the excitation, determine the real power, reactive power, power factor. CO4: Apply the network theorems suitably. CO5: Determine the Dual of the Network, develop the Cut Set and Tie-set Matrices for a given circuit.
II-I	19A02302	POWER SYSTEM ARCHITECTURE	CO1: Remember and understand the concepts of conventional generating systems. CO2: Remember and understand nonconventional power generating systems. CO3: Apply the economic aspects to the power generating systems. CO4:Analyse the transmission lines and obtain the transmission line parameters and constants. CO5:Design and Develop the schemes to improve the generation and capability of transmission line to meet the day to day power requirements.

II-I	19A02303T	DC MACHINES & TRANSFORMERS	CO1: Understand the concepts of magnetic circuits. CO2: Understand the operation of DC machines. CO3: Analyse the differences in operation of different DC machine configurations. CO4: Analyse single phase transformers circuits. CO5: Analyse three phase transformers circuits.
II-I	19A04306T	SEMICONDUCTOR DEVICES AND CIRCUITS	CO1. List various types of semiconductor devices. CO2. Study the characteristics of various types of semiconductor devices. CO3: Apply the characteristics of semiconductor devices to develop engineering solutions. CO4: Analyse functioning of various types of electronic devices and circuits. CO5: Analyse functioning of field effect transistor.
II-I	19A04304	DIGITAL ELECTRONICS AND LOGIC DESIGN	CO1: Understand various number systems, error detecting, correcting binary codes. CO2: Understand various logic families, combinational and sequential circuits. CO3: Apply Boolean laws, k-map and Q-M methods to minimize switching functions. CO4: Design combinational and sequential logic circuits. CO5: Compare different types of Programmable logic devices and logic families.
II-II	19A54401	NUMERICAL METHODS AND PROBABILITY THEORY	CO1: Apply numerical methods to solve algebraic and transcendental equations. CO2: Derive interpolating polynomials using interpolation formulae. CO3: Solve differential and integral equations numerically. CO4: Apply Probability theory to find the chances of happening of events. CO5: Understand various probability distributions and calculate their statistical constants.
II-II	19A02401T	ELECTRICAL CIRCUIT ANALYSIS	CO1: Understand about what is a Filter, Classification, where they can be used. CO2: Understand about attenuators and equalizers used in electronic high frequency circuits. CO3: Understand the analysis of three phase balanced and unbalanced circuits and to measure active and reactive powers in three phase circuits.

			CO4: Applications of Fourier transforms to electrical circuits excited by non-sinusoidal sources are known.
			CO5: Design of filters, equalizers and PSPICE programs for Circuit Analysis.
II-II	19A02402	ENGINEERING ELECTROMAGNETICS	CO1: Understand the concept of electrostatics.
			CO2: Understand the concepts of Conductors and Dielectrics.
			CO3: Understand the fundamental laws related to Magneto Statics.
			CO4: Understand the concepts of Magnetic Potential.
			CO5: Understand the concepts of Time varying Fields.
II-II	19A02403	POWER ELECTRONICS	CO1: Understand the operation, characteristics and usage of basic Power Semiconductor Devices.
			CO2: Understand different types of Rectifier circuits with different operating conditions.
			CO3: Understand DC-DC converters operation and analysis of their characteristics.
			CO4:Understand the construction and operation of voltage source inverters, Voltage Controllers and Cyclo Converters.
			CO5: Apply all the above concepts to solve various numerical problem solving.
II-II	19A04405	ANALOG ELECTRONIC CIRCUITS	CO1: Explain the operation of various electronic circuits.
			CO2: List various types of feedback amplifiers, oscillators and large signal amplifiers.
			CO3:Analyse various electronic circuits and regulated power supplies for proper understanding.
			CO4:Understand about operational amplifiers.
			CO5: Understand applications of op amp and timers.
II-II	19A05304T	PYTHON PROGRAMMING	CO1: Apply the features of Python language in various real applications.
			CO2:Select appropriate data structure of Python for solving a problem.
			CO3:Design object oriented programs using Python for solving real-world problems.
			CO4:Apply modularity to programs.
			CO5: Understand about Dictionaries.
			CO1: Grasp multidisciplinary nature of environmental studies and various renewable and nonrenewable resources.
			CO2: Understand flow and bio-geo- chemical cycles and ecological pyramids.

II-II	19A99301	ENVIRONMENTAL SCIENCE	CO3: Understand various causes of pollution and solid waste management and related preventive measures. CO4: About the rainwater harvesting, watershed management, ozone layer depletion and waste land reclamation. CO5: Casus of population explosion, value education and welfare programmes.
III-I	19A02501T	AC MACHINES	CO1:Analyze Magnetic and pulsating fields produced by spatially displaced windings and when the windings are spatially shifted by an angle CO2:Understand the construction, types, equivalent circuit, torque slip characteristics and various losses present in an induction machine. CO3:Understand induction generator operation, self-excitation, doubly fed induction machines, various methods of starting, braking and speed control of induction motors. CO4:Analyze the phasor diagrams, parallel operation of alternators, synchronization and load division of synchronous generators CO5:Analyze the phasor diagram, determination of V and inverted V curves and power circles of synchronous motor.
III-I	19A02502	CONTROL SYSTEMS	CO1:Merits and demerits of open loop and closed loop systems; the effect of feedback CO2:The use of block diagram algebra and Mason's gain formula to find the overall transfer function CO3:Transient and steady state response, time domain specifications and the concept of Root loci CO4:Evaluate the frequency domain specifications from Bode, Polar and Nyquist plots CO5:Understand the concept of state space, controllability and observability
III-I	19A52601T	ENGLISH LANGUAGE SKILLS	CO1:Facilitate active listening to enable inferential learning through expert lectures and talks CO2:Impart critical reading strategies for comprehension of complex texts CO3:Provide training and opportunities to develop fluency in English through participation in formal group discussions and presentations using audio-visual aids CO4:Demonstrate good writing skills for effective paraphrasing,

			argumentative essays and formal correspondence CO5:Encourage use of a wide range of grammatical structures and vocabulary in speech and writing.
III-I	19A02504	ELECTRICAL MACHINE DESIGN	CO1:To know about fundamental aspects of design parameters and limitations in designing CO2:To know about designing aspects of DC machines with respect to performance equations and characteristics CO3:To know about the design aspects of 1-ϕ transformer based on performance equations CO4:To know about necessity mitigating harmonic torque CO5:understand complete design aspects of 3-ϕ synchronous machine and to be able to design for a specified rating
III-I	19A02503B	DC DRIVES	CO1:To understand the basic concepts of high speed drives CO2:Understand the concept of phase control of separately excited DC motor. CO3:Understand the concept of Chopper Control CO4:Understand Equivalent circuit, transfer function of self, separately excited DC motor. CO5:Understand the concept of PLL and micro controlled DC drives
III-I	19A27506B	COMPUTER APPLICATIONS IN FOOD INDUSTRY	CO1:Introduction to Bar-charts and Pie-charts & the procedure to develop bar-charts and pie-charts on given Data. CO2:Advantages and disadvantages of Flowcharts & Algorithms. Introduction, Fundamentals & advantages of 'C'. CO3:Basic Structure of a simple 'C' program. Decision Making/Control Statements. CO4:Concept of Arrays & Types of Arrays (Single, Double and Multi-Dimensional Arrays). CO5:Concept of Linked Lists, Types of Linked Lists & Basic operations on linked Lists.
III-I	19A02501P	AC MACHINES LAB	CO1:Analyze and apply load test, no-load and blocked-rotor tests for construction of circle diagram and equivalent circuit determination in a single phase induction motor. CO2: Predetermine regulation of a three-phase alternator by synchronous impedance & m.m.f methods.

			CO3: Predetermine the regulation of Alternator by Zero Power Factor method Xd and Xq determination of salient pole synchronous machine. CO4:Evaluate and analyze V and inverted V curves of 3 phase synchronous motor
III-I	19A52601P	ENGLISH LANGUAGE SKILLS LAB	CO1:Understand different accents spoken by native speakers of English CO2:Participate in formal discussions and speak clearly on a specific topic using suitable discourse markers CO3:Follow a discussion to identify the salient points CO4:Prepare a CV and write a cover letter to seek internship/ job CO5:Apply communication skills through various language learning activities
III-I	19A02506	POWER ELECTRONICS & SIMULATION LAB	CO1:Understand and analyze various characteristics of power electronic devices with gate firing circuits and forced commutation techniques. CO2:Analyze the operation of single-phase half & fully-controlled converters and inverters with different types of loads. CO3: Analyze the operation of DC-DC converters, single-phase AC Voltage controllers, cyclo converters with different loads. CO4:Create and analyze various power electronic converters using PSPICE software.
III-I	19A99601	RESEARCH METHODOLOGY	CO1:Understand the concept of research and its process CO2:Understand the concept of sampling and sampling design CO3:Apply the knowledge of C&R Analysis to get the results CO4:Understand the hypothesis testing procedure CO5:Design a scientific paper to present in the conferences/seminars
III-II	19A04301	SIGNALS & SYSTEMS	CO1:Analyze the periodic signals by applying Fourier series. CO2:Identify system properties based on impulse response and Fourier analysis. CO3:Understand the properties of the discrete-time Fourier transform. CO4:Analyse filter characteristics and physical realisation of LTI system. (L3) CO5:Apply transform techniques to analyse discrete-time signals and systems.
III-II	19A02601T	DIGITAL COMPUTER PLATFORMS	CO1:To know about 8086 as one of digital compute platforms CO2:To understand about interrupt structures and various service routines in 8086

			CO3:To know about data transfer manipulations CO4:To know about mapping of external devices to the DSP core CO5:To understand about Xilinx-HDL programming
III-II	19A02602	POWER SYSTEM ANALYSIS	CO1:Understand the concepts of Per-Unit equivalent system CO2:Analyze the concept of formation of Zbus CO3Understand about Load flow Solution for Simple Power Systems. CO4:Calculate the fault current using sequence impedances for unsymmetrical faults CO5:Analyze the stability using equal area criterion
III-II	19A02603A	POWER QUALITY	
III-II	19A52604A	SOFT SKILLS	CO1:Understand the importance of soft skills CO2:Apply various techniques to know the self CO3:Apply interpersonal skills through etiquettes. CO4:Understand the importance of verbal skills in corporate climate CO5:Apply various techniques to use para language
III-II	19A52602B	MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS	CO1:Analyze the Elasticity and degree of elasticity CO2:Know the production function, Input-Output relationship and different cost concepts CO3:Evaluate price-output relationship to optimize cost, revenue and profit CO4:Know the concept of capital budgeting and its importance in business CO5:Know the concept of capital budgeting and its importance in business
III-II	19A02605	CONTROL SYSTEMS & SIMULATION LAB	CO1:Get the knowledge of feedback control and transfer function of DC servo motor. CO2:Model the systems and able to design the controllers and compensators. CO3: Get the knowledge about the effect of poles and zeros location on transient and steady state behavior of second order systems and can implement them to practical systems and MATLAB

			CO4:Determine the performance and time domain specifications of first and second order systems.
III-II	19A02601P	DIGITAL COMPUTER PLATFORMS LAB	CO1:Assembly language programming on 8086 Microprocessors. CO2:Interfacing of various devices with 8086. CO3:MASAM Programming. CO4:Interfacing 8051 Microcontroller with its peripheral devices
III-II	19A99501	CONSTITUTION OF INDIA	CO1:Apply the knowledge on directive principle of state policy CO2:Understand the structure of Indian government CO3:Analyze the role of Governor and Chief Minister CO4Apply the knowledge on directive principle of state policy CO5:Know the role of Election Commission