



Dr. Ambedkar Institute of Technology
Electronics and communication Department

The enclosed documents are valid and verified.

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ECE Department

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Dept. of Electronics and Communication Engg.

Dr. Ambedkar Institute of Technology

Bengaluru - 560056

	Dr. Ambedkar Institute of technology, Bengaluru	
	Department of Electronics and Communication	
	Course Outcome of 2018 Batch	
Course Outcome	Subject: Basic Electronics	Subject Code: 18ELN14/24
1	Characterize and understand the Semiconductors, Bipolar Junction Transistor, Field Effect Transistor, Operational Amplifiers.	
2	Design and Describe an electronic circuits for specific applications such as oscillators and Amplifiers.	
3	Analyze and Designing of Op-Amp circuits for basic applications	
4	Understand and remember the number systems and how to convert the numbers from one system to the other and the ability to apply Boolean algebra to describe the function of logic circuits.	
5	Demonstrate their ability to use appropriate engineering mathematical concepts in qualitatively problems pertaining to the Rectifiers, Regulators, Amplifiers, Op-Amp.	
Course Outcome	Subject: Electronics Devices	Subject Code: 18EC31
1	Understand the principles of semiconductor Physics.	
2	Understand the principles and characteristics of different types of semiconductor devices	
3	Understand the fabrication process of semiconductor devices	
4	Understand and utilize the mathematical models of semiconductor junctions and MOS transistors for circuits and systems.	
5	Differentiate the semiconductor devices based on its usage and applications	
Course Outcome	Subject: : DIGITAL SYSTEM DESIGN	Subject Code: 18EC32
1	Develop simplified switching equation using Karnaugh Maps .	
2	Explain the operation of decoders, encoders, multiplexers, demultiplexers, adders, subtractors and comparators.	
3	Explain the working of Latches and Flip Flops (SR,D,T and JK).	
4	Design Synchronous/Asynchronous Counters and Shift registers using FlipFlops.	
5	Develop Mealy/Moore Models and state diagrams for the given clocked sequential circuits.	
Course Outcome	Subject: Network Theory	Subject Code: 18EC33
1	Define and classify electrical elements, resonance, two port network parameters and also state the different network theorems.	
2	Explain Loop, nodal analysis, Resonance, initial conditions and transient behavior, properties and theorems of Laplace Transforms. relation between network parameters and interconnection of networks.	
3	Apply the source transformation, shifting, Laplace transforms and basic theorems to simplify the analysis of electrical Circuits.	
4	Evaluate the dynamic behavior of Electrical networks using initial and final conditions.	
5	Solve the given network using specified two port network parameter like Z or Y or T or h.	

Course Outcome	Subject: Engineering Statistics	Subject Code: 18EC34
1	Associate the concepts of statistics to Communication events and identify corresponding Random Variables and Random Processes in these events.	
2	Analyse and model the Random events in typical communication events to extract quantitative statistical parameters.	
3	Analyse and model typical signal sets in terms of a basis function set of Amplitude, phase and frequency.	
4	Demonstrate by way of simulation or emulation the ease of analysis employing basis functions	
5	Demonstrate by way of simulation or emulation the ease of analysis employing statistical representation.	
Course Outcome	Subject:Power Electronics and Instrumentation	Subject Code: 18EC35
1	Define different Instrument errors.	
2	Describe the principle of operation of Digital instruments, Signal generators.	
3	Use different Transducers for measuring physical parameters.	
4	Build and test circuits using power devices such as SCR and controlled rectifier.	
5	Develop circuits for multirange ammeters, voltmeters and bridges to measure passive component values and frequency.	
Course Outcome	Subject: ELECTRONIC DEVICES AND INSTRUMENTATION LABORATORY	Subject Code: 18ECL36
1	Understand the characteristics of various electronic devices and measurement of parameters.	
2	Design and test simple electronic circuits	
3	Use of circuit simulation software for the implementation and characterization of electronic circuits and devices.	
Course Outcome	Subject: Digital Design Lab	Subject Code: 18ECL37
1	Demonstrates the truth table of various expressions and combinational circuits using logic gates.	
2	Design, test and evaluate various combinational circuits such as adders, Subtractors Multiplexers, De-Multiplexers, Encoders and Decoders.	
3	Construction of Flip-Flops and its truth table verification	
4	Construction of Various applications of Sequential logic circuits.	
Course Outcome	Subject: Analog Circuits	Subject Code: 18EC41
1	Understand the characteristics of BJTs and FETs	
2	Design and analyze BJT and FET amplifier circuits	
3	Understand the fabrication process of semiconductor devices	
4	Understand the functioning of linear ICs and design of Linear IC based circuits	
5	Understand and design of the Filter circuits.	

Course Outcome	Subject: Principles of Communication Systems	Subject Code: 18EC42
1	Able to define AM, DSBSC, SSB, FM modulation, sampling and quantization.	
2	Explain and describe AM, DSBSC, SSB, FM modulation technique, noise in the signal and Generation of PPM Waves.	
3	Demonstrate their ability to use appropriate AM, DSBSC,SSB,FM modulation	
4	Test and validate digital formatting schemes with quantization noise under noisy channel conditions to estimate the performance in practical communication systems and also describe the AM, FM modulation and demodulation.	
5	Design/Demonstrate by way of simulation or emulation the functional blocks of digital formatting.	
Course Outcome	Subject: Computer Organization and Architecture	Subject Code: 18EC43
1	Associate the concepts of structure of computer.	
2	Analyse and model the machine instruction and programs.	
3	Analyse and addressing modes.	
4	Demonstrate the input/output organization	
5	Demonstrate the memory system.	
Course Outcome	Subject: Verilog HDL	Subject Code: 18EC44
1	Define the terminologies of the Verilog HDL.	
2	Explain the design flow and design methodologies of digital circuits.	
3	Write compact programs using gatelevel, dataflow, behavioural, RTL directives, tasks and functions.	
4	Analyze Verilog HDL programs	
Course Outcome	Subject: Signals and System	Subject Code: 18EC45
1	Define and describe the different types of signals and systems.	
2	Determine the linearity, causality, time-invariance and stability properties of continuous and discrete time systems	
3	Analyze continuous and discrete systems in time and frequency domain using different transforms	
4	Test whether the system is stable.	
Course Outcome	Subject: Analog Circuits and Communication Laboratory	Subject Code: 18ECL46
1	Design of analog circuits using BJTs and FETs and evaluate their performance characteristics.	
2	Design of analog circuits using OPAMPs for different applications	
3	Understand the use of transistor in the design of continuous or pulse modulation schemes.	
4	Understand the use of ICs in circuit designs for AM and FM modulation and demodulation	
Course Outcome	Subject: HDL Lab	Subject Code: 18ECL47

1	Design, Simulation and synthesis of various digital circuits.	
2	Generate Waveforms using FPGA.	
3	Synthesize Combinational and Sequential circuits on programmable ICs and test the hardware.	
4	Interface the hardware to the programmable chips and obtain the required output.	
Course Outcome	Subject: Electromagnetic Wave	Subject Code: 18EC51
1	Able to define electrostatic and magnetic field laws such as Coulomb's law, Gauss' law, potential gradient, Biot-Savart law, Maxwell's equations and Wave polarization.	
2	Able to understand wave propagation, electric and magnetic fields in different system of charges and also able to explain Maxwell's equations and potential Energy.	
3	Able to apply and solve Divergence, Potential gradient in electrostatic fields & Ampere's circuital law, Curls in magnetostatic fields and also able to solve and apply Maxwell's	
4	Able to analyse Poisson's, Laplace & Maxwell's equations and propagation of waves in different medium with its fundamental concepts.	
Course Outcome	Subject: Digital Signal Processing	Subject Code: 18EC52
1	Define the sampling process, invertible systems, Discrete Fourier Transforms, Fast Fourier Transforms, IIR and FIR filters and their structures	
2	Understand sampling process, Inverse Systems, DFT and their properties, FFT algorithms and IIR and FIR filters.	
3	Analyze DFT, FFT algorithms, IIR and FIR filters.	
4	Apply the concept of sampling theorem, DFT, FFT algorithms, IIR and FIR filters	
5	Design the analog IIR, digital IIR and FIR filters.	
Course Outcome	Subject: DIGITAL COMMUNICATION	Subject Code: 18EC53
1	Able to understand the System approach to Digital communication right at the foundation level and various basic signal processing operations involved.	
2	Gain the knowledge on the key concepts such as signal space concepts, probability of error, and analyse the detection of signals using correlation receiver and matched filter.	
3	Gain the knowledge on the sampling process, waveform coding techniques and quantization techniques to improve performance of the digital communication system.	
4	Capable of analysing Discrete PAM signals and its power spectra and knowledge on to ISI and measures to counter ISI problem using raised cosine filter and correlative coding methods.	
5	Able to describe the spread spectrum type of communication along with its advantages and know briefly the various multiple access techniques compare them.	
Course Outcome	Subject: Microprocessor and Microcontrollers	Subject Code: 18EC54
1	Understand the architecture and features of 8086 microprocessor, 8051 microcontrollers and MSP 430.	
2	Understand the memory organization and memory mapping of MCS51 and MSP 430.	
3	Understand the instruction sets of MCS51 and able to write Assembly and High-level Programs.	
4	Explain the TIMER/COUNTER configuration able to implement by programs to generate time delay/counting.	

5	Explain the Interrupt and serial communication and able to apply for real time applications.	
Course Outcome	Subject: DIGITAL SWITCHING SYSTEM	Subject Code: 18EC551
1	Demonstrate the understanding of basic fundamentals of a telecommunication and switching system.	
2	Ability to Analyze traffic management and switching system.	
3	Ability to describe the common switching & control techniques and switching system software.	
4	Ability to describe the maintenance of digital switching systems and its controlling.	
5	Ability to analyze the various types of connection and switching links used by industry for telecommunication system worldwide and recent and future trends in DSS	
Course Outcome	Subject: Programming with Python	Subject Code: 18EC552
1	Demonstrate the understanding and usage of core python scripting elements, python constructs, data types, lists, tuples and dictionaries	
2	Demonstrate the understanding and usage of control structures module and exception handling	
3	Demonstrate usage of object oriented features such as Inheritance, Polymorphism, operator overloading	
4	Apply the knowledge of python and use the language scripting elements and constructs to develop file handling and build the data structures	
5	Apply the concept of decorators and regular expressions.	
Course Outcome	Subject: ARTIFICIAL NEURAL NETWORK	Subject Code: 18EC553
1	Understand the basic concepts of Neural Networks.	
2	Analysis and development of different techniques in neural networks.	
3	Analysis the concepts of Prediction Networks.	
4	Understand and analysis of the concepts of Polynomial networks in Artificial	
5	Analyze and design a real world problem for implementation and understand the dynamic behaviour of a system.	
Course Outcome	Subject: Object Oriented Programming with C++	Subject Code: 18EC554
1	To gain the knowledge of object oriented concepts and get familiarized with basic concepts of programming.	
2	Ability to design the programs using the classes and managing the objects	
3	Ability to design the programs with features of extensibility and use many operators.	
4	Ability to develop the programs with reusability	
5	Ability to develop the programs with built in error handling and use of pointers in the program	
Course Outcome	Subject: Control Systems	Subject Code: 18EC555
1	Ability to Develop and understand the Mathematical Model of Mechanical, Electrical and Electro Mechanical Systems, and also obtain the transfer function by using Block Diagram and Signal Flow Graphs.	

2	Ability to Analyse and evaluate the first order and second order systems in time domain approach.
3	Ability to define, understand, analyse and evaluate the stability of a second order system in Time domain as well as frequency domain specifications.
4	Ability to Design and analyse the stability of the second order Control Systems using Root locus, Bode Techniques.
5	Ability to use Modern tools to obtain the state models for the electrical and Mechanical systems and evaluate their response in time domain as well as frequency approach.

Course Outcome	Subject: Microcontroller Lab	Subject Code: 18ECL56
1	Understand the architectural features of microcontrollers.	
2	Explain the instruction sets of Microcontrollers and write Assembly and High level Programs.	
3	Study the various features of Microcontrollers based systems.	
4	Study the applications of Microcontrollers for real time systems.	
5	Development of single chip solutions	

Course Outcome	Subject: Digital Signal Processing Laboratory	Subject Code: 18ECL57
1	Define and verify the sampling theorem, impulse response, convolution and frequency response of the system	
2	Understand DFT, IDFT, Auto correlation and Cross correlation	
3	Analyze and design digital IIR and FIR filters.	
4	Demonstration of DSP algorithms using Matlab software.	
5	Demonstration of DSP algorithms using Code Composer Studio software.	

Course Outcome	Subject: Real Time Operating System	Subject Code: 18ECE01
1	Understand the basics of Real Time Embedded System and System Resources	
2	Analyse the concepts Processing and IO Resources	
3	Analyse Various multi-resource services	
4	Analyse different Embedded System Components and Debug components.	
5	Analyze and Categorize the design trade-offs	

Course Outcome	Subject: MECHATRONICS	Subject Code: 18ECE02
1	Understand the basic elements and building blocks of Mechatronics system.	
2	Make use of the functions of various signal conditioning and processing devices	
3	Choose various combinational and sequential circuits for various applications	
4	Identify and Make use of various sensors and actuation systems	
5	Take part in design of the Mechatronics system.	

Course Outcome	Subject: Television Engineering	Subject Code: 18ECE03
1	Identify the Reception of Signal.	
2	Ability to Picture Tube.	

3	Creation of Master control room.		
4	Ability to Compare the types of Television.		
Course Outcome	Subject: SENSORS	Subject Code: 18ECE04	
1	Understand the basic knowledge of various kinds of sensors and their working principle..		
2	Analyze the functions of various thermal and magnetic sensors.		
3	Apply the basic principles of various kinds of sensors, to build some home appliance sensors.		
4	Analyze the working of various smart sensors.		
5	list and illustrate the various applications of different sensors.		
Course Outcome	Subject: CMOS VLSI DESIGN	Subject Code: 18EC61	
1	Demonstrate understanding of MOS transistor theory, CMOS fabrication flow and technology scaling		
2	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects.		
3	Describe different logic structures.		
4	Design of Adder and Multiplier circuits using MOS transistors		
5	Demonstrate ability to design Combinational, sequential and dynamic logic circuits.		
Course Outcome	Subject: Embedded Systems	Subject Code: 18EC62	
1	Understand different blocks of a Typical Embedded System.		
2	Analyse different characteristics, quality attributes and modelling Techniques of embedded system design		
3	Apply the knowledge of Instruction Set to program ARM 32 bit Microcontroller.		
4	Analyze the concepts of Real time kernel & Operating System services.		
5	Evaluate the current trends in embedded industry and analyse different application and domain specific examples of embedded systems through case studies		
Course Outcome	Subject: Computer Communication Networks	Subject Code: 18EC63	
1	Define the network components, layers, addressing, topology, connectivity and network types for data transmission.		
2	Distinguish the basic network configurations and standards associated with each network		
3	Describe the layering architecture of computer networks and distinguish between the OSI reference model and TCP/IP protocol suite.		
4	Identify the protocols and functions associated with the transport layer services.		
5	Construct a network model and determine the routing of packets using different routing algorithm		
Course Outcome	Subject: Semiconductor Fabrication	Subject Code: 18EC641	
1	Identify the Semiconductor Materials.		
2	Ability to interpret Fabrication Steps.		

3	: Creation of semiconductor devices		
4	Ability to Compare the types of Diffusion and Ion Implantation.		
Course Outcome	Subject: Cryptography	Subject Code: 18EC642	
1	Define the basic concepts of network security, classical encryption, number theory, Private key, public key, authentication.		
2	Understand the structure of cryptographic algorithms and their applications.		
3	Apply the concept of classical encryption techniques to existing standard algorithms.		
4	Illustrate the significance of cryptographic algorithms and their applications		
5	Design the private key and public key, authentication functions for applications.		
Course Outcome	Subject: INFORMATION THEORY AND CODING	Subject Code: 18EC643	
1	Understand the concepts of information theory, source coding, channel coding, error control coding and binary cyclic codes.		
2	Apply information theory to source coding, channel coding and error control coding.		
3	Evaluate Entropy, Average code Length, Source coding efficiency and Channel capacity		
4	Analyze Various types of errors and coding techniques.		
5	Design source encoder and syndrome calculation circuits.		
Course Outcome	Subject: System Verilog for verification	Subject Code: 18EC644	
1	Use System Verilog to create correct, efficient, and re-usable models for digital designs.		
2	Use System Verilog to create test benches for digital designs.		
3	Understand and effectively exploit new constructs in System Verilog for verification.		
4	Use of threads and inter-process communication for system Verilog.		
5	Understand the process of formal verification.		
Course Outcome	Subject: Internet of Things	Subject Code: 18EC645	
1	Interpret the impact and challenges posed by IoT networks leading to new architectural models		
2	Compare and contrast the deployment of smart objects and the technologies to connect them to network		
3	Appraise the role of IoT protocols for efficient network communication.		
4	Analyse higher layer IoT Protocols.		
5	Elaborate the need for Data Analytics		
Course Outcome	Subject: Embedded Systems Lab	Subject Code: 18ECL67	
1	Understanding features of the architecture of ARM Cortex M3.		
2	Understanding features of the architecture of LPC 1768 MCU		
3	Write assembly level programs to program ARM Cortex M3		
4	Interface different modules to LPC 1768 MCU.		
5	Design and testing a program for Different Embedded applications.		

Course Outcome	Subject: CMOS VLSI DESIGN LAB	Subject Code: 18ECL67
1	Design and simulate basic CMOS circuits like different logic structures.	
2	Design and simulate basic CMOS circuits like inverter, common source amplifier and Differential Amplifier.	
3	Perform ASIC design flow and understand the process of synthesis, synthesis constraints and evaluating the synthesis reports to obtain optimum gate level net list.	
4	Design and simulate combinational and sequential digital circuits using Verilog HDL.	
Course Outcome	Subject: Automotive Safety Measurement	Subject Code: 18ECE05
1	Identify the different sensors, Actuators, Engine Control, Ignition System and Spark plug.	
2	Summarize the concepts of an electronic engine control system, Cruise Control System.	
3	Demonstrate the Engine Efficiency.	
4	To analyse the concepts of an electronic engine control system, Vehicle Motion Control, Safety systems, sensors and actuators.	
5	Relate Safety systems.	
Course Outcome	Subject: NANOELECTRONICS	Subject Code: 18ECE06
1	Know the effect of particles size on mechanical, thermal, optical and electrical properties of nanomaterials.	
2	Know the properties of carbon and carbon nanotubes and its applications.	
3	Apply the knowledge to prepare and characterize nanomaterials.	
4	Apply the knowledge to prepare and characterize nanomaterials.	
5	Analyse the process flow required to fabricate state-of-the-art transistor technology	
Course Outcome	Subject: Wireless Sensor Network	Subject Code: 18ECE07
1	Define WSN, identify issues related to different protocols for WSN	
2	Understand protocols require for Wireless Sensor Network	
3	Explore current sensor technologies through algorithms, protocols, and applications	
4	Analyse routing ,tracking problems, data base requirement and programing challenges	
5	Interpret the design goals consideration tracking and evaluate the performance of different protocols for wireless Sensor Network	
Course Outcome	Subject: ROBOTICS AND MACHINE VISION SYSTEM	Subject Code: 18ECE08
1	The student will get the basic knowledge of, various robotic elements, end effectors and various sensors that can be used in robotics.	
2	The student will be able to analyze the robot mechanics using homogeneous transformation.	
3	The student will be able to apply the robotic principles to build a new artificially intelligent system.	
4	The student will be able to study the importance of Artificial Intelligence and robotics in Science fiction.	

5	The student will be able to study and analyze the fundamentals of machine vision.	
Course Outcome	Subject: Mini Project	Subject Code: 18ECP68
1	Conceptualize, design and implement solutions for specific problems	
2	Communicate the solutions through presentations and reports.	
3	Apply project and resource managements skills, professional ethics, societal concerns.	
4	Synthesize self-learning, sustainable solutions	
5	Demonstrate life -long learning of skills & ethics.	
Course Outcome	Subject: Wireless Communication	Subject Code: 18EC71
1	Understand and Identify the telecommunication system and networks system, Different generations of wireless cellular networks 1G, 2G,2.5G ,3G and 4G Cellular system and beyond, Wireless standard organizations.	
2	Analyze Common Cellular System components, Common cellular network components, Hardware and software views of cellular networks.	
3	Understand Wireless network architecture and operation, power management and network security and Capacity expansion techniques,.	
4	Understand GSM and TDMA Technologies. GSM frame concept , GSM system operation registration, call setup, location updating, and call hand off procedure,	
5	Analyze the design issues in CDMA, Wireless LAN and PAN Networks 3G cellular system components; list the components of wireless cellular network and different frequency band used in GSM and CDMA	
Course Outcome	Subject: Microwave and Antenna	Subject Code: 18EC72
1	Identify the microwave frequency band, its applications and different types of waveguides	
2	Analyze microwave networks, microwave passive devices and semiconductor devices.	
3	Apply microwave design principle, microwave tubes and antenna basics.	
4	Be able to analyze the radiation patterns from different types of wires, point sources and their arrays.	
5	Illustrate and design antennas like aperture, reflector, and broadband. Microstrip antenna.	
Course Outcome	Subject:5G Technology	Subject Code: 18EC731
1	Introduction to drivers in 5G technology.	
2	Analyze the 5G architecture and its deployment.	
3	Elaborate security features in 5G technology.	
4	Ability to understand the design issues in memory management.	
5	Elaborate the SON and Green flexible RF in 5G technology.	
Course Outcome	Subject: VIRTUAL REALITY	Subject Code: 18EC732
1	Describe the basic concepts of virtual reality and input devices.	
2	Compare the input and output devices	

3	Use the virtual reality modeling techniques
4	Illustrate the human factors in virtual reality
5	Understanding and identifying the applications of virtual reality
Course Outcome	Subject: Real Time Operating System Subject Code: 18EC733
1	Understand the basics of Real Time Embedded System and System Resources
2	Analyse the concepts Processing and IO Resources
3	Analyse Various multi-resource services
4	Analyse different Embedded System Components and Debug components.
5	Analyze and Categorize the design trade-offs
Course Outcome	Subject: DSP Algorithms and Architecture Subject Code: 18EC734
1	Define the fundamentals of DSP and the general architecture of DSP
2	Understand the general architecture of DSP processor and in particular TMS320C54xx DSP to run algorithms.
3	Applying the concept of DSP algorithms.
4	Analyse the implementation of FFT algorithms and interfacing memory to DSP processor.
5	Creating new designs based on existing algorithms targeted to DSP processor.
Course Outcome	Subject: NETWORK AND CYBER SECURITY Subject Code: 18EC735
1	Explain network security protocols ·
2	Understand the basic concepts of cyber security ·
3	Discuss the cyber security problems
4	Explain Enterprise Security Framework
5	Apply concept of cyber security framework in computer system administration.
Course Outcome	Subject: Optical Fiber Communication Subject Code: 18EC736
1	Describe the basic concepts of propagation of optical energy in single and multimode optical fibers.
2	Compare the fiber losses and its measurements to provide background for optical fiber communications.
3	Use the cable design and Identify the optical sources and detectors.
4	Illustrate the digital transmission system of optical fiber communication
5	Understanding and Identifying the different optical Networks and its communication.
Course Outcome	Subject: Analog and Mixed Mode VLSI Design Subject Code: 18EC741
1	Draw the basic gates using the stick and layout diagrams with the knowledge of physical design aspects
2	Ability to Analyse and Design of Single Stage Amplifiers.
3	Ability to Analyse and Design of Current sources and sinks.

4	Understand concepts of ADC and DAC	
5	Analysis of ADC, DAC Architectures and Mismatch errors.	
Course Outcome	Subject: Operating System	Subject Code: 18EC742
1	Understand the evolution of operating systems and various types of operating systems in practice	
2	Analyze the structure of operating system	
3	Analyze the concepts of process management and different scheduling management.	
4	Understand the design issues in memory management and virtual meamory.	
5	Understand the file and I/O management techniques	
Course Outcome	Subject: SATELLITE COMMUNICATION	Subject Code: 18EC743
1	Identify the characteristics of satellite communication Orbits, Launching Methods and channels.	
2	Explain the concept of geostationary orbit and mathematical model for various losses on signal transmission in satellite system.	
3	Apply analytical and empirical models in the design of satellite networks and space segments. Able to compute link power budget estimation, System noise	
4	Illustrate the multiple access schemes for satellite access.	
5	Compile the Direct Broadcast System, satellite mobile and specialized services	
Course Outcome	Subject: Real Time Embedded Systems	Subject Code: 18EC744
1	Discuss the fundamentals of various real time services, real time service utilities, and Real time embedded system.	
2	Apply priority based static and dynamic Real time scheduling techniques for the given real time embedded system specifications.	
3	Analyze deadlock conditions, shared memory problem, priority inversion, missed deadlines and QoS of Real time embedded systems.	
4	Choose the appropriate real time embedded system components to improve the performance.	
5	Develop the simple real time embedded systems	
Course Outcome	Subject: OPERATIONS RESEARCH	Subject Code: 18EC745
1	Identify the OR Definitions and Able to apply TP.	
2	Ability to interpret and explain the Assignment Problem.	
3	Creation of Network construction, determining critical path, floats and scheduling by network	
4	Ability to Compare the type of $2 \times n$, $m \times 2$ game.	
5	Design the Queuing system, Game Theory and their characteristics.	
Course Outcome	Subject: Adaptive Signal Processing	Subject Code: 18EC746
1	Understand the basic concept of adaptive filter and adaptive system	
2	Understand the design of adaptive linear combiner and Identify the geometrical significance of Eigenvectors and values	

3	Analyse the Simple, Newton's and Steepest descent Gradient search method to search performance surface.
4	Estimate the gradient component using Newton's, Steepest-descent methods and LMS algorithm
5	Design of adaptive communication system, adaptive noise canceller and adaptive modelling in FIR digital filter synthesis.
Course Outcome	Subject: Advanced Communication Laboratory
	Subject Code: 18ECL75
1	Understand the working of ASK, FSK, PSK, DPSK and QPSK circuits.
2	Design ASK, FSK, PSK, DPSK and QPSK circuits.
3	Analyse various losses using OFC kit and parameters like frequency, guide wavelength, power, VSWR and Attenuation.
4	Demonstrate the sampling theorem and measurement of antenna parameters.
Course Outcome	Subject: COMPUTER COMMUNICATION NETWORKS LABORATORY
	Subject Code: 18ECL76
1	After the successful completion of this course the student should be able to conduct an experiment to simulate various protocols of data link and network layer.
2	After the successful completion of this course the student should be able to demonstrate the data communication between two systems using the communication kit.
3	After the successful completion of this course the student should be able to write the programs to verify the detection and correction of error.
4	Estimate the gradient component using Newton's, Steepest-descent methods and LMS algorithm
5	After the successful completion of this course the student should be able to verify the algorithm to find shortest path.
Course Outcome	Subject: Internet of Things
	Subject Code: 18ECE09
1	Interpret the impact and challenges posed by IoT networks leading to new architectural models
2	Compare and contrast the deployment of smart objects and the technologies to connect them to network.
3	Appraise the role of IoT protocols for efficient network communication.
4	Analyse higher layer IoT Protocols.
5	Elaborate the need for Data Analytics
Course Outcome	Subject: Cryptography
	Subject Code: 18ECE10
1	Define the basic concepts of network security, classical encryption, number theory, Private key, public key, authentication
2	Understand the structure of cryptographic algorithms and their applications.
3	Apply the concept of classical encryption techniques to existing standard algorithms.
4	Illustrate the significance of cryptographic algorithms and their applications.
5	Design the private key and public key, authentication functions for applications.
Course Outcome	Subject: Mobile Communication
	Subject Code: 18ECE11

1	Identify the telecommunication system and networks system, 3G cellular system components; list the components of wireless cellular network and different frequency band used in GSM and CDMA
2	Explain cellular systems, list the characteristics of 3G wireless mobile systems and network security
3	Explain the architecture of 3G and network Systems and the operation needed for call setup and call release in GSM and TDMA system and concept of CDMA,
4	Illustrate the cellular concept, cell sectoring and cell splitting, mobility management, CDMA channel concept, GSM frame concept
5	Discuss characteristics of Emerging wireless Network Technologies
Course Outcome	Subject: BIO-MECHATRONICS
	Subject Code: 18ECE12
1	Demonstrate the basic knowledge about the Bio mechanics, Bio sensors and actuators, and bio-mechatronics devices.
2	Acquire the different bio imaging and processing.
3	Analyse the Signal processing with bio sensors and actuators.
4	Analyse modern medical measurement devices.
5	Understand the properties of bio assist devices.
Course Outcome	Subject: Project Work
	Subject Code: ECP83
1	Discover the present problems facing the world related to the electronics and communication engineering domain
2	Conduct a survey of several available literature and compare and contrast the existing solutions
3	Utilize the modern tools and to develop the tools to design the projects.
4	Work in teams and manage the conduction of the research.
5	Formulate and propose a plan for creating a solution for research plan identified and Document and present the findings of the study conducted in the chosen domain
Course Outcome	Subject: Seminar
	Subject Code: ECS82
1	Topic Selection
2	Level of Understanding
3	Usage of resources
4	Presentation
5	Report