GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY
Department of Electronics and Communication Engineering

Course Outcomes

Batch: 2021-25   **A.Y: 2021-22**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (I Year- I Sem)		
Linear Algebra and Calculus (20A54101)		
C111.1	Solve linear system of equations and calculate the Eigen values and Eigen vectors of the given square matrices.	Understand
C111.2	Apply Cayley – Hamilton theorem to find the inverse and powers of a square matrix and diagonalise the square matrix.	Understand
C111.3	Analyze mean value theorems to given function	Remember
C111.4	Utilize the technique of partial differentiation to find the Jacobian and the extreme values of functions of several variables.	Understand
C111.5	Apply the techniques of multiple integrals to find the areas and volumes.	Apply
C111.6	Calculate the values of improper integrals using Beta and Gamma functions	Understand
Applied Physics (20A56201T)		
C112.1	Describe the importance of Interference, Diffraction and Polarization and the engineering applications as well	Understand
C112.2	Demonstrate the properties of lasers and fibre optics to various applications in science and technology	Remember/ Understand
C112.3	Explain the fundamental concepts and theory related to dielectric and magnetic materials.	Remember
C112.4	Explain the concept of quantum mechanics using electron theories in solids	Understand
C112.5	Illustrate the functioning of semiconductors in electronic devices	Understand
C112.6	Discuss the principles and theory related to superconductors and explore their technological applications	Understand
Communicative English (20A52101T)		
C113.1	Interpret basic grammatical concepts for better understanding of sentence structure in English language.	Understand
C113.2	Interpret pieces of specific information from social or transactional dialogues spoken by native speakers of English to improve comprehension abilities among students	Understand
C113.3	Use grammatical structures to construct sentences and correct word formation	Apply
C113.4	Illustrate discourse markers to make students use them in both formal and informal discussions	Apply
C113.5	Evaluate reading/listening skills of students through academic texts and enhance them to write summaries based on global comprehension of these texts.	Evaluate
C113.6	Develop better speaking skills among students through participation in structured talks/oral presentations.	Create
Fundamentals of Electrical Circuits (20A02101T)		
C114.1	Explain types of networks and Network Reduction Techniques	Understand
C114.2	Analyze Magnetic Circuits and Coupled circuits.	Analyse
C114.3	Analyze RLC circuits with AC Excitation	Analyse
C114.4	Apply theorems for finding the solutions of network problems	Analyse
C114.5	Analyse three phase balanced and unbalanced circuits and determine line voltages, line currents, phase voltages and phase currents	Analyse
C114.6	Analysis of electrical networks using graph theory and duality and dual networks	Analyse

	Engineering Drawing (20A03101T)	
C115.1	Discuss the Principles of Engineering Graphics and sketch the various Curves used in Engineering Practice	Apply
C115.2	Sketch the projections of points and lines	Apply
C115.3	Sketch the projection of solids	Apply
C115.4	Sketch the Section planes and sectional view of right regular solids	Apply
C115.5	Draw the development of regular solids such as prism, cylinder, pyramid and cone	Apply
C115.6	Sketch the development of sectional parts of regular shapes	Apply
	Engineering Graphics Lab (20A03101P)	
C116.1	Draw the various curves applied in engineering	Understand
C116.2	Show projections of solids and sections graphically	Understand
C116.3	Draw the development of surfaces of solids	Apply
C116.4	Use computers as a drafting tool	Understand
C116.5	Draw isometric drawings using CAD package	Apply
C116.6	Draw orthographic drawings using CAD package	Apply
	Applied Physics Lab (20A56201P)	
C117.1	Determine the radius of a curvature and / or thickness of thin wire using microscope with the help of interference concept	Understand
C117.2	Evaluate the wavelength of various colors of grating and also dispersive power of prism by spectrometer using the principle of diffraction	Understand
C117.3	Evaluate wavelength of light source and particle size with He-Ne laser using the principle of diffraction Estimate the numerical aperture of a given optical fiber and hence to find its acceptance angle	Understand
C117.4	Estimate the dielectric constant of a given material	Understand
C117.5	Examine the hysteresis loss of the magnetic material by B- H curve and Estimate the magnetic field of a circular coil carrying current along the axis	Understand
C117.6	Measure the type of conductivity ,hall voltage and hall coefficient of a given semiconductor using hall effect and also measure the energy band gap of a given semiconductor material	Evaluate
	Communicative English Lab (20A52101P)	
C118.1	Differentiate various accents spoken by native speakers of English.	Understand
C118.2	Apply suitable reading strategies for comprehension of texts on monitor to get general idea and locate specific information.	Apply
C118.3	Compose talks extemporarily by practicing talks on general topics.	Create
C118.4	Build efficient Written communication skills by practicing E-mail writing and Resume writing.	Create
C118.5	Build the ability of using language effectively to face interviews, group discussions, public speaking	Create
C118.6	Evaluate and exhibit acceptable etiquette essential in social and professional settings	Evaluate
	Fundamentals of Electrical Circuits Lab (20A02101P)	
C119.1	Explain network elements and types of networks	Apply
C119.2	Apply theorems for finding the solutions of network problems	Apply
C119.3	Apply Maximum power transfer theorems for finding the solutions of DC & AC Networks	Apply
C119.4	Analyze RLC circuits and coupled circuits.	Analyse
C119.5	Understand 3 phase balanced and unbalanced, star and delta connected supply and load	Understand
C119.6	Measure reactive power in 3-phase circuit using different methods	Apply

Course Outcomes

Batch: 2020-24   **A.Y: 2021-22**

S. No	Course Outcomes Statement	Taxonomy
	Course Outcomes (II Year- I Sem)	
	Complex Variable and Transforms (20A54302)	
C211.1	Find the analytic functions using C-R equations, the image using conformal mapping and bi-linear transformation.	Apply
C211.2	Use Cauchy's theorem, Cauchy's integral formula and Cauchy's residues theorem to evaluate complex integrations and expansion of complex functions using Taylor's and Laurent's series.	Apply
C211.3	Define Laplace and inverse Laplace transforms of various functions and solve ordinary differential equations using Laplace transform.	Apply
C211.4	Determine Fourier series of periodic functions in a given interval and Parseval's formula- Complex form of Fourier series.	Apply
C211.5	Find the Fourier Transform of certain functions.	Understand
C211.6	Solve the difference equations using Z-Transforms.	Apply
	Signals and Systems (20A04301T)	
C212.1	Describe the mathematical representation and description of continuous-time and discrete time signals and systems.	Understand
C212.2	Discuss the mathematical representation of continuous and discrete time signals using Fourier series.	Understand
C212.3	Illustrate the spectral characteristics of continuous-time aperiodic signals using Fourier Transform.	Apply
C212.4	Demonstrate the Continuous-time signals and systems using Laplace transforms.	Apply
C212.5	Analyze the filter characteristics and physical realization of LTIsystem.	Analyze
C212.6	Outline the discrete-time signals and systems using DTFT and Z- transforms.	Analyze
	Electrical Engineering (20A02303T)	
C213.1	Able to acquire knowledge about how to determine the transient response of R-L, R-C, R-L-C series circuits for D.C and A.C excitations.	Apply
C213.2	Able to solve the problems on R L C circuits for different excitations using different approaches.	Apply
C213.3	Analyze the complex circuits of R L C circuits	Analyze
C213.4	Able to solve the problems the e.m.f. generated on DC Generator	Apply
C213.5	Able to acquire knowledge about how to determine the efficiency and regulation of single phase transformer.	Apply
C213.6	Able to acquire knowledge about how to determine the efficiency and regulation synchronous machine.	Apply
	Analog Circuits (20A04302T)	
C214.1	Understand the characteristics of differential amplifiers, feedback and power amplifiers.	Understand
C214.2	Examine the frequency response of multistage and differential amplifier circuits using BJT & MOSFETs at low and high frequencies.	Apply
C214.3	Investigate different feedback and power amplifier circuits based on the application	Apply
C214.4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillator circuits	Create
C214.5	Evaluate the performance of different tuned amplifiers and multivibrators	Evaluate
C214.6	Design analog circuits for the given specifications and application	Create
	Managerial Economics & Financial Analysis (20A52301)	
C215.1	Explain the role and responsibilities of a managerial economist in modern	Understand

	business scenario.	
C215.2	Predict the demand of a product by using demand forecasting methods.	Apply
C215.3	Calculate the Break Even Point (BEP) with the help of production and cost analysis.	Apply
C215.4	Explain about competitive market structures and business economic environment.	Understand
C215.5	Intrepet the financial statements to know financial position of the firm.	Apply
C215.6	Discuss the sources of capital and allocation of funds for business undertaking.	Understand
Simulation Lab (20A04301P)		
C216.1	Explain to simulate the signals and sequences.	Understand
C216.2	Compute the Fourier transform of a given signal and plot its magnitude and phase spectrum.	Understand
C216.3	Illustrate Sampling theorem,	Apply
C216.4	Interpret the Filter characteristics.	Apply
C216.5	Calculate the parameters of a Complex Gaussian noise.	Analyze
C216.6	Examine to plot the pole-zero diagram in S-plane/Z-plane of given signal/sequence.	Analyze
Analog Circuits Lab (20A04302P)		
C217.1	Know about the usage of equipment/components/software tools used to conduct the experiments in analog circuits	Understand
C217.2	Conduct the experiment based on the knowledge acquired in the theory about various analog circuits using BJT/MOSFET	Understand
C217.3	Analyze the given analog circuit to find required important metrics of it theoretically	Analyze
C217.4	Draw the relevant graphs between important metrics of the system from the observed measurements.	Understand
C217.5	Compare the experimental results with that of theoretical ones and infer the conclusions	Evaluate
C217.6	Design the circuit for the given specifications	Create
Universal Human Values (20A52201)		
C218.1	Understand the need, concept and content of value-education individual's life and modifies their aspiration for happiness & prosperity.	Understand
C218.2	Comprehend the term self-exploration and its application for self-evaluation and development.	Understand
C218.3	Reconstruct the concepts about different values and discriminate between them.	Understand
C218.4	Understand the concept of co-existence & evaluate the program to ensure self regulation.	Understand
C218.5	Identify the holistic perception of harmony at level of self, family, society, nature.	Understand
C218.6	Apply professional ethics in their future profession & contribute for making a value based society	Remember

Course Outcomes

Batch: 2019-23   **A.Y: 2021-22**

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (III Year- I Sem)		
Integrated Circuits Analysis (19A04501T)		
C311.1	Understand DC and AC characteristics of operational amplifiers & Op amp parameters and functionality of specialized ICs such as 555 TIMER, VCO, PLL & Voltage regulators.	Understand
C311.2	Make use of Op-Amps and specialized ICs to design circuits for various applications.	Apply
C311.3	Analyze Op-Amp based Comparators, Waveform generators, Active filters, Converters.	Analyze
C311.4	Design of Op amp based Comparators, Waveform Generators, Active filters, Converters	Create
C311.5	Design various multi-vibrator circuits using IC 555 timer	Create
C311.6	Compare different types of A/D and D/A Converter circuits.	Analyze
Antennas & Wave Propagation (19A04502)		
C312.1	Describe the basic concepts of radiation mechanism , antenna characteristics , radiation intensity ,gain and directivity of Antennas	Understand
C312.2	Analyze the characteristics and parameters of Dipole, Monopole, Loop, Rhombic,Yagi-Uda array,Turnstile and Helical antennas	Analyze
C312.3	Determine the characteristics of antenna array, estimate radiation pattern of BSA and EFA, pattern multiplication and binomial arrays	Apply
C312.4	Analyze the characteristics and parameters of Lens Antenna ,Horn Antenna and Reflector antennas	Analyze
C312.5	Describe the feeding methods for micro-strip antennas and pertain the concepts to measure antenna parameters	Understand
C312.6	Describe the EM wave propagation in different layers of atmosphere, estimate the required profiles	Understand
English Language Skills (19A52601T)		
C313.1	Understand the context, topic, and pieces of specific information from social or transactional dialogues spoken by native speakers of English	Understand
C313.2	Apply grammatical structures to formulate sentences and correct word forms	Applying
C313.3	Analyze discourse markers to speak clearly on a specific topic in informal discussions	Analyzing
C313.4	Evaluate reading/listening texts and to write summaries based on global comprehension of these texts.	Evaluate
C313.5	Create a coherent paragraph interpreting a figure/graph/chart/table	Create
C313.6	Develop better speaking skills among students through participation in structured talks/oral presentations.	Create
Digital Communications (19A04503T)		
C314.1	Explain Sampling, Quantization and Encoding process in Pulse Modulation techniques of source encoding system	Understand
C314.2	Compare the different source code modulation techniques.	Analyze
C314.3	Analyze the performance of baseband data transmission system in presence of noise and other interference.	Analyze
C314.4	Demonstrate the mathematical background for communication system using signal space analysis	Apply

C314.5	Design different modulation & demodulation for band pass data transmission and their probability of error.	Create
C314.6	Explain the encoding & decoding for different channel encoding techniques.	Understand

Nano Electronics (19A04504b)

C315.1	Retrieving the challenges and current trends of CMOS technologies.	Remember
C315.2	Explain the fabrication process and limitations in the CMOS design	Understand
C315.3	Integrate and model the device with basic quantum structures	Apply
C315.4	Summarize the types, synthesis, interconnects and applications of carbon nano tubes	Understand
C315.5	Infer the tunneling devices with several parameters of hetero structures	Understand
C315.6	Apply the device in specific applications in real-time.	Apply

Free and Open-Source Software (19A05506a)

C316.1	Show and Explain about all free and open source software's	Remember
C316.2	Build the open source software system Installations and running's	Apply
C316.3	Explain the syntax and usages of programming languages Python, Perl and ruby	Understand
C316.4	Develop an applications in FOSS	Apply
C316.5	Make use of the various open source design tools	Apply
C316.6	Demonstrate the open Source Software Development	Understand

Integrated Circuit Lab (19A04501P)

C317.1	Understand the working of Op amp ICs & Application specific Analog ICs.	Understand
C317.2	Analyze operational amplifier based circuits for linear and non-linear applications.	Analyze
C317.3	Design Operational amplifiers for linear and nonlinear application, Multivibrator circuits using 555 & application specific ICs.	Create
C317.4	Simulate all linear and nonlinear application based Op amp Circuits and circuits based on application specific ICs.	Apply
C317.5	Demonstrate voltage regulation and signal conversion application using Op-amp	Understand
C317.6	Compare theoretical, practical & simulated results in integrated circuits.	Analyze

ELS Lab (19A52601P)

C318.1	Remember and understand the different aspects of the English language proficiency with emphasis on LSRW skills	Understand
C318.2	Apply communication skills through various language learning activities	Apply
C318.3	Analyze the English speech sounds, stress, rhythm, intonation and syllable division for better listening and speaking comprehension.	Analyze
C318.4	Evaluate and exhibit acceptable etiquette essential in social and professional settings	Evaluate
C318.5	Create awareness on mother tongue influence and neutralize it in order to improve fluency in spoken English	Create
C318.6	Understanding the different contexts of the speech	Understand

Digital Communication Lab (19A04503P)

C319.1	Understand basic theories of Digital communication system in practical.	Understand
C319.2	Describe different techniques in modern digital communications, particular source coding using MAT Lab tools.	Remember
C319.3	Calculate the performance of different waveform coding techniques for the generation of a digital representation of the signal	Apply
C319.4	Analyze digital modulation techniques by using SCILAB tools	Analyze
C319.5	Determine signal to noise ratio of magnitude relation which uses one bit PCM code	Apply
C319.6	Design digital communication systems as per given specifications	Create

Course Outcomes

Batch: 2018-22

A.Y: 2021-22

S. No	Course Outcomes Statement	Taxonomy
Course Outcomes (IV Year- I Sem)		
Optical Fiber Communications (15A04701)		
C411.1	Demonstrate the performance of both digital and analog optical fiber systems	Apply
C411.2	Analyze the system bandwidth, noise, probability of error and maximum usable bit rate of digital fiber system	Analyze
C411.3	Calculate the system link loss, distortion and dynamic range of an RF photonic link	Apply
C411.4	Describe the various optical source materials, LED structure, quantum efficiency of laser diodes.	Understand
C411.5	Analyze the various optical Detectors materials, APD & PIN structure, quantum efficiency of Photo detector	create
C411.6	Evaluate characteristics of fiber sources and detectors, as well as conduct experiment in software and hardware, and analyze the results to provide valid conclusions	Evaluate
Embedded Systems (15A04702)		
C412.1	Summarize the fundamental concepts of Embedded systems.	Create
C412.2	Design of embedded systems leading to 32-bit application development.	Understand
C412.3	Explain the hardware-interfacing concepts to connect digital as well as analog sensors while ensuring low power considerations.	Create
C412.4	Formulate and design the protocols used by microcontroller to communicate with external sensors in real world.	Understand
C412.5	Describe Embedded Networking and IoT concepts based upon connected MCUs	Understand
C412.6	Analyze and Develop embedded hardware and software development cycles and tools	Analyze
Microwave Engineering (15A04703)		
C413.1	Analyse TM/TE modes and characteristics of EM wave while propagating through rectangular wave guide and cavity resonator.	Analyse
C413.2	Describe the basic microwave components and ferrite devices like gyrator, isolator and circulator.	Understand
C413.3	Illustrate the two cavity klystron amplifier, reflex klystron oscillator and TWT amplifier	Apply
C413.4	Describe the Magnetron oscillator, IMPATT, TRAPATT, BARITT and GUNN diodes	Understand
C413.5	Illustrate the methods for measuring microwave parameters like attenuation, power, impudence, VSWR, frequency,e.t.c.	Apply
C413.6	Derive the Scattering matrix of E-Plane Tee, H-Plane Tee, Magic Tee, Directional Coupler, Isolator and Circulator	Create
Data Communications & Networking (15A04704)		
C414.1	Tabulate the functions of different layers in the OSI model and TCP/IP suite.	Remember
C414.2	Summarize the flow control and error control techniques to provide end-to-end delivery.	Understand
C414.3	Apply controlled access protocols which allows all users to coexist and use the entire bandwidth at the same time	Apply
C414.4	Analyze short range and long range wireless technologies	Analyze
C414.5	Choose the proper Routing protocols used to distribute data to multiple recipients	Evaluate
C414.6	Set up a simple network that can use several IP address ranges.	Create
Radar Systems (15A04705)		
C415.1	Illustrate Range Performance using false alarm time by integration of radar pulses with radar range equation.	Evaluate
C415.2	Explain CW -FM Radar – Block Diagram with Non-zero IF Receiver and bandwidth requirements.	Understand

C415.3	Analyze the concept of MTI radar & Doppler effect using filters with blind speeds and staggered prf's.	Analyze
C415.4	Describe various tracking radar systems with Acquisition and Scanning Patterns.	Remember
C415.5	Identify radar signals using Matched Filter with Non-white Noise with the help of Correlation Function and Cross-correlation Receiver.	Remember
C415.6	Discuss phase array antennas and basic concepts of radiation pattern along with applications and limitations	Understand
Digital Image Processing (15A04708)		
C416.1	Describe the image processing concepts and apply them for engineering and real time applications.	Understand
C416.2	Use the skills to develop new image processing techniques to process images of any context through image transforms.	Apply
C416.3	Differentiate image enhancement techniques in spatial domain as well as frequency domain.	Understand
C416.4	Categorize image restoration techniques for image processing applications.	Analyse
C416.5	Infer image segmentation techniques for image processing applications.	Analyse
C416.6	Describe the image processing concepts and apply them for engineering and real time applications.	Understand
Cellular & Mobile Communication (15A04709)		
C417.1	Discuss the cellular mobile radio system design.	Understand
C417.2	Explain the different co-channel and non-co-channel interferences.	Understand
C417.3	Analyze the mobile radio propagation, fading and diversity concepts.	Analyse
C417.4	Analyze different mobile and cell site antennas used for mobile communication.	Analyse
C417.5	Interpret the various techniques used for reducing cochannel interference and improve system capacity.	Understand
C417.6	Discuss different types of handoff techniques and digital cellular networks.	Understand
Micro wave& Optical Communications Lab (15A04711)		
C418.1	Demonstrate the characteristics of Microwave sources	Apply
C418.2	Demonstrate the characteristics of directional Couplers	Analyze
C418.3	To test the characteristics of microwave components	Evaluate
C418.4	To analyze the radiation pattern of antenna	Analyze
C418.5	To measure antenna gain	Apply
C418.6	Practice microwave measurement procedures	Apply
VLSI & Embedded Systems Lab (15A04712)		
C419.1	Design and simulation of Combinational circuit with functional verification.	Create
C419.2	Design and simulation of Sequential circuit with functional verification.	Create
C419.3	Generate Synthesis report for both combinational and sequential circuits	Create
C419.4	Explain the configuration of the FPGA Spartan 3e Hardware using debug cable.	Understand
C419.5	Design and simulate the operations of systems using CC Studio software and study the different modes of operations.	Understand
C419.6	Explain the configuration of the embedded controller TIVA TM4C series using USB serial cable.	Understand