Sapthagiri College of Engineering

(Affiliated to Visvesvaraya Technological University, Belagavi& Approved by AICTE, New Delhi)

#14/5, Chikkasandra, Hesaraghatta Main Road, Bengaluru – 560057

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Department of Electronics & Communication Engineering

Course Outcomes (2017-2021 Batch)

Subject Name / Subject code/ Course code	Course Number	Course out comes: On completion of the course the student will be able to
ENGINEERING MATHEMATICS –I /17MAT11/C101	C101.1	Find nth derivative of standard functions, Radius of Curvature and angle between curves of functions in Cartesian and Polar form.
	C101.2	Find Taylor's and Maclaurin's series of the functions, the limits in indeterminate form and to solve the problems on Partial differentiation.
	C101.3	Find the velocity, acceleration, gradient, curl, divergence using vector identities in two and three dimensions.
	C101.4	Find the integrals involving Sinnx, Cosnx, SinnxCosnx between the limits 0 to $\pi/2$.
	C101.5	Solve the ordinary first order and first-degree differential equations.
	C101.6	Solve the system of linear equations by using different techniques of Linear Algebra.
ENGINEERING PHYSICS/17PHY12/ C102	C102.1	Describe the fundamentals of Modern Physics and Quantum Mechanics and apply to wave mechanics.
	C102.2	Differentiate the conductivity of conductors, semiconductors and super conductors based on Quantum theory
	C102.3	Explain basic principles, types and applications of Laser and Optical fibres.

	C102.4	Classify the crystal systems, and analyse crystal structure using XRD
	C102.5	Explain the concept, production and applications of shockwaves.
	C102.6	Explain the synthesis, characterization and applications of Nano materials.
ELEMENTS OF CIVIL ENGINEERING AND MECHANICS/17CIV23/ C103	C103.1	Understand the applications of various fields of Civil Engineering
	C103.2	Compute the resultant of given force system subjected to various loads.
	C103.3	Explain the comprehend the action of Forces, Moments and other loads on systems of rigid bodies and compute the reactive forces that develop as a result of the external loads.
	C103.4	Demonstrate to locate the Centroid and compute the Moment of Inertia of regular and built-up sections.
	C103.5	Apply Knowledge of kinetics and kinematics, to understand about curvilinear and rectilinear motion and to analyse the various problems based on these.
ELEMENTS OF MECHANICAL ENGINEERING /17EME14/ C104	C104.1	Explain different sources of energy and its conversion
	C104.2	Explain the conversion of energy by prime movers.
	C104.3	Explain the different machine tool operations and basics of Robotics and Automation.
	C104.4	Explain basic engineering materials and identify its application.
	C104.5	Explain the working principle of refrigeration and air conditioning.

BASIC ELECTRICAL ENGINEERING/17ELE15/ C105	C105.1	Analyse DC Circuits and apply laws to EMI to electrical equipment's.
	C105.2	Explain the construction, working of DC machines and measuring equipment's.
	C105.3	Analyse the single-phase AC circuits, explain the domestic wiring concepts together with protective devices and protective devices
	C105.4	Analyse the three phase AC circuits, explain the construction, working of synchronous generator with relevant equations and protective devices
	C105.5	Explain the construction, working and performance of single-phase transformers and three phase induction motors
WORKSHOP LAB/17WSL16/ C106	C106.1	Demonstrate the use of fitting tools to make models.
	C106.2	Demonstrate the use of sheet metal tools to make models.
	C106.3	Demonstrate the use of welding tools to make Models.
ENGINEERING PHYSICS LAB/17PHYL17/ C107	C107.1	Formulate, Conduct and inference of the Engineering physics experiments
	C107.2	Characterize the semiconducting materials
	C107.3	Determine the physical parameters in optical experiments.
	C107.4	Find the mechanical properties of materials.
	C107.5	Identify and verify the passive electronic components

ENGINEERING MATHEMATICS – II/17MAT21/ C108	C108.1	Solve linear and nonlinear ordinary differential equations of higher degree.
	C108.2	Solve the Partial differential equations of Fluid Mechanics, Electromagnetic Theory & Heat transfer
	C108.3	Find Area, Volume, Moment of Inertia of Plane and Solids using double and triple integrals.
	C108.4	Relate Beta and Gamma functions and its properties.
	C108.5	Solve initial and boundary value problems of ODE using Laplace Transforms.
ENGINEERING CHEMISTRY/17CHE22/ C109	C109.1	Explain the working of cells, batteries and fuel cells using electrochemical concepts.
	C109.2	Identify the corrosion related problems and develop corrosion resistance materials.
	C109.3	Identify techniques for analysis and analyze the quality parameters of chemical fuels.
	C109.4	Demonstrate the knowledge of polymer materials for futuristic engineering applications
	C109.5	Identify boiler troubles and apply suitable waste water treatment techniques in addition to basic concepts of nano-size particles and properties.
	C110.1	Illustrate simple algorithms and flowcharts for problem solving skills
	C110.2	Make use of the basic principles of Programming in C language

C PROGRAMMING FOR PROBLEM SOLVING/17PCD23/C110	C110.3	Develop modular programming skills.
	C110.4	Explain the basic concepts of pointers.
	C110.5	Utilization of memory using pointer concepts and data structures.
COMPUTER AIDED ENGINEERING DRAWING/17CED24/ C2111	C111.1	Demonstrate the usage of CAD software.
	C111.2	Draw orthographic projections of points, lines, planes and solids.
	C111.3	Generate the development of lateral surfaces of solids and isometric projections of solids
BASIC ELECTRONICS/17ELN25/ C112	C112.1	Describe the applications of semiconductor diodes in rectifier, Filter circuits and different transistor configurations, transistor biasing circuits.
	C112.2	Design simple amplifiers circuits, comparators, adders, integrator and differentiators using opamps.
	C112.3	Apply the knowledge of digital electronics to implement Boolean expressions using logic gates.
	C112.4	Explain the functioning of communication system and compare Analog modulation techniques.
	C112.5	Explain and Choose transducers for different applications.
	C113.1	Write flowcharts, algorithms and program for simple problems

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COMPUTER PROGRAMMING LABORATORY/17CPL26/ C113	C113.2	Identify Syntax and logical errors to execute a program
	C113.3	Develop iterative and recursive programs
	C113.4	Demonstrate use of functions, arrays, strings, structures and pointers in problem solving
ENGINEERING CHEMISTRY LAB/17CHEL27/ C114	C114.1	Analyze hardness of water and quality of cement
	C114.2	Analyze copper and iron metal from its alloy and ore.
	C114.3	Analyze waste water and Alkalinity of water sample.
	C114.4	Estimate the strength and concentration of acids.
	C114.5	Measure the viscosity coefficient of organic liquids
ENVIRONMENTAL STUDIES/17CIV28/ C115	C115.1	Understand the principles of ecology and environmental issues that apply to air, land, and water issues on a global scale
	C115.2	Develop critical thinking and/or observation skills, and apply them to the analysis of a problem or question related to the environment.
	C115.3	Demonstrate ecology knowledge of a complex relationship between predators, prey, and the plant community.
	C115.4	Apply their ecological knowledge to illustrate and graph a problem and describe the realities that managers face when dealing with complex issues.

ENGINEERING MATHEMATICS – III/17MAT 31/C201	C201.1	Find the Fourier series, half range Fourier series and Fourier coefficients of periodic functions
	C201.2	Find the Fourier and inverse Fourier transforms of a periodic function
	C201.3	Solve the finite difference equations using Z-transforms
	C201.4	Apply the concept of statistics for curve fitting, correlation and regression
	C201.5	Analyse and apply proper numerical techniques to solve the algebraic/transcendental equation, to find polynomials, intermediate values and evaluation of integrals
	C201.6	Find the integrals using Green's, Stokes and Gauss divergence theorem and extremal of a functional
ELECTRONIC INSTRUMENTATION/ 17EC32/C202	C202.1	Identify the various types of errors and calculate the same and describe the operation of ammeters, voltmeters and Multimeters and develop circuits for multi range Ammeters and Voltmeters
	C202.2	Illustrate functional concepts and operation of Digital voltmeters and instruments to measure frequency, time period, phase difference of signals, rotation speed, capacitance and pH of solutions and microprocessor-based instrumentation
	C202.3	Illustrate the operation of Analog oscilloscope, digital storage oscilloscope and different types of signal generators

	C202.4	Describe functional concepts of various Analog measuring instruments to measure field Strength, impedance, stroboscopic speed, Q of coils, insulation resistance and analyze AC and DC bridges for passive component and frequency measurements.
	C202.5	Classify different types of transducers for different applications
ANALOG ELECTRONICS /17EC33/C203	C203.1	Analyse the working and characteristics of BJT, FET, Single stage, cascaded and feedback amplifiers.
	C203.2	Analyse and design different oscillators using BJT/FET and explain UJT relaxation oscillator.
	C203.3	Calculate the AC gain and impedance for BJT using re and h parameters models for CE and CC configuration.
	C203.4	Analyse and determine the performance characteristics and parameters of BJT and FET amplifier using small signal model.
	C203.5	Design and evaluate the efficiency of Class A and Class B power amplifiers and explain the operation of voltage regulators
DIGITAL ELECTRONICS /17EC34/C204	C204.1	Develop simplified switching equations using Karnaugh Maps and Quine McClusky techniques
	C204.2	Apply the knowledge of decoders, encoders, multiplexers and demultiplexers to generate specific functions and describe the operation of adders, subtractors and comparators

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	C204.3	Analyse the working of Latches and Flip Flops (SR, D, T and JK)
	C204.4	Design Synchronous/Asynchronous Counters and Shift registers using Flip Flops
	C204.5	Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits
	C204.6	Apply the knowledge of flip flops in the design of Counters and Registers
NETWORK ANALYSIS/17EC35/C205	C205.1	Analyse and Solve problems in electric circuits using conventional methods
	C205.2	Apply Network Theorems to Electric circuits to reduce circuit complexities to arrive at feasible solutions.
	C205.3	Analyse and determine the circuit parameters under transient conditions
	C205.4	Analyse the resonant circuits and compute their performance parameters
	C205.5	Analyse the Electric network using two port parameters
ENGINEERING ELECTROMAGNETICS/ 17EC36/C206	C206.1	Evaluate the problems on Electric Fields due to different charge distributions by applying conventional methods and gauss law
	C206.2	Solve problems related to Poisson's and Laplace's Equations, Uniqueness theorem, and solution of Laplace's equation and steady magnetic field.
	C206.3	Analyse and solve problems related to Magnetic Forces, Time-varying fields using Maxwell's equations

	C206.4	Evaluate power associated with em waves using Poynting theorem
ANALOG ELECTRONICSLAB /17ECL37/C207	C207.1	Design and Test rectifiers, clipping circuits, clamping circuits and voltage regulators
	C207.2	Determine the parameters from the characteristics of JFET and MOSFET devices
	C207.3	Evaluate BJT amplifiers in CE configuration as well as JFET/MOSFET amplifiers
	C207.4	Test a power amplifier and compute its conversion efficiency
	C207.5	Design and test various types of oscillators
DIGITAL ELECTRONICS LAB/ 17ECL38/C208	C208.1	Apply De Morgan's theorem to simplify the various expressions, combinational circuits and verify the functionality.
	C208.2	Design, test and evaluate combinational circuits such as adders, subtractors, comparators, multiplexers and demultiplexers.
	C208.3	Construct flipflops, counters and shift registers
	C208.4	Simulate full adder and up down counters
ENGINEERING MATHEMATICS – IV/17MAT 41/C209	C209.1	Apply appropriate numerical methods to solve ordinary differential equations
	C209.2	Derive and Apply Bessel's function, Legendre's polynomials & Rodrigue's formula, and its properties.

	C209.3	Solve problems on analytic functions using Cauchy–Riemann equations, complex line integrals, conformal and bilinear transformations.
	C209.4	Analyse and solve the probability distribution problems.
	C209.5	Analyse and interpret the hypothesis for the given sampling distribution and to solve stochastic process problems.
SIGNALS AND SYSTEM/17EC42/C210	C210.1	Analyse and classify the signals and determine the properties of continuous/discrete time systems
	C210.2	Analyse and compute the response of a Continuous and Discrete LTI system using convolution integral and convolution sum.
	C210.3	Analyse and determine the spectral characteristics of continuous and discrete time signal using Fourier analysis.
	C210.4	Analyse discrete time systems using Z-transforms.
CONTROLS SYSTEM/17EC43/C211	C211.1	Develop mathematical model of mechanical and electrical systems and derive transfer function for a given control system using block diagram reduction techniques and signal flow graph method
	C211.2	Determine time domain specifications for first and second order systems
	C211.3	Analyse stability of a system in time domain using Routh-Hurwitz criterion and Root-locus technique

	C211.4	Analyse stability in the frequency domain using Nyquist and Bode plots
	C211.5	Develop a control system model in continuous and discrete time using state variable techniques
PRINCIPALS OF COMMUNICATION SYSTEM/17EC44/C212	C212.1	Determine the performance of amplitude modulation schemes in time and frequency domains.
	C212.2	Determine the performance of frequency modulation schemes in time and frequency domains.
	C212.3	Characterize analog signals in time domain as random processes and in frequency domain using Fourier transforms.
	C212.4	Determine the performance of analog communication systems.
	C212.5	Analyse the characteristics of pulse modulation schemes
LINEAR INTEGRATED CIRCUITS/17EC45/C213	C213.1	Explain and analyse opamp circuit and its parameters and design opamp based amplifier circuits
	C213.2	Design active filters using op-amp
	C213.3	Develop opamp based instrumentation amplifier, linear and non-linear circuits
	C213.4	Explain applications of linear ICs in voltage regulators, Phase detectors, VCO, DAC ADC and Timer

MICROPROCESSOR/17EC46/C214	C214.1	Familiarize basic architecture of 8086 microprocessor.
	C214.2	Program 8086 Microprocessor using Assembly Level Language.
	C214.3	Use Procedures in 8086 Programs.
	C214.4	Describe interfacing of 16-bit microprocessor with memory and peripheral chips involving system design.
	C214.5	Describe the Von-Neumann, Harvard, CISC & RISC CPU architecture.
MICROPROCESSOR LAB /17ECL47/C215	C215.1	Develop 8-86 assembly level programs to perform data transfer, arithmetic and logical operations
	C215.2	Develop 8-86 assembly level programs to sort and search elements in a given array.
	C215.3	Develop string transfer, string reversing, searching a character in a string with string manipulation instructions of 8-86
	C215.4	Develop 8-86 programs using concepts of procedures and macros
	C215.5	Develop the 8086 processor-based applications by interfacing input and output devices.
LINEAR INTEGRATED CIRCUITS LAB17ECL48/C216	C216.1	Demonstrate the pulse and flat top sampling techniques using basic circuits
	C216.2	Demonstrate addition, integration and differentiation using linear IC741, and 555 timer operations to generate signals/pulses

	C216.3	Demonstrate AM and FM operations and frequency synthesis.
	C216.4	Design and illustrate the operation of instrumentation amplifier using active filters DAC and oscillators using linear IC.
MANAGEMENT ENTREPRENEURSHIP AND DEVELOPMENT 17ES51/C301	C301.1	Illustrate the fundamental concepts of Management and Planning
	C301.1	Examine various functions of management and distinguish various leadership styles
	C301.1	Describe the functions of Entrepreneurs and their social responsibilities and select a best Entrepreneurship model for the required domain of establishment
	C301.1	Analyse the Institutional support by various state and central government agencies
	C301.1	Design a project and understand the various levels of project management and describe team management
DIGITAL SIGNAL PROCESSING/17EC52/C302	C302.1	Determine the response of LTI system using time domain and DFT techniques.
	C302.2	Compute DFT of real and complex discrete time signals.
	C302.3	Computation of DFT using FFT algorithms and linear filtering approach
	C302.4	Solve problems on analog filter design and realise using discrete structures (IIR filters)
	C302.5	Solve problems on digital filter design and realise using digital computations (FIR filter)

VERILOG HDL/17EC53/C303	C303.1	Describe the need of HDL with different design styles and design methodologies in HDL
	C303.2	Design combinational logic in Gate level and Data flow style using Verilog HDL.
	C303.3	Design Combinational and sequential circuits in behavioural modelling using Verilog HDL.
	C303.4	Design Combinational and sequential circuits in all the three design styles with VHDL.
INFORMATION THEORY AND CODING/17EC54/C304	C304.1	Apply the concept of measure of information, entropy, rate of information for dependent and independent sources.
	C304.2	Apply Shannon encoding, Shannon Fano prefix codes and Huffman encoding algorithms for the given information source
	C304.3	Determine a code word comprising of the check bits computed using linear block codes, cyclic codes and convolutional codes.
	C304.4	Design the encoding and decoding for linear block codes, cyclic codes, convolutional codes and model the continuous and discrete communication channels using input, output and joint probabilities
OPERATING SYSTEM/17EC553/C305	C305.1	Describe the fundamental concerns and classify the operating systems
	C305.2	Apply scheduling techniques to find performance parameters
	C305.3	Explain the organization of file system and IOCS

	C305.4	Apply suitable techniques for contiguous and non-contiguous memory allocations
	C305.5	Identify and explain different message passing techniques, deadlock detection and prevention methods
MICROCONTROLLER/17EC563/C306	C306.1	Define an embedded system and describe the architecture of 8-51 micro-controller.
	C306.2	Apply 8-51 instructions to develop embedded system application programs
	C306.3	Apply the concepts of stacks and subroutines in 8-51 based embedded systems application programmes
	C306.4	Apply the concepts of timers and UART in delay generation and serial communication.
	C306.5	Explain interrupts and apply Interfacing concepts to develop 8-51 based Embedded systems
DSP Lab/17ECL57/C307	C307.1	Simulate analog to digital conversion system using MATLAB
	C307.2	Apply DFT for the analysis of discrete time signals using MATLAB
	C307.3	Design the digital filters using MATLAB
	C307.4	Analyse and implement different discrete computations on DSP processor
HDL LAB/17ECL58/C308	C308.1	Develop, synthesize Verilog code for combinational circuits
	C308.2	Develop, synthesize Verilog code for sequential circuits like flip flops and counters.

	C308.3	Develop, Synthesize and implement Verilog code for Combinational and Sequential circuits on FPGA
	C308.4	Develop, synthesize and implement Verilog code on FPGA to interface input, output devices
DIGITAL COMMUNICATION/17EC61/C309	C309.1	Apply Hilbert transform and represent the signals mathematically and compare different line coding formats
	C309.2	Apply the concept of transmission of signals over AWGN channels
	C309.3	Apply the concept of different digital modulation techniques.
	C309.4	Design and analyse the transmission of signals through band limited channels
	C309.5	Apply the principles of secured digital communication systems
ARM MICRO-CONTROLLER AND EMBEDDED SYSTEM/17EC62/C310	C310.1	Describe the architectural features and instructions of 32-bit microcontroller ARM Cortex M3.
	C310.2	Describe the memory map of cortex m3 and apply the knowledge gained for Programming ARM Cortex M3 for different applications.
	C310.3	Apply the knowledge in selecting basic hardware components in the design of embedded systems

	C310.4	Describe the development of an embedded system using the hardware /software co-design and firmware design approaches.
	C310.5	Apply the need of real time operating system for embedded system applications.
VLSI Design/17EC63/C311	C311.1	Explain MOS transistor theory and CMOS process flow
	C311.2	Design and analyse logic gates using different cmos logic structures.
	C311.3	Analyse performance of MOS devices based on scaling
	C311.4	Design various subsystems like ALU and memory elements
	C311.5	Explain the basic FPGA Based Systems
COMPUTER COMMUNICATION NETWORK/17EC64/C312	C312.1	Identify the protocols and services of data link layer.
	C312.2	Identify the protocols and functions associated with transport layer services.
	C312.3	Distinguish the layer architecture of computer networks
	C312.4	Distinguish the basic network configuration and standards associated with each network
	C312.5	Construct a network model and determine the routing of packets using different routing algorithms.
	C313.1	compare the various switching systems for different applications

DIGITAL SWITCHING SYSTEMS/17EC654/C313	C313.2	Analyse the telecommunication traffic and design the grading system.
	C313.3	Compare and explain the technologies associated with the data switching operations
	C313.4	Analyse the different software aspects of switching systems and its maintenance.
DIGITAL SYSTEM DESIGN USING VERILOG /17EC663/C314	C314.1	Explain the concept of Verilog language and design digital systems as an activity in a larger system design contest
	C314.2	Explain the operation of semiconductor memories and design memories used in application specific digital system.
	C314.3	Analyse how effectively ICs are embedded in package and assembled in PCBs for different applications.
	C314.4	Design and diagnose of processors and IO controllers used in embedded system.
	C314.5	Summarise the concepts and techniques of modern IC design methodology
EMBEDDED CONTROLLER LAB/17ECL67/C315	C315.1	Develop assembly level program using 32-bit ARM Cortex M3 microcontroller
	C315.2	Develop ARM Cortex M3 based embedded c programs for different applications.
	C315.3	Develop ARM Cortex M3 based embedded systems by interfacing I/O devices
	C315.4	Develop embedded system applications using C language programs by using library functions.

COMPUTER NETWORKS LAB/17ECL68/C316	C316.1	Choose suitable tools to model a network and understand the protocols at various OSI reference levels
	C316.2	Design a suitable network and simulate using network simulator tool
	C316.3	Simulate the networking concepts and protocols using C/C++ programming
	C316.4	Model the networks for different configurations and analyse the results.
MICRO-WAVE AND ANTENNA /17EC71/C401	C401.1	Illustrate the advantages and applications of microwaves
	C401.2	Analyse various parameters related to microwave transmission lines and waveguides
	C401.3	Identify microwave devices for several applications
	C401.4	Analyse various antenna parameters necessary for building an RF system
	C401.5	Analyse various antenna configurations according to the applications.
DIGITAL IMAGE PROCESSING/17EC72/C402	C402.1	Explain Fundamental steps in Digital image processing and apply some basic relationships between pixels
	C402.2	Apply different transforms to analyse images
	C402.3	Apply different restoration techniques and methods for image processing
	C402.4	Apply different colour models and morphological operations for image processing

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	C402.5	Apply different image segmentation techniques to images.
POWER ELECTRONICS/17EC73/C403	C403.1	Analyse and explain the characteristics of different power devices based on their applications
	C403.2	Analyse and Design Control circuits for Thyristors
	C403.3	illustrate the design and application of thyristors as controlled rectifiers and AC voltage regulators.
	C403.4	Classify and design choppers.
	C403.5	Analyse the operation of Inverters.
MULTI-MEDIA COMMUNICATION/7EC741/C404	C404.1	Classify different multimedia networks based on applications.
	C404.2	Analyse different compression techniques.
	C404.3	Analyse compression techniques required to compress text and image and gain knowledge of DMS.
	C404.4	Analyse compression techniques required to compress audio and video.
	C404.5	Explain multimedia communication across different networks.
SATELLITE COMMUNICATION/17EC755/C405	C405.1	Classify the satellite orbits and illustrate the orbital parameters.
	C405.2	Identify and illustrate the different satellite subsystem and earth station.

	C405.3	List and summarise the various applications of satellite (focus on national satellite system).
	C405.4	Compute the satellite link parameters under various propagation conditions with the illustration of multiple access techniques.
ADVANCED COMMUNICATION LAB/17ECL76/C406	C406.1	Design and demonstrate the digital modulation techniques.
	C406.2	Demonstrate the measurement of the operating frequency, guided wavelength and VSWR in micro wave test bench.
	C406.3	Measure the performance parameters for a given micro strip passive device.
	C406.4	simulate PCM, NRZ QPSK using MATLAB.
	C406.5	Demonstrate and analyse the losses in optical fibers.
VLSI LAB/17ECL77/C407	C407.1	Write test bench to simulate various digital circuits.
	C407.2	Interpret concepts of DC Analysis, AC Analysis and Transient Analysis in analog circuits.
	C407.3	Design and simulate basic CMOS circuits like inverter, common source amplifier and differential amplifiers.
	C407.4	Use basic amplifiers and further design higher level circuits like operational amplifier and analog/digital converters to meet desired parameters.

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	C407.5	Use transistors to design gates and further using gates realize shift registers and adders to meet desired parameters.
PROJECT WORK-PHASE-1/17ECP78/C408	C408.1	Identify, formulate and analyse engineering problems for the need of society.
	C408.2	Design solutions for engineering problems using modern tool/technology to investigate with interpretation of data
	C408.3	Analyse the impact of the engineering solutions in societal and environmental contexts for sustainable development with commit to professional ethics
	C408.4	Work individually and in team, Communicate effectively through reports and presentations.
	C408.5	Apply engineering, management and ethical principles for Project management and finance.
WIRELESS CELLULAR COMMUNICATION & LTE4G/17EC81/C409	C409.1	Model the system architecture and the functional standard specified in LTE 4G.
	C409.2	Analyze the role of LTE radio interface protocols and EPS Data convergence protocols to set up, reconfigure and release data and voice from users.
	C409.3	compare the UTRAN and EPS handling processes from set up to release including mobility management for a variety of data call scenarios.
	C409.4	Examine the Performance of resource management and packet data processing and transport algorithms.

FIBER OPTICS AND NETWORKS/17EC82/C410	C410.1	Explain the classification and working of optical fiber with different modes of signal propagation.
	C410.2	Analyse the transmission characteristics and compute losses in optical fiber communication.
	C410.3	Explain the construction and working of optical sources and detectors.
	C410.4	Illustrate the networking aspects of optical fiber and describe associated standards.
MACHINE LEARNING/17EC834/C411	C411.1	Explain the core concepts of Machine Learning.
	C411.2	Apply decision tree algorithm.
	C411.3	Acquire knowledge and apply neural networks, Bayesian techniques and instant based learning algorithms.
	C411.4	Apply analytical learning and reinforcement learning algorithms.
INTERNSHIP/PROFESSIONAL PRACTICE/17EC85/C412	C412.1	Apply gained knowledge and skills in engineering practice.
	C412.2	Analyse and design solutions for engineering problems.
	C412.3	Work individually, in team and communicate effectively through reports and presentations.
	C412.4	Demonstrate professionalism and ethics.

PROJECT WORK-PHASE-2/17EC85/C413	C413.1	Identify, formulate and analyse engineering problems for the need of society.
	C413.2	Design solutions for engineering problems using modern tool/technology to investigate with interpretation of data.
	C413.3	Analyse the impact of the engineering solutions in societal and environmental contexts for sustainable development with commit to professional ethics
	C413.4	Work individually and in team, Communicate effectively through reports and presentations.
	C413.5	Apply engineering, management and ethical principles for Project management and finance.
TECHNICAL SEMINAR /17EC86/C414	C414.1	Identify and explore recent trends in Electronics and Communication Engineering.
	C414.2	Prepare effective report on the selected topic.
	C414.3	Prepare Power point presentation (PPT), Communicate and answer the queries.

Course Outcomes-Program Outcomes Mapping (2017-2021 Batch)

Subject Name / Subject code/ Course code	Course Outcome Number	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
ENGINEERING MATHEMATICS – I/17MAT11/ C101	C101.1	3	1	-	-	-	-	-	-	-	-	-	1
	C101.2	3	2	-	-	-	-	-	-	-	-	-	2
	C101.3	3	2	-	-	-	-	-	-	-	-	-	1
	C101.4	3	1	-	-	-	-	-	-	-	-	-	1
	C101.5	3	3	-	-	-	-	-	-	-	-	-	2
	C101.6	-	-	-	-	-	-	-	-	-	-	-	-
ENGINEERING PHYSICS/17PHY12/ C102	C102.1	2	1	-	-	-	-	-	-	-	-	-	-
	C102.2	2	1	-	-	-	1	1	-	-	-	-	1
	C102.3	3	1	-	-	1	1	1	-	-	-	-	1
	C102.4	1	1	-	-	-	-	-	-	-	-	-	1

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Course	CO											
	C102.5	1	-	-	-	-	1	-	-	-	-	-	-
	C102.6	2	1	-	-	-	-	-	-	-	-	-	1
ELEMENTS OF CIVIL ENGINEERING AND MECHANICS/17CIV13/ C103	C103.1	3	-	-	-	-	3	1	-	-	-	-	1
	C103.2	3	3	-	-	-	-	-	-	-	-	-	2
	C103.3	3	3	-	-	-	-	-	-	-	-	-	2
	C103.4	3	3	-	-	-	-	-	-	-	-	-	2
	C103.5	3	3	-	-	-	-	-	-	-	-	-	2
ELEMENTS OF MECHANICAL ENGINEERING/17EME14/ C104	C104.1	2	-	-	-	-	-	-	-	-	-	-	1
	C104.2	1	-	-	-	-	-	-	-	-	-	-	1
	C104.3	2	-	-	-	-	-	-	-	-	-	-	2
	C104.4	2	-	-	-	-	-	-	-	-	-	-	1
	C104.5	2	-	-	-	-	-	-	-	-	-	-	1
BASIC ELECTRICAL ENGINEERING/17ELE15/ C105	C105.1	3	2	2	-	-	-	-	-	-	-	-	-
	C105.2	2	2	-	-	-	-	-	-	-	-	-	-
	C105.3	3	2	-	-	-	2	-	-	-	-	-	-

	C105.4	2	2	-	-	-	-	-	-	-	-	-	-
	C105.5	2	2	-	-	-	-	-	-	-	-	-	-
WORKSHOP LAB/17WSL16/ C106	C106.1	3	-	-	-	-	-	-	-	2	2	-	2
	C106.2	3	-	-	-	-	-	-	-	2	2	-	2
	C106.3	3	-	-	-	-	-	2	-	2	2	-	3
ENGINEERING PHYSICS LAB/17PHYL17/ C107	C107.1	2	1	-	-	-	-	-	-	1	1	-	-
	C107.2	2	1	-	-	-	-	-	-	1	1	-	1
	C107.3	2	1	-	-	-	-	-	-	1	1	-	-
	C107.4	1	1	-	-	-	-	-	-	1	1	-	-
	C107.5	1	1	-	-	-	-	-	-	1	1	-	-
ENGINEERING MATHEMATICS – II/17MAT21/ C108	C108.1	3	3	-	-	-	-	-	-	-	-	-	2
	C108.2	3	3	-	-	-	-	-	-	-	-	-	2
	C108.3	3	3	-	-	-	-	-	-	-	-	-	2
	C108.4	1	-	-	-	-	-	-	-	-	-	-	-
	C108.5	2	-	-	-	-	-	-	-	-	-	-	1

ENGINEERING CHEMISTRY/17CHE22/ C109	C109.1	3	-	-	-	-	-	-	-	-	-	-	-
	C109.2	3	-	-	-	-	-	-	-	-	-	-	-
	C109.3	3	-	-	-	-	-	-	-	-	-	-	-
	C109.4	3	-	-	-	-	-	-	-	-	-	-	-
	C109.5	3	-	-	-	-	-	-	-	-	-	-	-
C PROGRAMMING FOR PROBLEM SOLVING/17PCD23/C110	C110.1	2	2	-	-	-	-	-	-	-	1	1	2
	C110.2	2	2	1	-	-	-	-	-	-	1	1	2
	C110.3	2	2	1	1	-	-	-	-	-	1	1	2
	C110.4	2	2	2	1	-	-	-	-	-	1	1	2
	C110.5	2	2	2	1	-	-	-	-	-	1	1	2
COMPUTER AIDED ENGINEERING DRAWING/17CE24/C111	C111.1	2	-	-	-	3	-	-	-	2	3	-	2
	C111.2	1	-	-	-	2	-	-	-	2	3	-	1
	C111.3	1	-	-	-	2	-	-	-	2	3	-	1
BASIC ELECTRONICS/17ELN25/ C112	C112.1	2	3	1	-	-	-	-	-	-	-	-	1
	C112.2	2	3	1	-	-	-	-	-	-		-	1

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	C112.3	2	3	1	-		-	-	-	-	-	-	1
	C112.4	2	3	1	-	-	-	-	-	-	-	-	1
	C112.5	2	3		-	-	-	-	-	-	-	-	1
COMPUTER PROGRAMMING LABORATORY/17CPL26/ C113	C113.1	2	2	2	2	-	-	-	1	3	3	2	2
	C113.2	2	2	2	2	-	-	-	1	3	3	2	2
	C113.3	2	2	2	2	-	-	-	1	3	3	2	2
	C113.4	2	2	2	-	-	-	-	1	3	3	2	2
ENGINEERING CHEMISTRY LAB/17CHEL27/ C114	C114.1	3	-	-	-	-	-	-	-	-	-	-	-
	C114.2	3	-	-	-	-	-	-	-	-	-	-	-
	C114.3	3	-	-	-	-	-	-	-	-	-	-	-
	C114.4	3	-	-	-	-	-	-	-	-	-	-	-
	C114.5	3	-	-	-	-	-	-	-	-	-	-	-
ENVIRONMENTAL STUDIES/17CIV28/ C115	C115.1	3	-	-	-	-	3	1	-	-	-	-	1
	C115.2	3	3	-	-	-	-	-	-	-	-	-	2

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	C115.3	3	3	-	-	-	-	-	-	-	-	-	2
	C115.4	3	3	-	-	-	-	-	-	-	-	-	2
ENGINEERING MATHEMATICS – III/17MAT 31/C201	C201.1	3	2	-	-	-	-	-	-	-	-	-	2
	C201.2	3	2	-	-	-	-	-	-	-	-	-	2
	C201.3	-	-	-	-	-	-	-	-	-	-	-	-
	C201.4	3	1	-	-	-	-	-	-	-	-	-	2
	C201.5	3	2	-	-	-	-	-	-	-	-	-	2
	C201.6	2	2	-	-	-	-	-	-	-	-	-	2
ELECTRONIC INSTRUMENTATION/17EC32/C202	C202.1	2	1	-	-	-	-	-	-	-	-	-	1
	C202.2	2	1	-	-	-	-	-	-	-	-	-	1
	C202.3	3	2	-	-	-	-	-	-	-	-	-	-
	C202.4	3	3	-	-	-	-	-	-	-	-	-	1
	C202.5	3	3	-	-	-	-	-	-	-	-	-	2
ANALOG ELECTRONICS/17EC33/C203	C203.1	3	2	-	-	-	-	-	-	-	-	-	2

	C203.2	3	2	-	-	-	-	-	-	-	-	-	2
	C203.3	3	2	1	-	-	-	-	-	-	-	-	2
	C203.4	3	2	1	-	-	-	-	-	-	-	-	2
	C203.5	3	2	2	-	-	-	-	-	-	-	-	2
DIGITAL ELECTRONICS/17EC34/C204	C204.1	1	2	-	-	-	-	-	-	-	-	-	-
	C204.2	1	1	2	-	-	-	-	-	-	-	-	-
	C204.3	1	1	-	-	-	-	-	-	-	-	-	-
	C204.4	2	3	2	-	-	-	-	-	-	-	-	1
	C204.5	2	3	3	-	-	-	-	-	-	-	-	1
	C204.6	2	2	2	-	-	-	-	-	-	-	-	1
NETWORK ANALYSIS/17EC35/C205	C205.1	1	2	2	-	-	-	-	-	-	-	-	1
	C205.2	1	2	2	-	-	-	-	-	-	-	-	1
	C205.3	1	2	2	-	-	-	-	-	-	-	-	1
	C205.4	2	2	2	-	-	-	-	-	-	-	-	1
	C205.5	2	2	2	-	-	-	-	-	-	-	-	1

ENGINEERING ELECTROMAGNETICS/17EC36/C206	C206.1	3	2	1	-	-	-	-	-	-	-	-	1
	C206.2	3	2	1	-	-	-	-	-	-	-	-	1
	C206.3	3	2	1	-	-	-	-	-	-	-	-	1
	C206.4	3	2	1	-	-	-	-	-	-	-	-	1
ANALOG ELECTRONICS LAB/17ECL37/C207	C207.1	-	-	3	3	-	-	-	-	3	3	-	3
	C207.2	-	-	3	3	-	-	-	-	3	3	-	3
	C207.3	-	-	3	3	-	-	-	-	3	3	-	3
	C207.4	-	-	3	3	-	-	-	-	3	3	-	3
	C207.5	-	-	3	3	-	-	-	-	3	3	-	3
DIGITAL ELECTRONICS LAB/17ECL38/C208	C208.1	2	-	3	-	-	-	-	-	3	3	-	-
	C208.2	-	-	3	2	-	-	-	-	3	3	-	1
	C208.3	-	-	3	2	-	-	-	-	3	3	-	1
	C208.4	-	-	-	-	3	-	-	-	3	3	-	-
	C209.1	3	2	-	-	-	-	-	-	-	-	-	2

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ENGINEERING MATHEMATICS – IV/17MAT 41/C209	C209.2	3	1	-	-	-	-	-	-	-	-	-	2
	C209.3	3	1	-	-	-	-	-	-	-	-	-	2
	C209.4	3	2	-	-	-	-	-	-	-	-	-	2
	C209.5	3	2	-	-	-	-	-	-	-	-	-	2
SIGNALS AND SYSTEM /17EC42/C210	C210.1	2	3	1	1	-	-	-	-	-	-	-	1
	C210.2	2	3	2	-	-	-	-	-	-	-	-	1
	C210.3	2	3	2	-	-	-	-	-	-	-	-	1
	C210.4	2	3	2	-	-	-	-	-	-	-	-	1
	C210.5	2	3	2	1	-	-	-	-	-	-	-	1
CONTROLS SYSTEM/17EC43/C211	C211.1	3	2	-	-	-	-	-	-	-	-	-	-
	C211.2	3	2	-	-	-	-	-	-	-	-	-	1
	C211.3	3	2	-	-	-	-	-	-	-	-	-	1
	C211.4	3	2	1	-	-	-	-	-	-	-	-	1
	C211.5	3	2	-	-	-	-	-	-	-	-	-	2

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Course	CO												
PRINCIPALS OF COMMUNICATION SYSTEM /17EC44/C212	C212.1	3	2	2	-	-	-	-	-	-	-	-	2
	C212.2	3	2	2	-	-	-	-	-	-	-	-	2
	C212.3	3	2	2	-	-	-	-	-	-	-	-	2
	C212.4	3	2	2	-	-	-	-	-	-	-	-	2
	C212.5	3	2	2	-	-	-	-	-	-	-	-	2
LINEAR INTEGRATED CIRCUITS/17EC45/C213	C213.1	3	2	-	-	-	-	-	-	-	-	-	1
	C213.2	3	2	1	-	-	-	-	-	-	-	-	1
	C213.3	3	2	1	-	-	-	-	-	-	-	-	1
	C213.4	3	2	1	-	-	-	-	-	-	-	-	2
MICROPROCESSOR/17EC46/C214	C214.1	2	1	-	-	-	-	-	-	-	-	-	2
	C214.2	2	2	-	-	-	-	-	-	-	-	-	2
	C214.3	2	2	-	-	-	-	-	-	-	-	-	-
	C214.4	2	2	1	-	-	-	-	-	-	-	-	-
	C214.5	2	-	-	-	-	-	-	-	-	-	-	-
	C215.1		-	3	-	2	-	-	-	3	3	-	2

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Course	CO												
MICROPROCESSOR LAB/17ECL47/C215	C215.2	-	-	3	-	2	-	-	-	3	3	-	2
	C215.3	-	-	3	-	2	-	-	-	3	3	-	2
	C215.4	-	-	3	-	2	-	-	-	3	3	-	2
	C215.5	-	-	3	-	2	-	-	-	3	3	-	2
LINEAR INTEGRATED CIRCUITS LAB/17ECL48/C216	C216.1	2	2	-	-	-	-	-	-	3	3	-	-
	C216.2	2	2	1	-	-	-	-	-	3	3	-	-
	C216.3	2	2	-	-	-	-	-	-	3	3	-	-
	C216.4	2	2	2	-	-	-	-	-	3	3	-	-
MANAGEMENT ENTREPRENEURSHIP AND DEVELOPMENT/17ES51/C301	C301.1	-	-	-	-	-	-	-	3	2	2	2	3
	C301.2	-	-	-	-	-	2	-	2	2	3	2	3
	C301.3	-	-	-	-	-	3	1	3	2	3	2	3
	C301.4	-	-	-	-	-	-	-	-	-	2	2	3
	C301.5	-	-	-	-	-	2	1	3	3	3	3	3
	C302.1	3	2	2	-	-	-	-	-	-	-	-	2

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DIGITAL SIGNAL PROCESSING/17EC52/C302	C302.2	3	2	2	-	-	-	-	-	-	-	-	2
	C302.3	3	2	2	-	-	-	-	-	-	-	-	2
	C302.4	3	2	2	-	-	-	-	-	-	-	-	2
	C302.5	3	2	2	-	-	-	-	-	-	-	-	2
VERILOG HDL/17EC53/C303	C303.1	-	-	-	-	-	-	-	-	-	-	-	2
	C303.2	3	2	3	-	-	-	-	-	-	-	-	2
	C303.3	3	2	3	-	-	-	-	-	-	-	-	2
	C303.4	3	2	3	-	-	-	-	-	-	-	-	2
INFORMATION THEORY AND CODING/ 17EC54/C304	C304.1	3	1	1	-	-	-	-	-	-	-	-	2
	C304.2	3	3	1	-	-	-	-	-	-	-	-	2
	C304.3	3	3	1	-	-	-	-	-	-	-	-	2
	C304.4	3	3	1	-	-	-	-	-	-	-	-	2
OPERATING SYSTEM/17EC553/C305	C305.1	1	-	-	-	-	-	-	-	-	-	-	-
	C305.2	2	2	-	-	-	-	-	-	-	-	-	1

	C305.3	1	-	-	-	-	-	-	-	-	-	-	1
	C305.4	2	1	-	-	-	-	-	-	-	-	-	1
	C305.5	1	1	-	-	-	-	-	-	-	-	-	1
MICROCONTROLLER/17EC563/C306	C306.1	1		-	-	-	-	-	-	-	-	-	2
	C306.2	3	2	2	-	-	-	-	-	-	-	-	2
	C306.3	3	2	2	-	-	-	-	-	-	-	-	2
	C306.4	3	2	2	-	-	-	-	-	-	-	-	2
	C306.5	3	2	2	-	-	-	-	-	-	-	-	2
DSP LAB/17ECL57/C307	C307.1	-	-	3	-	3	-	-	-	3	3	-	2
	C307.2	-	-	3	3	3	-	-	-	3	3	-	2
	C307.3	-	-	3	3	3	-	-	-	3	3	-	2
	C307.4	-	-	3	3	3	-	-	-	3	3	-	2
HDL LAB/17ECL58/C308	C308.1	-	-	3	3	3	-	-	-	3	3	-	2
	C308.2	-	-	3	3	3	-	-	-	3	3	-	2

	C308.3	-	-	3	3	3	-	-	-	3	3	-	2
	C308.4	-	-	3	3	3	-	-	-	3	3	-	2
DIGITAL COMMUNICATION/17EC 61/C309	C309.1	3	2	1	-	-	-	-	-	-	-	-	2
	C309.2	3	2	1		-	-	-	-	-	-	-	2
	C309.3	3	2	1	-		-	-	-	-	-	-	2
	C309.4	3	2	1	-	-	-	-	-	-	-	-	2
	C309.5	3	3	1	-	-	-	-	-	-	-	-	2
ARM MICRO-CONTROLLER AND EMBEDDED SYSTEM/17EC62/C310	C310.1	-	-	-	-	-	-	-	-	-	-	-	3
	C310.2	3	3	-	-	-	-	-	-	-	-	-	3
	C310.3	3	3	-	-	-	-	-	-	-	-	-	3
	C310.4	2	3	-	-	-	-	-	-	-	-	-	3
	C310.5	3	3	-	-	-	-	-	-	-	-	-	3
VLSI DESIGN \17EC63\C311	C311.1	2	2	-	-	-	-	-	-	-	1	-	1
	C311.2	2	2	1	-	-	-	-	-	-	1	-	1
	C311.3	1	2	2	1	-	-	-	-	-	1	-	1

	C311.4	2	1	1	-	-	-	-	-	-	1	-	1
COMPUTER COMMUNICATION NETWORK/ 17EC64/C312	C312.1	3		-	-	-	-	-	-	-	-	-	2
	C312.2	3		-	-	-	-	-	-	-	-	-	2
	C312.3	3	2	-	-	-	-	-	-	-	-	-	2
	C312.4	3	2	-	-	-	-	-	-	-	-	-	2
	C312.5	3	2	1	-	-	-	-	-	-	-	-	2
DIGITAL SWITCHING SYSTEMS 17EC654/C313	C313.1	3	2	-	-	-	-	-	-	-	-	-	-
	C313.2	3	3	1	-	-	-	-	-	-	-	-	-
	C313.3	3	2	-	-	-	-	-	-	-	-	-	1
	C313.4	3	2	-	-	-	-	-	-	-	-	-	1
DIGITAL SYSTEM DESIGN USING VERILOG/17EC663/C314	C314.1	3	1	1	-	-	-	-	-	-	-	-	2
	C314.2	3	-	-	-	-	-	-	-	-	-	-	2
	C314.3	2	1	-	-	-	-	-	-	-	-	-	2
	C314.4	2	1	-	-	-	-	-	-	-	-	-	2

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	C314.5	3	-	-	-	-	-	-	-	-	-	-	2
EMBEDDED CONTROLLER LAB/17ECL67/C315	C315.1	-	-	3	-	3	-	-	-	3	3	-	3
	C315.2	3	3	3	-	3	-	-	-	3	3	-	3
	C315.3	3	3	3	-	3	-	-	-	3	3	-	3
	C315.4	3	3	3	-	3	-	-	-	3	3	-	3
COMPUTER NETWORKS LAB/17ECL68/C316	C316.1	3	1	-	-	3	-	-	-	-	-	-	2
	C316.2	3	2	3	-	3	-	-	-	-	-	-	2
	C316.3	-	2	3	-	-	-	-	-	-	-	-	2
	C316.4	-	2	3	-	3	-	-	-	-	-	-	2
MICRO-WAVE AND ANTENNA/17EC71/C401	C401.1	2	-	-	-	-	-	2	-	-	-	-	1
	C401.2	2	2	2	-	-	-	-	-	-	-	-	1
	C401.3	2	2		-	-	-	-	-	-	-	-	1
	C401.4	2	2	1	-	-	-	-	-	-	-	-	1
	C401.5	2	2	2	-	-	-	-	-	-	-	-	1

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DIGITAL IMAGE PROCESSING 17EC72/C402	C402.1	2	1	-	-	-	-	-	-	-	-	-	2
	C402.2	3	2	1	1	-	-	-	-	-	-	2	2
	C402.3	2	2	-	-	-	-	-	-	-	-	2	2
	C402.4	3	2		-	-	-	-	-	-	-	2	2
	C402.5	2	2	-	-	-	-	-	-	-	-	2	2
POWER ELECTRONICS/17EC73/C403	C403.1	2	1	-	-	-	-	-	-	-	-	-	-
	C403.2	3	2	1	-	-	-	-	-	-	-	-	1
	C403.3	3	2	1	-	-	-	-	-	-	-	-	1
	C403.4	3	2	1	-	-	-	-	-	-	-	-	1
	C403.5	3	2	1	-	-	-	-	-	-	-	-	1
MULTI-MEDIA COMMUNICATION 17EC741/C404	C404.1	2	2	-	-	-	-	-	-	-	-	-	2
	C404.2	2	3	-	-	-	-	-	-	-	-	-	2
	C404.3	2	3	2	-	-	-	-	-	-	-	2	2
	C404.4	2	3	2	-	-	-	-	-	-	-	2	2
	C404.5	1	-	-	-	-	-	-	-	-	-	-	2

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SATELLITE COMMUNICATION 17EC755/C405	C405.1	2	-	-	-	-	-	-	-	-	-	-	1
	C405.2	2	-	-	-	-	-	-	-	-	-	-	1
	C405.3	2	-	-	-	-	2	2	-	-	-	-	1
	C405.4	2	1	-	-	-	-	-	-	-	-	-	1
ADVANCED COMMUNICATION LAB/17ECL76/C406	C406.1	-	-	3	2	-	-	-	-	3	3	-	1
	C406.2	-	-	-	2	-	-	-	-	3	3	-	1
	C406.3	-	-	3	2	-	-	-	-	3	3	-	1
	C406.4	-	-	3	-	2	-	-	-	3	3	-	1
	C406.5	-	-	-	2	-	-	-	-	3	3	-	1
VLSI LAB/17ECL77 /C407	C407.1	2	2	3	3	3	-	-	-	3	3	1	2
	C407.2	2	2	3	3	3	-	-	-	3	3	1	2
	C407.3	2	-	3	3	3	-	-	-	3	3	1	2
	C407.4	2	-	3	3	3	-	-	-	3	3	1	2
	C407.5	2	2	3	3	3	-	-	-	3	3	1	2
	C408.1	3	3	-	3	-	3	3	-	-	-	-	3

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Course	CO												
PROJECT WORK-PHASE-1/17ECP78/ C408	C408.1	3	3	3	3	3	3	3	-	-	-	-	3
	C408.1	3	3	-	3	-	3	3	-	-	-	-	3
	C408.1	-	-	-	-	-	-	-	-	3	3	-	3
	C408.1	3	-	-	-	-	-	-	3	-	-	3	3
WIRELESS CELLULAR COMMUNICATION & LTE4G/17EC81/C409	C409.1	2	-	-	-	-	-	-	-	-	-	-	3
	C409.2	2	1	-	-	-	-	-	-	-	-	-	3
	C409.3	2	1	-	1	-	-	-	-	-	-	-	3
	C409.4	2	2	-	1	-	-	-	-	-	-	-	3
FIBER OPTICS AND NETWORS/17EC82/C410	C410.1	2	2	-	-	-	-	-	-	-	-	-	2
	C410.2	2	3	-	-	-	-	-	-	-	-	-	2
	C410.3	2	1		-	-	-	-	-	-	-	-	2
	C410.4	2	-	-	-	-	-	-	-	-	-	-	2
MACHINE LEARNING /17EC834/C411	C411.1	2	-	-	-	-	-	-	-	-	-	2	3
	C411.2	1	2	-	-	-	-	-	-	-	-	2	3

	C411.3	3	2	-	-	-	-	-	-	-	-	2	3
	C411.4	1	3	2	1	-	-	-	-	-	-	2	3
INTERNSHIP/PROFESSIONAL PRACTICE /17EC85/C412	C412.1	2	2	2	2	2	2	2	-	-	-	-	3
	C412.2	2	3	3	3	2	3	-	-	-	-	2	3
	C412.3	-	-	-	-	-	-	-	3	3	3	-	3
	C412.4	-	-	-	-	-	-	-	3	3	-	2	3
PROJECT WORK-PHASE-2 /17EC85/C413	C413.1	3	3	-	3	-	3	3	-	-	-	-	3
	C413.2	3	3	3	3	3	3	3	-	-	-	-	3
	C413.3	3	3	-	3	-	3	3	-	-	-	-	3
	C413.4	-	-	-	-	-	-	-	-	3	3	-	3
	C413.5	3	-	-	-	-	-	-	3	-	-	3	3
TECHNICAL SEMINAR /17EC86/C414	C414.1	3	3	-	3	3	2	2	3	3	3	-	3
	C414.2	-	-	-	-	3	-	-	3	3	3	-	3
	C414.3	-	-	-	-	3	-	-	3	3	3	-	3

Course Outcomes-Program Specific Outcomes Mapping (2017-2021 Batch)

Subject Name / Subject code/ Course code	Course Outcome Number	PSO1	PSO2
ENGINEERING MATHEMATICS – I/17MAT11/ C101	C101.1	-	-
	C101.2	-	-
	C101.3	-	-
	C101.4	-	-
	C101.5	-	-
	C101.6	-	-
ENGINEERING PHYSICS/17PHY12/ C102	C102.1	-	-
	C102.2	-	-
	C102.3	-	-
	C102.4	-	-

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	C102.5	-	-
	C102.6	-	-
ELEMENTS OF CIVIL ENGINEERING AND MECHANICS/17CIV13/ C103	C103.1	2	2
	C103.2	3	-
	C103.3	3	-
	C103.4	2	-
	C103.5	-	-
ELEMENTS OF MECHANICAL ENGINEERING/17EME14/ C104	C104.1	-	-
	C104.2	-	-
	C104.3	-	-
	C104.4	-	-
	C104.5	-	-
BASIC ELECTRICAL ENGINEERING/17ELE15/ C105	C105.1	2	-
	C105.2	2	-
	C105.3	2	-

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	C105.4	2	-
	C105.5	2	-
WORKSHOP LAB/17WSL16/ C106	C106.1	-	-
	C106.2	-	-
	C106.3	-	-
ENGINEERING PHYSICS LAB/17PHYL17/ C107	C107.1	-	-
	C107.2	-	-
	C107.3	-	-
	C107.4	-	-
	C107.5	-	-
ENGINEERING MATHEMATICS – II/17MAT21/ C108	C108.1	-	-
	C108.2	-	-
	C108.3	-	-
	C108.4	-	-
	C108.5	-	-

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ENGINEERING CHEMISTRY/17CHE22/ C109	C109.1	-	-
	C109.2	-	-
	C109.3	-	-
	C109.4	-	-
	C109.5	-	-
C PROGRAMMING FOR PROBLEM SOLVING/17PCD23/C110	C110.1	-	1
	C110.2	-	1
	C110.3	-	1
	C110.4	-	1
	C110.5	-	1
COMPUTER AIDED ENGINEERING DRAWING/17CE24/C111	C111.1	-	-
	C111.2	-	-
	C111.3	-	-
BASIC ELECTRONICS/17ELN25/ C112	C112.1	1	-
	C112.2	1	-

	C112.3	1	-
	C112.4	1	-
	C112.5	-	1
COMPUTER PROGRAMMING LABORATORY/17CPL26/ C113	C113.1	-	2
	C113.2	-	2
	C113.3	-	2
	C113.4	-	2
ENGINEERING CHEMISTRY LAB/17CHEL27/ C114	C114.1	-	-
	C114.2	-	-
	C114.3	-	-
	C114.4	-	-
	C114.5	-	-
ENVIRONMENTAL STUDIES/17CIV28/ C115	C115.1	2	2
	C115.2	3	-

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	C115.3	3	-
	C115.4	2	-
ENGINEERING MATHEMATICS – III/17MAT 31/C201	C201.1	-	2
	C201.2	-	2
	C201.3	-	-
	C201.4	-	2
	C201.5	-	2
	C201.6	-	1
ELECTRONIC INSTRUMENTATION/17EC32/C202	C202.1	2	-
	C202.2	2	-
	C202.3	2	-
	C202.4	2	-
	C202.5	2	-
ANALOG ELECTRONICS/17EC33/C203	C203.1	2	-

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	C203.2	2	-
	C203.3	2	-
	C203.4	2	-
	C203.5	2	-
DIGITAL ELECTRONICS/17EC34/C204	C204.1	-	-
	C204.2	1	-
	C204.3	1	-
	C204.4	1	-
	C204.5	2	-
	C204.6	1	-
NETWORK ANALYSIS/17EC35/C205	C205.1	1	1
	C205.2	1	1
	C205.3	1	1
	C205.4	1	1

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	C205.5	1	1
ENGINEERING ELECTROMAGNETICS/17EC36/C206	C206.1	1	-
	C206.2	1	-
	C206.3	1	-
	C206.4	1	-
ANALOG ELECTRONICS LAB/17ECL37/C207	C207.1	3	2
	C207.2	3	2
	C207.3	3	2
	C207.4	3	2
	C207.5	3	2
DIGITAL ELECTRONICS LAB/17ECL38/C208	C208.1	1	-
	C208.2	1	-
	C208.3	1	-
	C208.4	1	-

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ENGINEERING MATHEMATICS – IV/17MAT 41/C209	C209.1	-	-
	C209.2	-	-
	C209.3	-	-
	C209.4	-	-
	C209.5	-	-
SIGNALS AND SYSTEM /17EC42/C210	C210.1	2	1
	C210.2	2	1
	C210.3	2	1
	C210.4	2	1
	C210.5	2	1
CONTROLS SYSTEM/17EC43/C211	C211.1	-	-
	C211.2	-	-
	C211.3	-	-
	C211.4	-	-
	C211.5	-	-

PRINCIPALS OF COMMUNICATION SYSTEM /17EC44/C212	C212.1	1	1
	C212.2	1	2
	C212.3	1	2
	C212.4	1	1
	C212.5	1	2
LINEAR INTEGRATED CIRCUITS/17EC45/C213	C213.1	2	-
	C213.2	2	-
	C213.3	2	-
	C213.4	2	-
MICROPROCESSOR/17EC46/C214	C214.1	2	-
	C214.2	2	-
	C214.3	2	-
	C214.4	2	-
	C214.5	-	-
	C215.1	2	-

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MICROPROCESSOR LAB/17ECL47/C215	C215.2	2	-
	C215.3	2	-
	C215.4	2	-
	C215.5	2	-
LINEAR INTEGRATED CIRCUITS LAB/17ECL48/C216	C216.1	1	2
	C216.2	1	2
	C216.3		2
	C216.4	1	2
MANAGEMENT ENTREPRENEURSHIP AND DEVELOPMENT/17ES51/C301	C301.1	-	-
	C301.2	-	-
	C301.3	-	-
	C301.4	-	-
	C301.5	-	-
	C302.1	3	-

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DIGITAL SIGNAL PROCESSING/17EC52/C302	C302.2	3	-
	C302.3	3	-
	C302.4	3	-
	C302.5	3	-
VERILOG HDL/17EC53/C303	C303.1	3	-
	C303.2	3	-
	C303.3	3	-
	C303.4	3	-
INFORMATION THEORY AND CODING/ 17EC54/C304	C304.1	-	2
	C304.2	-	2
	C304.3	-	2
	C304.4	-	2
OPERATING SYSTEM/17EC553/C305	C305.1	-	-
	C305.2	-	-

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	C305.3	-	-
	C305.4	1	-
	C305.5	-	-
MICROCONTROLLER/17EC563/C306	C306.1		-
	C306.2	3	-
	C306.3	3	-
	C306.4	3	-
	C306.5	3	-
DSP LAB/17ECL57/C307	C307.1	3	-
	C307.2	3	-
	C307.3	3	2
	C307.4	3	2
HDL LAB/17ECL58/C308	C308.1	3	-
	C308.2	3	-

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	C308.3	3	-
	C308.4	3	-
DIGITAL COMMUNICATION/17EC 61/C309	C309.1	-	2
	C309.2	-	2
	C309.3	-	2
	C309.4	-	2
	C309.5	-	2
ARM MICRO-CONTROLLER AND EMBEDDED SYSTEM/17EC62/C310	C310.1	3	-
	C310.2	3	-
	C310.3	3	-
	C310.4	3	-
	C310.5	3	-
VLSI DESIGN \17EC63\C311	C311.1	-	3
	C311.2	-	3
	C311.3	-	3

	C311.4	-	3
COMPUTER COMMUNICATION NETWORK/ 17EC64/C312	C312.1	-	3
	C312.2	-	3
	C312.3	-	3
	C312.4	-	3
	C312.5	-	3
DIGITAL SWITCHING SYSTEMS 17EC654/C313	C313.1	-	2
	C313.2	-	2
	C313.3	-	1
	C313.4	-	1
DIGITAL SYSTEM DESIGN USING VERILOG/17EC663/C314	C314.1	3	-
	C314.2	3	-
	C314.3	3	-
	C314.4	3	-

	C314.5	3	-
EMBEDDED CONTROLLER LAB/17ECL67/C315	C315.1	3	1
	C315.2	3	1
	C315.3	3	1
	C315.4	3	1
COMPUTER NETWORKS LAB/17ECL68/C316	C316.1	-	3
	C316.2	-	3
	C316.3	-	3
	C316.4	-	3
MICRO-WAVE AND ANTENNA/17EC71/C401	C401.1	-	1
	C401.2	-	1
	C401.3	-	1
	C401.4	-	1
	C401.5	-	1

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DIGITAL IMAGE PROCESSING 17EC72/C402	C402.1	**2**	-
	C402.2	**2**	-
	C402.3	**2**	-
	C402.4	**2**	-
	C402.5	**2**	-
POWER ELECTRONICS/17EC73/C403	C403.1	1	-
	C403.2	2	-
	C403.3	2	-
	C403.4	2	-
	C403.5	2	-
MULTI-MEDIA COMMUNICATION 17EC741/C404	C404.1	-	3
	C404.2	-	3
	C404.3	-	3
	C404.4	-	3
	C404.5	-	3

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SATELLITE COMMUNICATION 17EC755/C405	C405.1	-	1
	C405.2	-	1
	C405.3	-	1
	C405.4	-	1
ADVANCED COMMUNICATION LAB/17ECL76/C406	C406.1	-	3
	C406.2	-	2
	C406.3	-	2
	C406.4	-	2
	C406.5	-	2
VLSI LAB/17ECL77 /C407	C407.1		
	C407.2		
	C407.3		
	C407.4		
	C407.5		
	C408.1	3	3

PROJECT WORK-PHASE-1/17ECP78/ C408	C408.1	3	3
	C408.1	3	3
	C408.1	-	-
	C408.1	-	-
WIRELESS CELLULAR COMMUNICATION & LTE4G/17EC81/C409	C409.1	-	3
	C409.2	-	3
	C409.3	-	3
	C409.4	-	3
FIBER OPTICS AND NETWORS/17EC82/C410	C410.1	-	-
	C410.2	-	1
	C410.3	2	-
	C410.4	-	1
MACHINE LEARNING /17EC834/C411	C411.1	-	-
	C411.2	1	-

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	C411.3	1	-
	C411.4	1	-
INTERNSHIP/PROFESSIONAL PRACTICE /17EC85/C412	C412.1	2	2
	C412.2	2	2
	C412.3	-	-
	C412.4	-	-
PROJECT WORK-PHASE-2 /17EC85/C413	C413.1	3	3
	C413.2	3	3
	C413.3	3	3
	C413.4	-	-
	C413.5	-	-
TECHNICAL SEMINAR /17EC86/C414	C414.1	3	3
	C414.2	3	3
	C414.3	3	3