

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

List of course outcomes 2021 scheme (Co's)

SL NO	SEM	SCHEME	COURSE CODE	COURSE NAME	COURSE OUTCOMES
1	3RD	2021	21MAT31	Mathematics Course	Co1: To solve ordinary differential equations using Laplace transform.
					Co2: Demonstrate the Fourier series to study the behaviour of periodic functions and their applications in system communications, digital signal processing and field theory.
					Co3: To use Fourier transforms to analyze problems involving continuous-time signals and to apply Z-Transform techniques to solve difference equations
					Co4: To solve mathematical models represented by initial or boundary value problems involving partial differential equations
					Co5: Determine the extremals of functionals using calculus of variations and solve problems arising in dynamics of rigid bodies and vibrational analysis.
2	3RD	2021	21EC32	Digital System Design using Verilog	Co1: Simplify Boolean functions using K-map and Quine-McCluskey minimization technique.
					Co2: Analyze and design for combinational logic circuits.
					Co3: Analyze the concepts of Flip Flops (SR, D, T and JK) and to design the synchronous sequential circuits using Flip Flops.
					Co4: Model Combinational circuits (adders, subtractors, multiplexers) and sequential circuits using Verilog descriptions.
3	3RD	2021	21EC33	Basic Signal Processing	Co1: Understand the basics of Linear Algebra
					Co2: Analyse different types of signals and systems
					Co3: Analyse the properties of discrete-time signals & systems
					Co4: Analyse discrete time signals & systems using Z transforms
4	3RD	2021	21EC34	Analog Electronic Circuits	Co1: Understand the characteristics of BJTs and FETs for switching and amplifier circuits.
					Co2: Design and analyze FET amplifiers and oscillators with different circuit configurations and biasing conditions.
					Co3: Understand the feedback topologies and approximations in the design of amplifiers and oscillators.
					Co4: Design of circuits using linear ICs for wide range applications such as ADC, DAC, filters and timers.
					Co5: Understand the power electronic device components and its functions for basic power electronic circuits.
5	3RD	2021	21ECL35	Analog & Digital Electronics Lab	Co1: Design and analyze the BJT/FET amplifier and oscillator circuits.
					Co2: Design and test Opamp circuits to realize the mathematical computations, DAC and precision rectifiers.
					Co3: Design and test the combinational logic circuits for the given specifications.
					Co4: Test the sequential logic circuits for the given functionality.

				Co5: Demonstrate the basic electronic circuit experiments using SCR and 555 timer.
6		21UH36	Social Connect and Responsibility	Co1: Understand social responsibility
				Co2: Practice sustainability and creativity
				Co3: Showcase planning and organizational skills
7		21KKBK37	Kannada	Co1: To understand the necessity of learning of local language for comfortable life.
				Co2: To Listen and understand the Kannada language properly.
				Co3: To speak, read and write Kannada language as per requirement.
				Co4: To communicate (converse) in Kannada language in their daily life with kannada speakers.
				Co5: To speak in polite conversation.
8		21EC381	LD Lab using Pspice	Co1: Demonstrate the truth table of various expressions and combinational circuits using logic gates.
				Co2: Design various combinational circuits such as adders, subtractors, comparators, multiplexers and code converters.
				Co3: Construct flips-flops, counters and shift registers.
				Co4: Design and implement synchronous counters.
9		21MAT41	Maths for Communication Engineers	Co1: Recall the basic laws and definitions (with mathematical representations) in Electric and Magnetic fields.
				Co2: Apply the basic laws of Electric and Magnetic fields to arrive at Divergence Theorem, Current continuity Equation, Curl, Stokes' theorem.
				Co3: Apply Electric and Magnetic field concepts to arrive at Maxwell's equations, Electromagnetic wave equations and Poynting's theorem (Important concepts related to Communication link).
				Co4: Recall the definitions related to Random variables and Random Processes
				Co5: Model the Random events in the Communication set-up and determine useful statistical parameters.
10		21EC42	Digital Signal Processing	Co1: Determine response of LTI systems using time domain and DFT techniques
				Co2: Compute DFT of real and complex discrete time signals
				Co3: Compute DFT using FFT algorithms
				Co4: Design FIR and IIR Digital Filters
				Co5: Design of Digital Filters using DSP processor
				Co1: Analyse and solve Electric circuit, by applying, loop analysis, Nodal analysis and by applying
				Co2: Evaluate two port parameters of a network and Apply Laplace transforms to solve electric networks.

11	4TH	2021	21EC43	Circuits & Controls	Co3: Deduce transfer function of a given physical system, from differential equation representation or Block Diagram representation and SFG representation.
					Co4: Calculate time response specifications and analyse the stability of the system.
					Co5: Draw and analyse the effect of gain on system behaviour using root loci.
					Co6: Perform frequency response Analysis and find the stability of the system.
					Co7: Represent State model of the system and find the time response of the system.
12			21EC44	Communication Theory	Co1: Understand the amplitude and frequency modulation techniques and perform time and frequency domain transformations.
					Co2: Identify the schemes for amplitude and frequency modulation and demodulation of analog signals and compare the performance.
					Co3: Characterize the influence of channel noise on analog modulated signals.
					Co4: Understand the characteristics of pulse amplitude modulation, pulse position modulation and pulse code modulation systems.
					Co5: Illustration of digital formatting representations used for Multiplexers, Vocoders and Video transmission.
13			21BE45	Biology For Engineers	Co1: Elucidate the basic biological concepts via relevant industrial applications and case studies.
					Co2: Evaluate the principles of design and development, for exploring novel bioengineering projects.
					Co3: Corroborate the concepts of biomimetics for specific requirements.
					Co4: Think critically towards exploring innovative biobased solutions for socially relevant problems.
14			21ECL46	Communication Laboratory I	Co1: Demonstrate the AM and FM modulation and demodulation by representing the signals in time and frequency domain.
					Co2: Design and test the sampling, Multiplexing and PAM with relevant circuits.
					Co3: Demonstrate the basic circuitry and operations used in AM and FM receivers.
					Co4: Illustrate the operation of PCM and delta modulations for different input conditions.
15			21CIP47	Constitution of India & Professional Ethics	CO1 Analyse the basic structure of Indian Constitution.
					CO2 Remember their Fundamental Rights, DPSP's and Fundamental Duties (FD's) of our constitution.
					CO3 know about our Union Government, political structure & codes, procedures.
					CO4 Understand our State Executive & Elections system of India.
					CO5 Remember the Amendments and Emergency Provisions, other important provisions given by the constitution.

16	5TH	2021	21EC481	Embedded C Basics	Co1: write C programs in 8051 for solving simple problems that manipulate input data using different instructions of 8051 C.		
					Co2: Develop testing and experimental procedures on 8051 Microcontroller, analyze their operation under different cases.		
					Co3: Develop programs for 8051 Microcontroller to implement real world problems.		
					Co4: Design and Develop Mini projects		
17					21UH49	Universal Human Values	Co1: Holistic vision of life
							Co2: Socially responsible behaviour
							Co3: Environmentally responsible work
							Co4: Ethical human conduct
							Co5: Having Competence and Capabilities for Maintaining Health and Hygiene
							Co6: Appreciation and aspiration for excellence (merit) and gratitude for all
19			21EC51	Digital Communication	Co1: Analyze different digital modulation techniques and choose the appropriate modulation technique for the given specifications.		
					Co2: Test and validate symbol processing and performance parameters at the receiver under ideal and corrupted bandlimited channels.		
					Co3: Differentiate various spread spectrum schemes and compute the performance parameters of communication system.		
					Co4: Apply the fundamentals of information theory and perform source coding for given message		
					Co5: Apply different encoding and decoding techniques with error Detection and Correction.		
20			21EC52	Computer Organization & ARM Microcontrollers	Co1: Explain the basic organization of a computer system.		
					Co2: Demonstrate functioning of different sub systems, such as processor, Input/output, and memory.		
					Co3: Describe the architectural features and instructions of 32-bit microcontroller ARM Cortex M3.		
					Co4: Apply the knowledge gained for Programming ARM Cortex M3 for different applications.		
21			21EC53	Computer Communication Networks	Co1: Understand the concepts of networking thoroughly.		
					Co2: Identify the protocols and services of different layers.		
					Co3: Distinguish the basic network configurations and standards associated with each network.		
					Co4: Discuss and analyse the various applications that can be implemented on networks.		
					Co1: Evaluate problems on electrostatic force, electric field due to point, linear, volume charges by applying conventional methods and charge in a volume.		

22			21EC54	Electromagnetics Waves	Co2: Apply Gauss law to evaluate Electric fields due to different charge distributions and Volume Charge distribution by using Divergence Theorem.
					Co3: Determine potential and energy with respect to point charge and capacitance using Laplace equation and Apply Biot-Savart's and Ampere's laws for evaluating Magnetic field for different current configurations
					Co4: Calculate magnetic force, potential energy and Magnetization with respect to magnetic materials and voltage induced in electric circuits
					Co5: Apply Maxwell's equations for time varying fields, EM waves in free space and conductors and Evaluate power associated with EM waves using Poynting theorem
23			21ECL55	Communication Lab II	Co1: Design and test the digital modulation circuits and display the waveforms.
					Co2: To Implement the source coding algorithm using C/C++/ MATLAB code.
					Co3: To Implement the Error Control coding algorithms using C/C++/ MATLAB code.
					Co4: Illustrate the operations of networking concepts and protocols using C programming and network simulators.
24			21RMI56	Research Methodology & Intellectual Property Rights	CO 1. To know the meaning of engineering research.
					CO 2. To know the procedure of Literature Review and Technical Reading.
					CO 3. To know the fundamentals of patent laws and drafting procedure
					CO 4. Understanding the copyright laws and subject matters of copyrights and designs
					CO 5. Understanding the basic principles of design rights .
25			21CIV57	Environmental Studies	CO1: Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale,
					CO2: Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
					CO3: Demonstrate ecology knowledge of a complex relationship between biotic and a biotic components.
					CO4: Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.
26			21EC581	IoT (Internet of Things) Lab	Co1: Understand internet of Things and its hardware and software components
					Co2: Interface I/O devices, sensors & communication modules
					Co3: Remotely monitor data and control devices
					Co4: Develop real life IoT based projects
27	6TH	2021	21EC61	Technological Innovation Management and	Co1: Understand the fundamental concepts of Management and its functions.
					Co2: Understand the different functions to be performed by managers/Entrepreneur.
					Co3: Understand the social responsibilities of a Business.
					Co4: Understand the Concepts of Entrepreneurship and to identify Business opportunities.

			Entrepreneurship	Co5: Understand the components in developing a business plan and awareness about various sources of funding and Institutions supporting Entrepreneur.	
28			21EC62	Microwave Theory & Antennas	Co1: Describe the use and advantages of microwave transmission
					Co2: Analyze various parameters related to transmission lines.
					Co3: Identify microwave devices for several applications.
					Co4: Analyze various antenna parameters and their significance in building the RF system.
					Co5: Identify various antenna configurations for suitable applications.
29			21EC63	VLSI Design & Testing	Co1: Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling.
					Co2: Draw the basic gates using the stick and layout diagram with the knowledge of physical design aspects.
					Co3: Interpret memory elements along with timing considerations.
					Co4: Interpret testing and testability issues in combinational logic design.
					Co5: Interpret testing and testability issues in combinational logic design.
30			21EC642	Cryptography	Co1: Explain traditional cryptographic algorithms of encryption and decryption process.
					Co2: Use symmetric and asymmetric cryptography algorithms to encrypt and decrypt the data.
					Co3: Apply concepts of modern algebra in cryptography algorithms.
					Co4: Design pseudo random sequence generation algorithms for stream cipher systems.
31			21CS653	Introduction to cyber security	Co1: Describe the cyber crime terminologies
					Co2: Analyze cybercrime in mobiles and wireless devices along with the tools for Cybercrime and prevention
					Co3: Analyze the motive and causes for cybercrime, cybercriminals, and investigators
					Co4: Apply the methods for understanding criminal case and evidence, detection standing criminal case and evidence.
32			21ECL66	VLSI Laboratory	Co1: Design and simulate combinational and sequential digital circuits using Verilog HDL.
					Co2: Understand the synthesis process of digital circuits using EDA tool.
					Co3: Perform ASIC design flow and understand the process of synthesis, synthesis constraints and evaluating the synthesis reports to obtain optimum gate level netlist.
					Co4: Design and simulate basic CMOS circuits like inverter, common source amplifier, differential amplifier, SRAM.
					Co5: Perform RTL_GDSII flow and understand the stages in ASIC design.