

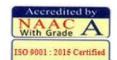
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING	
COURSE OUTCOMES (MIC18)	
	I SEMESTER (I BTECH-I SEM)
18EC1T01	English-1
CO 1	Use English language, both written and spoken, competently and correctly
CO 2	Improve comprehension and fluency of speech
CO 3	Gain confidence in using English in verbal situations.
CO 4	Hone the communication skills to meet the challenges of their careers very successfully.
CO 5	Strengthen communication skills in different contexts like formal and informal.
18EC1T02	Linear Algebra & Differential Equations
CO 1	Apply the knowledge to solve a system of homogeneous and non-homogeneous linear equations
CO 2	Optimize functions of several variables and able to find extreme values of constrained functions
CO 3	Able to analyze the real-life situations, formulate the differential equations and then applying the methods
CO 4	Apply the knowledge to solve the linear differential equations
CO 5	Provide the techniques of Laplace transformations and able to solve problems related to digital signal processing
18EC1T03	Applied Physics
CO 1	Study of lasers and optical fibers with an emphasis of their application in communication in particular.
CO 2	Outline the principles of Quantum mechanics to understand the principles of solid-state materials for use in engineering applications.
CO 3	The Analytical study of response of materials to Electromagnetic fields.
CO 4	To study various magnetic and dielectric materials and their Engineering applications
CO 5	To Gain knowledge on the physics of semiconductors for their engineering applications
18EC1T04	Problem Solving through C and Python
CO 1	Understand the basic concepts of programming
CO 2	Understand and Apply loop construct for a given problem
CO3	Demonstrate the use pointers
CO 4	Understand the use of functions and develop modular reusable code
CO 5	Understand File I/O operations
18EC1T05	Engineering Graphics
CO 1	Introduce the students, the techniques of constructing the various types of polygons
CO 2	Understand the concepts of projections and draw projections for simple entities such as points and lines.





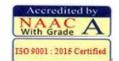
CO 3	To visualize projections of planes
CO 4	To visualize projections of solids
CO 5	Analyze the 2D drawings and convert to 3D isometric views & converting Isometric view to Orthographic views
18EC1L06	English Communication Skills Lab-1
CO 1	Acquire basic proficiency in English by learning functional aspects of English language
CO 2	Learn the methods of enhancing vocabulary
CO 3	Acquaint himself/herself with nuances of phonetics
18EC1T07	Applied Physics Lab
CO 1	Implement the basic principles of Optics through various phenomena of light.
CO 2	Implement the basic principles of Mechanics to measure different physical parameters.
CO 3	Enhance the knowledge of Usage of electronic devices in various applications
18EC1L08	Problem Solving Lab using C and Python
CO 1	Demonstrate Knowledge on various concepts of a C language.
CO 2	Able to draw flowcharts and write algorithms.
CO 3	Able design and development of C problem solving skills.
CO 4	Able to design and develop modular programming skills.
CO 5	Able to trace and debug a program
18EC1T09	Environmental Studies
CO 1	The concepts of the ecosystem and its function in the environment the importance of environment current global environmental challenges for the sustenance of the life on planet earth.
CO 2	Natural resources classification and their conservation
CO 3	The biodiversity of India and the threats to biodiversity, and conservation practices to protect the biodiversity
CO 4	The various attributes of the pollution and their impacts and measures to reduce or control the pollution along with waste management practices
CO 5	The environmental legislations of India and Social issues and the possible means and EIA
	II SEMESTER (I BTECH-II SEM)
18EC2T01	English-II
CO 1	Use English language in various contexts
CO 2	Improve comprehension and fluency of speech
CO 3	Appreciate a literary text
CO 4	Hone the communication skills to meet the challenges of their careers very successfully
CO 5	Understand the need for lifelong learning
18EC2T02	Numerical Methods & Vector Calculus





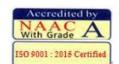
CO1	Determine the solution of transcendental & linear equations by different
	numerical methods
CO 2	Illustrate the numerical methods to determine solutions for a class of ordinary differential equations involving irregularly shaped boundaries
CO 3	Determine the areas and volumes using multiple integration
CO 4	Interpret the divergence, gradient and curl physically
CO 5	Apply complex functions in the study of thermodynamics and electric fields
18EC2L03	Applied Chemistry
CO 1	study of polymers and composite materials enable us to use them in a good number of engineering fields
CO 2	Electrochemical principles from the basis of batteries that are being developed. Destruction of metals and alloys can be prevented by understanding the science of corrosion
CO 3	industries are run by the quality of fuels and energy crisis can be met by broad understanding of different fuels
CO 4	study of existing developed materials forms a basis for developing more number of advanced materials
CO 5	importance of engineering materials in the engineering fields can be understood
18EC2T04	Biology for Engineers
CO 1	Understand how biological observations lead to major discoveries and the
	morphological, Biochemical and ecological classification of organisms Understand that all forms of life have the same building blocks and their
CO 2	involvement in the maintenance and metabolic processes of living organisms
	Classify enzymes and distinguish between different mechanisms of enzyme
CO 3	action and study the chemical reactions that are catalysed by enzymes. Apply
	thermodynamic principles to biological systems and able to understand major
CO 4	chemical process that occur within a living organism in order to maintain life Identify DNA as genetic material in the molecular basis of information transfer
	Identify and classify micro-organisms, Understand media compositions and
CO 5	growth of microorganisms
18EC2T05	Basic Electronics & Electrical Engineering
CO 1	Understand basic semiconductor devices
CO 2	Observe characteristics diodes
CO 3	Analyze applications of Semiconductor diodes
CO 4	Characterize the Bipolar Junction Transistor in different modes
CO 5	Understand the construction and working of Field Effect Transistor
CO 6	To understand the concepts and applications of electronic devices
18EC2T06	Data Structures using C
CO 1	Understand the properties, interfaces, and behaviors of basic abstract data types.
CO 2	Understand and apply linked lists
CO 3	Apply Stacks and Queue data structures.
CO 4	Demonstrate different methods for traversing trees.





CO 5	Demonstrate the application of Graphs
18EC2L07	Applied Chemistry Lab
CO 1	Student is exposed to different methods of chemical analysis and use of some commonly employed instruments, they thus acquire some experimental skills
18EC2L08	Basic Electronics & Electrical Engineering Lab
CO 1	Measure voltage, frequency and phase of any waveform using CRO
CO 2	Generate sine, square and triangular waveforms with required frequency and amplitude using function generator
CO 3	Analyze the characteristics of different electronic devices such as diodes, transistors etc., and simple circuits like rectifiers, amplifiers etc.
18EC2L09	Data Structures using C Lab
CO1	Understand the properties, interfaces, and behaviors of basic abstract data types.
CO2	Understand and apply linked lists
CO3	Apply Stacks and Queue data structures.
CO4	Demonstrate different methods for traversing trees.
CO5	Demonstrate the application of Graphs
	III SEMESTER (II BTECH-I SEM)
18EC3T01	Probability Theory & Stochastic Processes
CO 1	Define sample space and probability
CO 2	Understand the concept of random variable ,distribution and density functions
CO 3	Operations on Single and Multiple Random Variables
CO 4	Evaluate the temporal characteristics of random process
CO 5	Analyze the spectral characteristics and response of linear system for random input
18EC3T02	Electronic Circuit Analysis
CO 1	Design and analyze the small signal low and high frequency transistor amplifier using BJT
CO 2	Design and analysis of multi stage amplifiers using BJT and FET and Differential amplifier using BJT
CO 3	Identify and analyze the different feedback topologies
CO 4	Derive the expressions for frequency of oscillation and condition for oscillation of RC and LC oscillators and their amplitude and frequency stability concept
CO 5	Know the classification of the power amplifiers and their analysis with performance comparison
18EC3T03	Digital Electronics
CO 1	Understand different number systems and their conversions
CO 2	Analyze the logical operations and Boolean algebra
CO 3	Develop combinational circuits and perform logical operations
CO 4	Design the sequential logic functions
CO 5	Know finite state machines and different programmable logic devices
18EC3T04	Network Theory





CO 1	Gain the knowledge on basic network elements and graph theory
CO 2	Understand Network Theorems and applications
CO 3	Analyze Coupled circuits and Resonance
CO 4	Will analyze the RLC circuit's behavior in detailed
CO 5	Gain the knowledge in characteristics of two port network parameters
18EC3T05	Signals & Systems
CO 1	Characterize the signals and systems and principles of vector spaces, Concept of Orthogonality
CO 2	Analyze the Fourier series, Fourier transform and Laplace transform
CO 3	Apply sampling theorem to convert continuous-time signals to discrete-time signal and reconstruct back
CO 4	Understand the relationships among the various representations of LTI systems
CO 5	Apply z-transform to analyze discrete-time signals and systems
18EC3T06	Managerial Economics & Finance Analysis
CO 1	The knowledge of estimating the Demand and demand elasticity's for a product
CO 2	The knowledge of understanding of the Input-Output-Cost relationships and estimation of the least cost combination of inputs
CO 3	understand the nature of different markets and Price Output determination under various market conditions
CO 4	Prepare Financial Statements and the usage of various Accounting tools for Analysis
CO 5	Evaluate various investment project proposals with the help of capital budgeting techniques
18EC3L07	Electronic Circuit Analysis Lab
CO 1	Understand how the amplification under small signal models
CO 2	Analyzing frequency response of amplifiers
CO 3	Design and realize different classes of Power Amplifiers and tuned amplifiers useable for audio and Radio applications
CO 4	Utilize the Concepts of negative feedback to improve and importance of multivibrators
CO 5	Understand the concepts of sampling gates
18EC3L08	Signals & Systems Lab
CO 1	Have a thorough understanding of the fundamental concepts and techniques used
CO 2	To understand and examine the signals and its operations
CO 3	The ability to understand and analyze sampling process
CO 4	Ability to identify basic requirements for a transformation techniques in continuous and discrete time
18EC3N09	Constitution of India
CO 1	Importance for building a democratic India, features and principles of Indian Constitution.





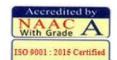
CO 2	The functioning of three wings of the government ie., executive, legislative and judiciary.	
CO 3	The roles and powers of State Government	
CO 4	The decentralization of power between Union, State and Local self-government and local administration	
CO 5	Election Commission, UPSC, Welfare commissions for sustaining democracy	
	IV SEMESTER (II BTECH-II SEM)	
18EC4T01	Humanities (Effective Technical Communication)	
CO 1	learn different ways of enhancing their range of vocabulary	
CO 2	Improve their writing skills	
CO 3	identify common errors in writing	
CO 4	Hone their skills needed for making presentations and succeed at interviews	
CO 5	gain practical knowledge about the soft skills required	
18EC4T02	Physics of Materials	
CO 1	To identify different crystal structures	
CO 2	To study about different defects in crystals	
CO 3	To acquire knowledge on physical properties of metals	
CO 4	To develop the knowledge of Ultrasonics and their applications in various fields	
CO 5	Impart knowledge of Physical Optics phenomenon and identify these phenomenon in natural processes	
18EC4T03	Analog IC Applications	
CO 1	Understand about Logic Families with Diode-Transistor	
CO 2	Design different Time base generators	
CO 3	Design circuits using operational Amplifier for various applications	
CO 4	Understand the concept of A/D & D/A Converters	
CO 5	Analyze and design amplifiers and active filters using Op-amp	
18EC4T04	Digital System Design Using HDL	
CO 1	Understand the concepts of Design Flow and Programming Statements	
CO 2	Understand the concepts of Combinational logic circuits in digital system	
CO 3	Understand the concepts of sequential logic circuits in digital system	
CO 4	Understand the concepts of Programmable logic devices & memories	
CO 5	Understand the concepts of HDL modeling and logic families	
18EC4T05	Electromagnetic Waves & Transmission lines	
CO 1	Know the basic principles of electrostatics	
CO 2	Understand the primary laws in magneto statics and its importance	
CO 3	Gain knowledge on functionalities of time varying fields	
CO 4	Determine the parameters in EM Wave propagating conditions	
CO 5	Derive and determine the conditions and constants in transmission lines	
18EC4T06	Control Systems	





CO 1	Represent the mathematical model of a system
CO 2	Determine the response of different order systems for various inputs in time domains
CO 3	Analyze the stability of the system using RH and RL
CO 4	Know the Frequency Response Using Different Graphical Networks
CO 5	Design Controllers for Different Applications
18EC4L07	Analog IC Applications Lab
CO 1	Understand about Logic Families with Diode-Transistor
CO 2	Design different Time base generators
CO 3	Design circuits using operational Amplifier for various applications
CO 4	Analyze and design amplifiers and active filters using Op-amp
CO 5	Understand the concept of A/D & D/A Converters
18EC4L08	Digital System Design Using HDL Lab
CO 1	Understand the concepts of Design Flow and Programming Statements
CO 2	Understand the concepts of Combinational logic circuits in digital system
CO 3	Understand the concepts of sequential logic circuits in digital system
CO 4	Understand the concepts of Programmable logic devices & memories
CO 5	Understand the concepts of HDL modeling and logic families
18EC4L09	Mini Project
CO 1	Understand the real world problems
CO 2	Gain knowledge to solve and address the problem
CO 3	Improve presentation skills and writing skills
CO 4	Involve in both theoretical and practical work
	V SEMESTER (III BTECH-I SEM)
18EC5T01	Analog and Digital Communications
CO 1	Differentiate various Analog modulation schemes
CO 2	Analyze demodulation schemes and their spectral characteristics
CO 3	Analyze noise characteristics of various analog modulation methods
CO 4	Differentiate various Digital modulation schemes
CO 5	Analyze demodulation schemes and their spectral characteristics
18EC5T02	Microcontroller and Microprocessors
CO 1	To be able to understand the overview of 8085 & 8086 microprocessor in general
CO 2	To be able to understand the Assembly Language Programming in microprocessors
CO 3	To be able to understand Interfacing I/O devices through PPI with microprocessor
CO 4	To be able to understand the overview of microcontroller in general & ALP in microcontrollers





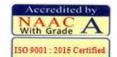
CO 5	To be able to understand the microcontroller interfacing with I/O devices using ALP
18EC5T03	Digital Signal Processing
CO 1	Apply the difference equations concept in the analyzation of Discrete time systems
CO 2	Use the FFT algorithm for solving the DFT of a given signal
CO 3	Design a Digital filter (FIR&IIR) from the given specifications
CO 4	Realize the FIR and IIR structures from the designed digital filter
CO 5	Use the Multirate processing concepts in various applications
18EC5T04	IPR & Patents
CO 1	To introduce the various concepts relating to Intellectual Property Rights and Patents.
CO 2	To impart knowledge on various aspects relating to laws relating to patents in India.
CO 3	To indulge the process of registering for copyrights and trademarks.
18EC5T05	Quantitative Aptitude & Reasoning
CO 1	Understand the basics concepts of Numerical Ability & Reasoning Skills
CO 2	Use the logical thinking and analytical abilities to solve Quantitative aptitude questions from companies specific and other competitive tests
CO 3	Solve questions related to time and distance, time and work ,percentages, simple interest and compound interest etc.
CO 4	Solve questions related to coding and decoding, number series, directions, puzzles ,etc.
CO 5	Understand and solve puzzle related questions for competitive and campus placements exams.
18EC5L08	Microcontroller and Microprocessors Lab
CO 1	Apply assembly language programming skills for simple and complex calculations.
CO 2	Interface peripherals with microprocessor
CO 3	Understand the concepts on hardware and software/programming of a microcontroller.
CO 4	Interface peripherals with microcontroller.
CO 5	ADC & DAC interfacing with microcontrollers.
18EC5L09	DSP Lab
CO 1	Use MATLAB software to process different signals.
CO 2	Design the digital filters for generating desired signals.
CO 3	Simulation of system in Time and Frequency domain.
CO 4	Use Digital signal processing algorithms for implementation of DFT.
CO 5	understand the concept of interpolation and decimation
18EC5L10	Communication Systems Lab
CO 1	Simulate modulation and demodulation circuits such as AM, DSB-SC in hardware and MATLAB simulation





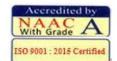
CO 2	Understand of Sampling Process.
CO 3	Orientation to time-division multiplexing (TDM) systems
CO 4	Verification of ASK, FSK and PSK
CO 5	Understand of pulse code modulation technique
18EC5N11	Essence of Indian Traditional Knowledge
CO 1	Understand the significance of Indian Traditional Knowledge
CO 2	Classify the Indian Traditional Knowledge
CO 3	Compare Modern Science with Indian Traditional Knowledge system.
CO 4	Analyze the role of Government in protecting the Traditional Knowledge
CO 5	Understand the impact of Philosophical tradition on Indian Knowledge System.
	VI SEMESTER (III BTECH-II SEM)
18EC6T01	VLSI Design
CO 1	Model the behavior of a MOS Transistor
CO 2	Design combinational and sequential circuits using CMOS gates
CO 3	Design the low power circuits
CO 4	Implement design on FPGA
CO 5	Perform Testing and implementation techniques
18EC6T02	Antenna and wave propagation
CO 1	Define various antenna parameters
CO 2	Analyze radiation patterns of antennas
CO 3	Evaluate antennas for given specifications
CO 4	Illustrate techniques for antenna parameter measurements
CO 5	Design antennas for specific applications
18EC6T03	Cellular Mobile Communication
CO 1	Understand the basic cellular concepts like frequency reuse, cell splitting, cell sectoring etc., and various cellular systems
CO 2	Understand the different types of interference s influencing cellular and mobile communications
CO 3	Understand the frequency management, channel assignment and various propagation effects in cellular environment
CO 4	Understand the different types antennas used at cell site and mobile
CO 5	Understand the concepts of handoff and types of handoffs
18EC6T06	OOPS Through JAVA
CO 1	Understand the principles of object oriented concepts. Define classes and objects by identifying real world entities, their properties and functionalities.
CO 2	Reuse the existing classes by using inheritance and understand the concepts of packages and exception handling.
CO 3	Make use of built-in classes in Java and understand the concept of thread.
CO 4	Develop user interfaces using applets, AWT and Event handling in java.
CO 5	Create portable GUI applications using Swing components.





18EC6T09	Embedded Systems
CO 1	Program an embedded system
CO 2	Design, implement and test an embedded system
CO 3	Identify the unique characteristics of real-time systems
CO 4	Explain the general structure of a real-time system
CO 5	Define the unique design problems and challenges of real-time systems
18EC6L10	VLSI Lab
CO 1	Design and analyse the MOS at device, circuit and layout level using back end CAD tool
CO 2	Design of combinational and sequential circuit using CAD tool
CO 3	Design of Combinational and sequential circuit at gate level using Front end tool
18EC6L11	OOPS Through JAVA Lab
CO 1	Understand the behavior of primitive data types, object references, and arrays.
CO 2	Implement Java classes from specifications
CO 3	Implement interfaces, inheritance, and polymorphism as programming techniques
CO 4	Apply exceptions handling.
18EC6P11	Technical Seminar
CO 1	Define the real world problems
CO 2	Acquire knowledge to solve and address the problem
CO 3	Improve presentation skills and writing skills
CO 4	Involve in both theoretical and practical survey work
	VII SEMESTER (IV BTECH-I SEM)
18EC7T01	Digital Image Processing
CO 1	Exploration of the limitations of the computational methods on digital images
CO 2	Expected to implement the spatial and frequency domain image transforms on enhancement and restoration of images
CO 3	Elaborate understanding on image enhancement techniques
CO 4	Understand image segmentation techniques
CO 5	Expected to define the need for compression and evaluate the basic compression algorithms
18EC7T02	Microwave Engineering
CO 1	Gain Knowledge of Transmission Lines and Waveguide Structures and How They Are Used as Elements in Impedance Matching and Filter Circuits
CO 2	Apply Analysis Methods to Determine Circuit Properties of Passive or Active Microwave Devices
CO 3	Gain Knowledge and Understanding of Microwave Analysis Methods
CO 4	Distinguish Between M-Type and O-Type Tubes
CO 5	Analyze and Measure Various Microwave Parameters Using a Microwave Test Bench





18EC7T03	Wireless Sensor Network
CO 1	To know the basic concepts of Sensor Networks
CO 2	To understand the concept of Deployment and Configuration
CO 3	To know Routing Protocals
CO 4	To understand the concept of Transport Layer And Security Protocols
CO 5	To know Data storage & Manipulations
18EC7T06	Satellite Communication
CO 1	Understand the basic concepts, applications, frequencies used and types of satellite communications
CO 2	Understand the concept of look angles, launches and launch vehicles and orbital effects in satellite Communications
CO 3	Understand the various satellite subsystems and its functionality
CO 4	Understand the concepts of satellite link design and calculation of C/N ratio
CO 5	Understand the concepts of multiple access and various types of multiple access techniques in satellite Systems
18EC7T09	Computer Architecture & Organization
CO 1	To know the Basic Structure of computers
CO 2	To know the Register Transfer Language And Micro operations
CO 3	To understand the memory concepts
CO 4	To know the memory systems
CO 5	To understand the concept of input output organization
18EC7L12	Microwave & OC Lab
CO 1	The student will be able to understand the characteristic of Optical fiber
CO 2	The student will be able to Differentiate analog and digital link
CO 3	The student will be able to Measure the power and attenuation of optical and microwave devices
CO 4	The student will be able to Microwave parameter measurement of Gunn diode and Reflex Klystron
CO 5	Able to determine numerical aperture and attenuation of optical fiber
18EC7P13	Industrial Internship
CO 1	Understand the real world problems
CO 2	Aquitaine with industry interaction skills
CO 3	Gain knowledge to solve and address the problem
CO 4	Improve presentation skills and writing skills
CO 5	Involve in industrial needs related work
	VIII SEMESTER (IV BTECH-II SEM)
18EC8T01	Coding Theory & Techniques
CO 1	Design the channel performance using Information theory
CO 2	Comprehend various error control code properties
CO 3	Apply linear block codes for error detection and correction





CO 4	Apply convolution codes for performance analysis & cyclic codes for error detection and correction
CO 5	Design BCH & RS codes for Channel performance improvement against burst errors
18EC8T04	Electronic Measurements & Instrumentation
CO 1	Recognize the evolution and history of units and standards in Measurements
CO 2	Identify the various parameters that are measurable in electronic instrumentation
CO 3	Employ appropriate instruments to measure given sets of parameters
CO 4	Practice the construction of testing and measuring set up for electronic systems
CO 5	To have a deep understanding about instrumentation concepts which can be applied to Control systems
18EC8T05	Operating Systems
CO 1	Understand the functionalities of an operating system and Evaluate different CPU scheduling algorithms
CO 2	Apply synchronization to cooperating processes and handle the deadlocks
CO 3	Learn various management techniques for efficient utilization of system memory
CO 4	Understand and analyze theory and implementation of files and Evaluate different disk scheduling algorithms
CO 5	Analyze the functionalities in various operating systems
18EC8T08	Data Communication & Networking
CO 1	to understand basic knowledge of data sharing, transmission media and their protocols
CO 2	to have the basic knowledge of computer networks
CO 3	To Focus on information sharing and networks
CO 4	To Introduce flow of data, categories of network, different topologies
CO 5	To Focus on different coding schemes
18EC8P11	Project
CO 1	Identification of real world problems.
CO 2	Analyze real world problems.
CO 3	Identify advanced tools & programming in problem solving.
CO 4	Simulate and implement the design.
CO 5	Technical report writing.