Course Outcomes(IV Year) 2019-20 I Sem		
Course Name: OPTICAL FIBER COMMUNICATIONS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: EMBEDDED SYSTEMS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: MICROWAVE ENGINEERING		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: DATA COMMUNICATIONS AND NETWORKING		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: RADAR SYSTEMS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: FPGA DESIGN		
NO	**Course Outcome**	**Taxonomy**
C416.1	Describe the programming of DSP and challenges of FPGA	Understand
C416.2	Explain asthmatic basics of DSP	Understand
C416.3	Interpret Altera FPGA Technologies, Xilinx FPGA Technologies and system level design tools for FPGA	Understand
C416.4	Summarization of behavioral synthesis tools and IRIS implementation.	Understand
C416.5	Analyse the issues for implementing complex DSP system onto heterogeneous platforms or even a single FPGA device.	Analyse
C416.6	Explain about system level design and exploration.	Understand

Course Name: DIGITAL IMAGE PROCESSING		
NO	**Course Outcome**	**Taxonomy**
C417.1	Describe the image processing concepts and apply them for engineering and real time applications.	Understand
C417.2	Use the skills to develop new image processing techniques to process images of any context through image transforms.	Apply
C417.3	Differentiate image enhancement techniques in spatial domain as well as frequency domain.	Understand
C417.4	Categorize image restoration techniques for image processing applications.	Analyse
C417.5	Infer image segmentation techniques for image processing applications.	Analyse
C417.1	Describe the image processing concepts and apply them for engineering and real time applications.	Understand
Course Name: Cellular & Mobile Communication		
NO	**Course Outcome**	**Taxonomy**
C418.1	Discuss the cellular mobile radio system design.	Understand
C418.2	Explain the different co-channel and non-co-channel interferences.	Understand
C418.3	Analyze the mobile radio propagation, fading and diversity concepts.	Analyse
C418.4	Analyze different mobile and cell site antennas used for mobile communication.	Analyse
C418.5	Interpret the various techniques used for reducing cochannel interference and improve system capacity.	Understand
C418.6	Discuss different types of handoff techniques and digital cellular networks.	Understand
Course Name: VLSI & EMBEDDED SYSTEMS LAB		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: MICROWAVE&OPTICAL COMMUNICATIONS LAB		
NO	**Course Outcome**	**Taxonomy**
C4110.1	Demonstrate the characteristics of Microwave sources	Apply
C4110.2	Demonstrate the characteristics of directional Couplers	Analyze
C4110.3	To test the characteristics of microwave components	Evaluate
C4110.4	To analyze the radiation pattern of antenna	Analyze
C4110.5	To measure antenna gain	Apply
C4110.6	Practice microwave measurement procedures	Apply

Course Outcomes (III Year) 2019-20 I Sem		
Course Name: COMPUTER ORGANIZATION		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: ANTENNAS & WAVE PROPAGATION		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: DIGITAL COMMUNICATION SYSTEMS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: LINEAR INTEGRATED CIRCUITS & APPLICATIONS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: DIGITAL SYSTEM DESIGN		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: MEMS & MICRO SYSTEMS		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: IC APPLICATIONS LAB		
NO	**Course Outcome**	**Taxonomy**
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
Course Name: DIGITAL COMMUNICATION SYSTEMS LAB		

NO	Course Outcome	Taxonomy
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
Course Name: DIGITAL COMMUNICATION SYSTEMS LAB		
NO	**Course Outcome**	**Taxonomy**
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

Course Outcomes (II Year) 2019-20 I Sem		
Course Name: Mathematics – III		
NO	**Course Outcome**	**Taxonomy**
C211.1	Solve the system of homogeneous and non-homogeneous linear equations.	Apply
C211.2	Find the Eigen values and Eigen vectors of the square matrices and discuss the nature of quadratic forms.	Apply
C211.3	Find the root of algebraic and transcendental Equations.	Apply
C211.4	Estimate the interpolating value of the function using interpolating techniques.	Apply
C211.5	Find the best fit of curves from the given data.	Apply
C211.6	Solve differential equations using numerical methods.	Apply
Course Name: ELECTRONIC DEVICES & CIRCUITS		
NO	**Course Outcome**	**Taxonomy**
C212.1	Recognize the transport phenomena of the charge carriers in a semiconductor.	Understand
C212.2	Analyze the different types of diodes, operation and its characteristics	Analyze
C212.3	Apply Different types of Filters in a AC to DC conversion	Apply
C212.4	Describe Bipolar Junction Transistors and Field Effect Transistors	Understand
C212.5	Analyze the different biasing techniques used in BJTs and FETs	Analyze
C212.6	Analyze different types of Amplifiers	Analyze
Course Name: SWITCHING THEORY AND LOGIC DESIGN		
NO	**Course Outcome**	**Taxonomy**
C213.1	Explain number systems, binary addition and subtraction, 2's complement representation and operations with this representation and understand the different binary codes.	Understand
C213.2	Explain switching algebra theorems and apply them for logic functions	Understand
C213.3	Identify the importance of SOP and POS canonical forms in the minimization or other optimization of Boolean formulas in general and digital circuits.	Understand
C213.4	Discuss about digital logic gates and their properties.	Understand
C213.5	Evaluate functions using various types of minimizing algorithms like Boolean algebra, Karnaugh map or tabulation method.	Evaluate
C213.6	Analyze the design procedures of Combinational & sequential logic circuits.	Analyze
Course Name: SIGNALS AND SYSTEMS		
NO	**Course Outcome**	**Taxonomy**
C214.1	Discuss the mathematical representation of continuous and discrete time signals using Fourier series.	Understand
C214.2	Illustrate the spectral characteristics of continuous-time aperiodic signals using Fourier Transform.	Apply
C214.3	Interpret the process of sampling for band limited signals.	Understand
C214.4	Analyze the response of LTI systems for various input signals.	Analyze
C214.5	Illustrate the spectral characteristics of discrete-time aperiodic signals using Fourier Transform.	Apply
C214.6	Determine the response of the system and ROC using Laplace and Z- transforms.	Apply
Course Name: PROBABILITY THEORY & STOCHASTIC PROCESSES		
NO	**Course Outcome**	**Taxonomy**
C215.1	Explain the concepts of Probability and Random Variable.	Understand
C215.2	Calculate probability Density and distribution functions for a single random variable..	Apply
C215.3	Illustrate multiple Random variables and operations on Multiple Random variables	Apply
C215.4	Analyze Temporal characteristics of a Random Processes.	Analyze
C215.5	Analyze Spectral characteristics of a Random Processes.	Analyze
C215.6	Evaluate the response of Linear Systems with random inputs	Evaluate
Course Name: Electrical Technology		
NO	**Course Outcome**	**Taxonomy**
C216.1	Acquire knowledge about the constructional details and principle of operation of dc machines.	Analyse
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.	Analyse
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	Analyse
C216.6	Acquire knowledge about testing and applications of synchronous machines.	Analyse
Course Name: Electronic Devices & Circuits Lab		
NO	**Course Outcome**	**Taxonomy**
C217.1	Use of RPS and CRO	Understand
C217.2	Working Operation of various electronic Components	Understand
C217.3	Set up a bias point in a transistor	Create
C217.4	Construct and evaluate the performance of simple electronic circuits	Analyze
C217.5	BJT,FET Amplifiers for Voltage Amplification	Create
C217.6	Simple DC power Supply circuits	Create
Course Name: Electrical Technology Lab		
NO	**Course Outcome**	**Taxonomy**
C218.1	Determine the Magnetization Characteristics and Critical Field Resistanceof D.C.Shunt Generator.	Apply
C218.2	Determination of Efficiency of a Given DC Shunt Machine Working as Motor by using Swinburne's test.	Apply
C218.3	Determination of Efficiency of a Given DC Shunt Machine Working as generator by using Swinburne's test.	Apply
C218.4	Determination of Performance Characteristics of DC Shunt Motor.	Apply
C218.5	Determination of Efficiency and Regulation at Given Power Factors of Single-Phase Transformer by OC & SC Tests	Apply
C218.6	Evaluate the Load Test on Single Phase Transformer.	Evaluate
Course Name: Basic Simulation Lab		
NO	**Course Outcome**	**Taxonomy**
C219.1	List and explain the MATLAB commands, functions and programming	Understand
C219.2	Generate various signals and sequences in MATLAB and perform operations on them.	Create
C219.3	Determine the Convolution and Correlation between Signals and Sequences.	Apply
C219.4	Justify the properties of a given Continuous/Discrete System and Sampling theorem.	Evaluate
C219.5	Determine the Laplace and Fourier Transform of the given signal.	Apply
C219.6	Judge the Linearity and Time Invariance Properties of a Given Continuous / Discrete System.	Evaluate