Course Outcomes

Batch: 2020-24 **A.Y: 2020-21**

Course Outcomes (I Year- I Sem)		
S. No	**Course Outcomes Statement**	**Taxonomy**
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
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

GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY

Department of Electronics and Communication Engineering

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Batch: 2019-23 **A.Y: 2020-21**

Course Outcomes (II Year I Sem)		
Course Name: Complex Variables and Transforms – 19A54302		
No	**Course Outcome**	**Taxonomy**
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 integration and expansion of complex function 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**
Course Name: Signals and Systems- 19A04301		
No	**Course Outcome**	**Taxonomy**
C212.1	Analyze the periodic signals by applying Fourier series.	**Analyze**
C212.2	Apply Fourier transform to solve problems.	**Apply**
C212.3	Evaluate the Fourier transform of Discrete-time signals.	**Evaluate**
C212.4	Analyze filter characteristics and physical realization of LTI system.	**Analyze**
C212.5	Evaluate response of linear systems to known inputs by using Laplace transforms.	**Evaluate**
C212.6	Analyze the continuous-time and discrete-time signals and systems using Laplace and Z- transforms.	**Analyze**
Course Name: Electronic Devices and Circuits -19A04302T		
No	**Course Outcome**	**Taxonomy**
C213.1	Recognize the transport phenomena of the charge carriers in a semiconductor.	**Understand**
C213.2	Study the characteristics and operation of p-n junction diode.	**Understand**
C213.3	Study the characteristics operation and applications of Special Diodes	**Understand**
C213.4	Illustrate diode circuits for different applications such as rectifiers, clippers and clampers	**Analyze**
C213.5	Design various biasing circuits for BJT and FET	**Create**
C213.6	Compare the performance of various semiconductor devices	**Evaluate**
Course Name: Probability Theory and Stochastic Process - 19A04303		
No	**Course Outcome**	**Taxonomy**
C214.1	Explain the concepts of Probability and Random Variable.	**Understand**
C214.2	Illustrate operations on single Random Variable	**Apply**
C214.3	Interpret concepts of multiple Random Variable	**Understand**
C214.4	Examine operations on multiple Random Variable	**Apply**
C214.5	Analyze Temporal characteristics and Spectral characteristics of a Random Processes.	**Analyze**
C214.6	Evaluate the response of Linear Systems with random inputs	**Evaluate**
Course Name: Digital Electronics and Logic Design - 19A04304		
No	**Course Outcome**	**Taxonomy**
C215.1	Apply basic laws and De Morgan's theorems to simplify Boolean expressions	**Apply**
C215.2	Compare K- Map and Q-M methods of minimizing logic functions	**Analyze**
C215.3	Design various Combinational logic circuits	**Create**
C215.4	Design synchronous sequential circuits using flip flops and construct digital systems using components such as registers and counters	**Create**
C215.5	Describe functional differences between different types of RAM & ROM	**Understand**

C215.6	Compare bipolar and MOS logic families	**Analyze**
Course Name: Electrical Technology - 19A02304T		
No	**Course Outcome**	**Taxonomy**
C216.1	Acquire knowledge about the constructional details and principle of operation of d machines.	**Analyze**
C216.2	Explain the working and classification of dc machines as generators and motors	**Understand**
C216.3	Acquire knowledge about testing and applications of dc machines	**Analyze**
C216.4	Explain about the constructional details, principle of operation, testing and applications of transformers.	**Understand**
C216.5	Acquire knowledge about the constructional details and principle of operation of three phase and single phase induction motors	**Analyze**
C216.6	Acquire knowledge about testing and applications of synchronous machines.	**Analyze**
Course Name: Electronic Devices and Circuits Lab - 19A04302P		
No	**Course Outcome**	**Taxonomy**
C217.1	Describe the use of RPS and CRO	**Understand**
C217.2	Recognize the characteristics and applications of basic electronic devices	**Understand**
C217.3	Observe the characteristics of electronic devices by plotting graphs	**Understand**
C217.4	Categorize the Characteristics of UJT, BJT, FET, and SCR	**Analyze**
C217.5	Design BJT, FET Amplifiers for Voltage Amplification	**Create**
C217.6	Simulation of all Electronic circuits in PSPICE /Multisim	**Analyze**
Course Name: Basic Simulation Lab - 19A04305		
No	**Course Outcome**	**Taxonomy**
C218.1	Understand the basic concepts of programming in SCILAB and explain use of built-in functions to perform assigned task.	**Understand**
C218.2	Generate signals and sequences, Input signals to the systems to perform various operations.	**Remember**
C218.3	Analyze signals using Fourier, Laplace and Z-transforms.	**Analyze**
C218.4	Compute Fourier transform of a given signal and plot its magnitude and phase spectrum.	**Apply**
C218.5	Verify Sampling theorem,	**Understand**
C218.6	Determine Convolution and Correlation between signals and sequences.	**Apply**
Course Name: Electrical Technology Lab - 19A02304P		
No	**Course Outcome**	**Taxonomy**
C219.1	Understand various characteristics of DC generators.	**Understand**
C219.2	Understand various characteristics of DC motors.	**Understand**
C219.3	Predetermine the efficiency and regulation of a 1-ϕ transformer.	**Analyze**
C219.4	Know power measurement in 3-ϕ circuits	**Analyze**
C219.5	Understand various characteristics of Induction motors.	**Understand**
C219.6	Understand various characteristics of Synchronous machines.	**Understand**
Course Name: Biology For Engineers - 19A99302		
No	**Course Outcome**	**Taxonomy**
C2110.1	Explain about cells and their structure and function. Different types of cells and basics for classification of living organisms	**Understand**
C2110.2	Explain about bio molecules, their structure and function and their role in the living organisms. How bio molecules are useful in Industry	**Understand**
C2110.3	Briefly about human physiology	**Remember**
C2110.4	Explain about genetic material, DNA, genes and RNA how they replicate, pass and preserve vital information in living Organisms	**Understand**
C2110.5	Know about application of biological Principles in different technologies for the production of medicines and Pharmaceutical molecules through transgenic microbes, plants and animals.	**Understand**
C2110.6	Understand transgenic plants and animals and their production	**Understand**

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Course Outcomes (III Year- I Sem)		
S. No	**Course Outcomes Statement**	**Taxonomy**
Computer Organization (15A04511)		
C311.1	Identify functional units of a computer, bus structures and addressing modes	Understand
C311.2	Explain Arithmetic Micro operations, Logical Micro operations, and Shift Micro operations	Understand
C311.3	Design Hardwired Control unit and Micro programmed control unit	Design
C311.4	Identify Peripheral devices and Memory devices of a computer	Understand
C311.5	Explain Pipelined execution and instruction scheduling	Understand
C311.6	Explain Inter processor arbitration and Inter processor communication	Understand
Antennas & Wave Propagation (15A04501)		
C312.1	Describe the basic concepts of radiation, antenna definition and various radiation characteristics of thin wire antenna.	Understand
C312.2	Analyze the characteristics and parameters of Loop, Yagi-Uda, Helical, Horn antennas for their design	Analyze
C312.3	Analyze the characteristics and parameters of Microstrip patch, Reflectors and Lens antennas for their design	Analyze
C312.4	Determine the characteristics of antenna array, estimate radiation pattern of BSA and EFA, pattern multiplication and binomial arrays	Apply
C312.5	Illustrate the requirements for antenna measurements setups, and describe the procedure for measurement	Apply
C312.6	Describe the EM wave propagation in different layers of atmosphere, estimate the required profiles	Remember
Digital Communication Systems (15A04502)		
C313.1	Explain the elements of Digital Communication Systems, the concepts of sampling theorem, Source coding and modulation techniques.	Understand
C313.2	Summarizes baseband pulse transmission system	Understand
C313.3	Analyze probability of error in digital systems -PCM , DPCM and DM.	Analyze
C313.4	Solve problems on geometric representation of signals by applying Gram-Schimdt orthogonalization procedure and explain correlation receiver.	Apply
C313.5	Compare digital modulation techniques-BPSK, QPSK, BFSK and M-ary systems.	Analyze
C313.6	Solve problems in linear block codes and design channel convolutional encoder	Create
Linear Integrated Circuits & Applications (15A04503)		
C314.1	Explain the basic building blocks of linear integrated circuits and its characteristics.	Understand
C314.2	Explain the different feedback amplifiers and frequency response of operational amplifier.	Understand
C314.3	Design linear applications of op-amp.	Analyze
C314.4	Design non-linear applications of op-amp.	Analyze
C314.5	Design oscillators and filters using operational amplifier.	Analyze
C314.6	Choose appropriate A/D and D/A converters for signal processing applications.	Analyze
Digital System Design (15A04504)		
C315.1	Explain the CMOS, Bi-CMOS and TTL logic families and interfacing between them.	Understand
C315.2	Describe Programming concepts using VHDL hard ware description language	Understand
C315.3	Illustrate the digital system Design using hardware description language (VHDL).	Apply
C315.4	Design Combinational logic circuits with standard ICs using VHDL.	Create

C315.5	Design Sequential logic circuits with standard ICs using VHDL.	Create
C315.6	Design Barrel shifter, comparators, Encoders, Latches & flip flops, PLDs, counters, shift register using VHDL.	Create
MEMS & Micro Systems (15A04506)		
C316.1	Summarize the MEMS technology & microsystems	Understand
C316.2	Describe microelectronics & micro machining processes	Understand
C316.3	Describe various MEMS micro sensors ,their operating principles	Understand
C316.4	Analyzes MEMS accelerometer technology	Analyze
C316.5	Summarizes the applications of MEMS accelerometer	Understand
C316.6	Describe advanced MEMS applications & the state of art in MEMS & MICROSYSTEMS	Understand
IC Applications Lab (15A04507)		
C317.1	Explain the significance of Op Amps, ASLK pro board and their applications.	Understand
C317.2	Design circuits using Analog system laboratory kit (ASLK) pro board trainers.	Create
C317.3	Define in-depth knowledge of applying the linear and nonlinear applications of op amps in real time applications.	Understand
C317.4	Analyze the OP Amp applications as summer, Subtractor, Multiplier, integrator, Voltage Regulator and multivibrators.	Analyze
C317.5	Generate various signal functions using ASLK pro board using TL081C Op Amp.	Create
C317.6	Design and explain the Analog to Digital conversion operation and vice versa.	Create
Digital Communication Systems Lab (15A04508)		
C318.1	Explain basic theories of Digital communication system in practical.	Remember
C318.2	Describe different techniques in modern digital communications, particular in source coding using MAT Lab tools.	Understand
C318.3	Determine the performance of different waveform coding techniques for the generation of a digital representation of the signal.	Apply
C318.4	Analyze digital modulation techniques by using MATLAB tools.	Analyze
C318.5	Recommend to appreciate high signal to noise magnitude relation which uses one bit PCM code to appreciate digital transmission of analog signal.	Evaluate
C318.6	Design digital communication systems as per given specifications	Create
Social Values and Ethics (15A99501)		
C319.1	Discuss the ethical values and social context of problems	Understand
C319.2	Outline the social responsibilities of an engineer, rights and qualities of moral Leadership.	Analyze
C319.3	Explain philosophy of Life and Individual qualities	Understand
C319.4	Discuss the core values that shape the ethical behavior of an engineer.	Understand
C319.5	Develop appropriate technologies and management patterns to create harmony in professional and personal life.	Create
C319.6	Outline environment conservation, enrichment and sustainability	Analyze

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Batch: 2017-21 **A.Y: 2020-21**

Course Outcomes (IV Year- I Sem)		
S. No	**Course Outcomes Statement**	**Taxonomy**
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)		
C4110.1	Design and simulation of Combinational circuit with functional verification.	Create
C4110.2	Design and simulation of Sequential circuit with functional verification.	Create
C4110.3	Generate Synthesis report for both combinational and sequential circuits	Create
C4110.4	Explain the configuration of the FPGA Spartan 3e Hardware using debug cable.	Understand
C4110.5	Design and simulate the operations of systems using CC Studio software and study the different modes of operations.	Understand
C4110.6	Explain the configuration of the embedded controller TIVA TM4C series using USB serial cable.	Understand