Sr. No.	Department of Electronics and Communication Engineering	
	Third Semester	
1	BEECE301T	Applied Mathematics III
2	BEECE302T	Electronic Devices and circuits
3	BEECE302P	Electronic Devices and circuits
4	BEECE303T	Electronics Measurements and Instrumentation
5	BEECE303P	Electronics Measurements and Instrumentation
6	BEECE304T	Object oriented programming & data structure
7	BEECE304P	Object oriented programming & data structure
8	BECEE305T	Network Analysis and Synthesis
	Fourth Semester	
1	BEECE401T	Applied Mathematics – IV
2	BEECE402T	Power Devices & Machine
3	BEECE402P	Power Devices & Machine
4	BEECE403T	Electro Magnetic Field
5	BEECE404T	Digital Circuit and Fundamental of Microprocessor
6	BEECE404P	Digital Circuit and Fundamental of Microprocessor
7	BEECE405T	Signals and Systems
8	BEECE407P	Software Workshop
	Fifth Semester	
1	BEECE501T	Antenna and Wave Propagation
2	BEECE502T	Microprocessor and Microcontroller
3	BEECE502P	Microprocessor and Microcontroller
4	BEECE503T	Analog Circuit and Design
5	BEECE503P	Analog Circuit and Design
6	BEECE504T	Communication Electronics
7	BEECE504P	Communication Electronics
8	BEECE505T	Industrial Economics and Entrepreneurship Development
	Sixth Semester	
1	BEECE601T	Telecommunication Switching System
2	BEECE602T	Digital Signal Processing
3	BEECE602P	Digital Signal Processing
4	BEECE603T	Control System Engineering
5	BEECE604T	Digital Communication
6	BEECE604P	Digital Communication
7	BEECE605T	Functional English
8	BEECE606P	Electronics Workshop
	Seventh Semester	
1	BEECE701T	DSP Processor & Architecture
2	BEECE701P	DSP Processor & Architecture
3	BEECE702T	Television & Video Engineering
4	BEECE702P	Television & Video Engineering
5	BEECE703T	Optical communication
6	BEETE704T	Advanced Digital System Design
7	BEETE704P	Advanced Digital System Design
8	BEECE705T	VLSI Signal Processing

	Eighth Semester	
1	BEECE801T	Microwave and Radar Engineering
2	BEECE801P	Microwave and Radar Engineering
3	BEECE802T	Computer Communication Network
4	BEECE802P	Computer Communication Network
5	BEECE803T	Wireless and Mobile Communication
6	BEECE804T	Embedded System Elective - II
7	BEECE804T	Digital Image Processing Elective – II
8	BEECE805T	Satellite Communication Elective –III
9	BEECE805T	CMOS VLSI Design Elective –III

Department of Electronics and Communication Engineering

The department of ECE Engineering has framed the following Program Specific Outcomes in consultation with concerned stakeholder and corresponding committees.

PSO1	Apply the basic knowledge acquired in Electronic Devices and Circuits, Electromagnetic fields, signal processing, communication engineering, VLSI circuits and Embedded Systems to provide efficient solutions to engineering problems.
PSO2	Should acquire the skills to communicate and document the ideas with necessary road maps and demonstrating the practices of professional ethics for societal

BE Electronics and Communication Engineering Third Semester	
	Applied Mathematics III (BEECE301T)
CO301.1	Will have the ability to solve integral equation, integral-differential equations, convolution type integrals, differential equations using operational
CO301.2	Will have a critical understanding of the methods for evaluation of integrals which provides the solution of numerous boundary value problems of engineering and understand the concept of periodic function, even and odd function, half range series, shape and symmetry etc. and can be expressed as a Fourier series.
CO301.3	Will have knowledge in the Technique, methodology of solving partial differential equation and basic understanding in the transforms which are
CO301.4	Will be able to formulate variational problems and analyze them to deduce key
CO301.5	Will be familiar with the concepts and applications of contour integration etc.
CO301.6	Will be able to simplify the power of matrices, system of linear equations,
	Electronic Devices and circuits (BEECE302T)
CO302.1	Understand diode functions, grasp the techniques for the analysis of diode circuits through modeling the diode characteristics, use of diode in various applications including design of rectifier circuits, filters, voltage doublers, voltage regulators etc.
CO302.2	An ability to analyze the BJT terminal characteristics, design of biasing circuits
CO302.3	An ability to utilize transistor H-parameter models to perform the analysis of BJT circuits and to design four basic single stage BJT amplifiers
CO302.4	Understand introduction of positive feedback in BJT amplifier to design various
CO302.5	An ability to analyze and design various power amplifier circuits.
CO302.6	Understand FET, MOSFET functions, its biasing techniques, comparison of

	and FET, Small signal analysis of FET circuits.
	Electronic Devices and circuits (BEECE302P)
CO302.1	Get basic concepts of different semiconductor components. They will be able to
CO302.2	To calculate different performance parameters of transistors and plot and study
CO302.3	To understand the use of Regulated power supply (RPS) and CRO. Set up a bias point in a transistor. Learn to design different types of filters and apply the
	Electronics Measurements and Instrumentation (BEECE303T)
CO303.1	Describe the fundamental concepts electronic instruments.
CO303.2	Understand the principle of operation, working of Different electronic instruments and Apply the knowledge about the Instruments to use them
CO303.3	Describe different terminology related to measurements and Measure various
CO303.4	Understand the principles of various types of transducers and sensors.
CO303.5	Apply the measurement techniques for different types of tests.
C303.6	Students will understand functioning, specification and application of signal
	Electronics Measurements and Instrumentation (BEECE303P)
CO7303.1	Measure various electrical parameters with accuracy, precision, resolution.
CO303.2	Use AC and DC bridges for relevant parameter measurement.
CO303.3	Select appropriate passive or active transducers for measurement of physical
	Object oriented programming and data structure (BEECE304T)
CO304.1	Students can understand and implement the concept of object oriented
CO304.2	Students can understand the concept of polymorphism and can apply the same in
CO304.3	Students can understand the concept of inheritance and reusability and
CO304.4	Students can perceive the knowledge of basic data structures and algorithm and
CO304.5	Students can comprehend the idea of stack and queue and can apply the concept
CO304.6	Students can encompass the basic terminologies and can integrate these data
	Object oriented programming and data structure (BEECE304P)
CO304.1	Students can understand and implement the concepts of object oriented
CO304.2	Students can perceive the knowledge of basic data structures and algorithm and
CO304.3	Students can encompass the basic terminologies of data structures and

	implement the related algorithms in large program.
	Network Analysis and Synthesis (BECEE305T)
CO305.1	Analyze the network using source transformation, mesh analysis and nodal
CO305.2	To determine current and change in current through a branch, and maximum
CO305.3	Analyze series and parallel resonance circuit.
CO305.4	Analyze different types of Filters and Attenuators.
CO305.5	Analyze application of Laplace Transform to different electrical circuits and
CO305.6	To analyze different network parameter of two port network.
BE Electronics and Communication Engineering Fourth Semester	
	Applied Mathematics – IV (BEECE401T)
CO401.1	Will be able to aware of mathematical background for different numerical methods such as to solve algebraic and transcendental equations, ordinary differential equations. Using these knowledge students may work on multidisciplinary projects.
CO401.2	Will be able to analyze the frequency response and representation of discrete
CO401.3	Will able to solve series solution of ordinary differential equations by Frobenious method and the concept of Bessel's functions, Rodrigue's
CO401.4	Will develop a deep understanding of laws of probabilities, random variables, expectations and distributions which provides a mathematical framework and
	Power Devices and Machine (BEECE402T)
CO402.1	Understand the basic concept and operation of unidirectional and bidirectional
CO402.2	Understand working principles, symbols and characteristics of power devices
CO402.3	Understand the concept of AC-AC and AC-DC converter for industry
C402.4	Understand the principle and operation of DC-DC and DC-AC converter along
CO402.5	Understand the construction and operation of 3 phase transformer and 3 phase
CO402.6	Understand different types of DC motor with its speed control technique and
	Power Devices and Machine (BEECE402P)
CO402.1	Understand the working and nature of characteristics of different power components used in Power Devices and be able to calculate
CO402.2	Be able to perform different tests on Transformers and motors for calculating the
CO402.3	Able to simulate the power Electronics circuit using

	software
	Electro Magnetic Field (BEECE403T)
CO403.1	Understand the different coordinate system, Calculate force, electric field, potential, and energy from various charge distributions; calculate electric
CO403.2	Understand magnetic field intensity, magnetic potential, and laws and theorems
CO403.3	Analyse Maxwell's equations for time varying fields and solve simple
CO403.4	Apply Maxwell's equations for derivation of electromagnetic wave equation in different media. Derive Poyntings theorem from Maxwell's equations and interpret the terms in the theorem.
CO403.5	Understand the basic concepts of rectangular waveguide for the transmission of
CO403.6	Understand the basic concepts of Radiation and Elements used for radiation
	Digital Circuit and Fundamental of Microprocessor (BEECE404T)
CO404.1	Analyze and understand K map representation of logic functions (SOP and POS forms), minimization of logical functions for min-terms and max-terms (up to 4 variables), don't care conditions, Design: Arithmetic Circuits, BCD - to
C404.2	Analyze and design Combinational logic circuits like Adders, substractor, look ahead carry, Digital Comparator, Parity generators/checkers, Multiplexers,
CO404.3	Analyze and design Sequential logic circuits like 1 Bit Memory Cell, Clocked SR, JK, MS J-K flip flop ,D and T flip-flops. Excitation Table for flip
CO404.4	Analyze and design Registers, Shift registers, Counters (ring counters, twisted ring counters),Sequence Generators, ripple counters, up/down
CO404.5	Analyze and understand Classification of logic families, Characteristics of digital ICs and there Comparison. Classification and characteristics of
CO404.6	Analyze and understand Basics of microprocessor, Architecture of 8085 microprocessor, Addressing modes, 8085 instruction set, Concept of
	Digital Circuit and Fundamental of Microprocessor (BEECE404P)
CO405.1	Understand the fundamental of basic gates and their use in combinational and
CO405.2	Design the applications for performing Arithmetic and logical functions.
CO405.3	Understand the Architecture of 8085 microprocessor with instruction sets and to write and execute assembly language programs using instructions of

	Signals and Systems (BEECE405T)
CO405.1	Get knowledge about different types of signals and systems used in communication electronics**.**
CO405.2	Understand the concept of probability and its use in communication system.
CO405.3	Be able to embed the use of Fourier series and Fourier transform for feature
CO405.4	Understand different coding schemes and able to apply selective coding scheme
CO405.5	Understand the different analog and digital modulation schemes.
CO405.6	Get knowledge about various error detecting and error correcting coding
	Software Workshop (BEECE407P)
CO407.1	Write MATLAB program for basic problem.
CO407.2	Plot various functions using different graphical techniques.
CO407.3	To draw, analyze and plot the electronic circuits using pSpice Software.
BE Electronics and Communication Engineering Fifth Semester	
	Antenna and Wave Propagation (BEECE501T)
CO501.1	Understand the basic concepts of transmission line characteristics and use of
CO501.2	Ability to analyze wire antenna(Monopol, Dipoles, and Loop antenna)
CO501.3	Understand the basic antenna array principles and Ability to analyze and design
CO501.4	Understand the basics concept of Micro strip antennas and Ability to analyze
CO501.5	Understand the operation of aperture and reflector antennas and ability to
CO501.6	Understand the effects of atmosphere on radio wave propagation.
	Microprocessor and Microcontroller (BEECE502T)
CO502.1	Describe Architecture, Pin diagram, Features with operating modes, Memory organization and interfacing, Different Addressing modes and Instruction set
CO502.2	Describe the concepts of Interrupts , Timing diagram , different I/O interfacing techniques and interfacing of 8086/8088 with 8255 PPI for key board,7
CO502.3	Interface of 8086/8088 with PIT 8254/8253, PIC 8259, USART 8251 and its working principle, Architecture and concepts of serial and
CO502.4	Demonstrate the concepts of Multiprocessing, Coprocessor 8087 NDP and DMAC 8237, along with its architecture and interfacing and Introduction
CO502.5	Describe the internal organization, architecture of 8051 microcontroller,
CO502.6	Describe the instruction set of 8051 microcontroller, addressing modes and programming examples along with Keyboard, LED, ADC, DAC and

	Microprocessor and Microcontroller (BEECE502P)
CO502.1	Understand the Architecture of 8086 microprocessor with pin diagram and demonstrate the concept of Assembly language structure and programming
CO502.2	Simulate the programs on different software platforms.
CO503.3	Interface various peripherals with 8086.
	Analog Circuit and Design (BEECE503T)
CO503.1	Understand and discuss the op-amp basic building blocks such as differential amplifier, its parameters and characteristics, inverting and non-
C503.2	Analyze and design various Op-amp based circuits such as Voltage Follower, Summing amplifier, Scaling amplifier, Averaging amplifier, Instrumentation amplifier and applications, Integrator and Differentiators, Log and Antilog amplifiers for linear practical applications.
CO503.3	Analyze and design various op-amp based circuit such as Comparators, Schmitt trigger, PLL circuit, Clipper and Clamper circuit, Multivibrators, D/A and
CO503.4	Analyze and design power supply circuit such as Series Voltage Regulator, IC
CO502.5	Analyze and design op-amp based and transistor based oscillator circuits and
CO503.6	Analyze and design active filters, relay driver circuits, stepper motor control
	Analog Circuit and Design (BEECE503P)
CO503.1	Gain a sound understanding of the operation, analysis and design of analog
CO503.2	Design linear and nonlinear applications of operational amplifier.
CO503.3	Design the oscillators and other complex circuits using op amp ICs and Demonstrate the gain-bandwidth concept and frequency response of
	Communication Electronics (BEECE504T)
CO504.1	Demonstrate different amplitude modulation techniques used in electronic
CO504.2	Study of angle modulation techniques with their comparison.
CO504.3	Evaluate pulse modulation techniques necessary for various engineering
CO504.4	Explain noise, signal to noise ratio, noise figure, and its calculations.
CO504.5	Study AM and FM radio receivers with their performance characteristics.
CO505.6	Study and Comparison of multiplexing techniques and haul systems.
	Communication Electronics (BEECE504P)
CO504.1	Demonstrate different modulation techniques used in electronic communication
CO504.2	Use the modulation techniques and modern communication tools necessary

	various engineering applications.
CO504.3	Evaluate fundamental communication system parameters, such as bandwidth
	Industrial Economics and Entrepreneurship Development (BEECE505T)
CO505T.1	Subject makes the student understand and learn the basic concepts of Industrial Economics such as types of business structures, top and bottom line
CO505T.2	Students learn the basic concepts like market structures, pricing strategies, business integration, economies and diseconomies of scale and the
CO505T.3	Students are familiarized with working of banking system, foreign direct investment, the concept of free trade, capital formation, inflation,
CO505T.4	Students learn about entrepreneurship as career avenue and factors affecting entrepreneurial growth. Students learn about project formulation, market survey and research, techno economic feasibility assessment and project appraisal.
CO505T.5	Subject enhances their understanding about needs and sources of finance, various types of loans, capital structures, break even analysis, network
CO505T.6	Students learn about role of small scale industries in the economy, problems of SSI,FDI as a threat to SSI, technical consultancy organizations,
BE Electronics and Communication Engineering Sixth Semester	
	Telecommunication Switching System (BEECE601T)
CO601.1	Describe the need for switching systems the working principles of switching systems From manual and electro- mechanical Systems to stored
CO601.2	Understand and Analyze basic telecommunication traffic theory.
CO601.3	Design single stage, multistage switching structures involving time and space
CO601.4	Describe public switched telephone network, Network Synchronization and Network Management.
CO601.5	Learn about ISDN (Integrated Services Digital Network), Compare telephone
CO601.6	Learn about Data Communication Architecture and ISO-OSI Reference Model,
	Digital Signal Processing (BEECE602T)
CO602.1	Meet the requirement of the theoretical and practical aspects of DSP with respect
CO602.2	Represent discrete time signals analytically and visualize them in the time
CO602.3	Classify and analyze the discrete time signals and systems.
CO602.4	Describe the various transforms for analysis of signals and systems.
CO602.5	Design and implement digital filters for various applications.
CO602.6	Describe the concept of multirate-signal processing and how to apply it for

	wavelet transform.
	Digital Signal Processing (BEECE602P)
CO602.1	Analyze and process the signals in the discrete domain.
CO602.2	Design the filters to suit requirements of specific applications.
CO602.3	Apply the techniques, skills, and modern engineering tools like MATLAB and
	Control System Engineering (BEECE603T)
CO603.1	Students shall be able to represent the mathematical model of systems.
CO603.2	Able to determine the system response of different order systems for various
CO603.3	To analyze the stability of the system using root locus, Bode plot and Nyquist
CO603.4	Obtain the transfer function of the system using SFG.
CO603.5	Design the Controller and Compensator based on the requirement of the
CO603.6	To apply the state variable approach in design and find the system condition.
	Digital Communication (BEECE604T)
CO604.1	Explain the working principles of basic building blocks of a digital communication system and describe a random process in terms of its mean
CO604.2	Study source and waveform coding techniques and describe optimum
CO604.3	Study digital modulation techniques
CO604.4	Study of Galois field, error control methods, error correction and detection
CO604.5	Study the different channel coding techniques
CO604.6	Describe spread spectrum analysis.
	Digital Communication (BEECE604P)
CO604.1	Describe the concept of the digital communication based design for testing and
CO604.2	Design and conduct experiments for testing digital communication circuits and
CO604.3	Analyze the different coding technique for design and modeling of digital communication. Identify, formulate and solve digital communication
	Functional English (BEME606T)
CO605.1	Will become adept in using functional grammar.
CO605.2	Would be able to write at workplaces.
CO605.3	Will be able to draft technical reports and write proposals
CO605.4	Will be able to understand the planning and procedure of carrying out research
CO605.5	Will become well prepared to face competitive examinations and job
CO605.6	Dexterous in presentation skills.
	Electronics Workshop (BEECE606P)
CO606.1	To make students familiar with measuring instruments like CRO, DSO,

	Signal Generator.
CO606.2	Design PCB using PCB designing software.
CO606.3	To enable students to design and fabricate their own Hardware.
BE Electronics and Communication Engineering Seventh Semester	
	DSP Processor and Architecture (BEECE701T)
CO701.1	Understand the fundamentals of programmable Digital Signal Processors (P-
CO701.2	Understand the architecture of TMS and Motorola processors.
CO701.3	Understand the assembly language instructions and write simple assembly
CO701.4	Write and execute the application programs for processing of real time signals.
CO701.5	Interface DSP processors hardware to a software Integrated Development
CO701.6	Implement different Digital Signal processing algorithms on DSP processors.
	DSP Processor and Architecture (BEECE701P)
CO701.1	Understand the architecture of TMS and Motorola Processors.
CO701.2	Implement different processing algorithms on DSP processors.
CO701.3	Design different types of filters and study their characteristics.
	Television and Video Engineering (BEECE702T)
CO702.1	Analyze and understand monochrome and color T.V. Systems.
CO702.2	Understand fundamental techniques of different color T.V. standards.
CO702.3	Understand Advance TV Technology – Digital T.V. and Video Compression
CO702.4	Understand HDTV standards and Digital TV systems – CCTV, CATV, and
CO702.5	Understand IPTV system, mobile TV and video transmission in 3G mobile
CO702.6	Understand different types of digital cameras, LED and LCD display systems
	Television and Video Engineering (BEECE702P)
CO702.1	Analyze and synthesize TV Pictures, Composite Video Signal, and TV Receiver
CO702.2	Develop an understanding of electronics, mechanical and environmental factors
CO702.3	Study and classify the concept of troubleshoot and repair.
	Optical communication (BEECE703T)
CO703.1	Able to understand the basic operating principles of physics, optical fiber, and its
CO703.2	Able to understand the transmission characteristics of optical fibers.
CO703.3	Able to learn the optical receiver fiber couplers and connectors
CO703.4	Able to learn the optical source and detectors, optical receiver
CO703.5	Able to understand the concept of analog and digital link, WDM concept and
CO703.6	Able to learn optical network SONET/SDH, WDM, high speed optical

	Such as GPON, FTTX, and High speed optical links.
	Advanced Digital System Design (BEETE704T)
CO704.1	Understand the development flow of VLSI system.
CO704.2	Design the combinational and sequential circuit using VHDL. Understand the HDL.
CO704.3	Test the system with test benches
CO704.4	Design finite state machines and asynchronous state machine.
CO704.5	Understand the synthesis process.
CO704.6	Understand the architecture of programmable logic devices and its working.
	Advanced Digital System Design (BEETE704P)
CO704.1	To model, simulate and verify the digital model with hardware description
CO704.2	To design and prototype with programmable logic devices.
CO704.3	To learn the modular design style to create large digital logic.
	VLSI Signal Processing (BEECE705T) Elective –II
CO705.1	Various methodologies to optimize power delay and area of VLSI design.
CO705.2	Transformation techniques used to generalize pipelining approach.
CO705.3	Transformation techniques used to design parallel architectures.
CO705.4	Build Real Time processing systems for area reduction.
CO705.5	Design of algorithm structure for DSP algorithms based on algorithm
CO705.6	Design of fast short length convolution algorithms.
BE Electronics and Communication Engineering Eighth Semester	
	Microwave and Radar Engineering (BEECE801T)
CO801.1	Understand the use of active and passive microwave devices.
CO801.2	Analyze Different UHF components with the help of scattering parameter.
CO801.3	Understand and analyze different O-type and M-type microwave components:
CO801.4	Understand the working of Solid State Microwave Devices like PIN diode, Gunn
CO801.5	Acquire technical competence in specialized areas of Radar engineering.
CO801.6	Able to identify, formulate and model problems and find Radar engineering
	Microwave and Radar Engineering (BEECE801P)
CO801.1	Describe working of microwave bench.
CO801.2	Measure power and VSWR of microwave component.
CO801.3	Measure different losses like insertion loss, isolation loss of different passive
	Computer Communication Network (BEECE802T)
CO802.1	Understand the requirement of theoretical and practical aspect of computer network. Students will be able to **define** and **describe** the services and features
CO802.2	Understand the network traffic in computer network.

CO802.3	Describe various protocols used in network.
CO802.4	Describe the concept of computer network security.
CO802.5	Understand the different wired and wireless LAN Standards. and Routers.
CO802.6	Understand the Basics of Security Requirements/Services/Dimensions, Security
	Computer Communication Network (BEECE802P)
CO802.1	Understand various types of protocols working on various layers of OSI
CO802.2	Establish peer to peer computers as well as Local Area Network connectivity
CO802.3	Effectively use available networking tools like NS2 in Computer Communication
	Wireless and Mobile Communication (BEECE803T)
CO803.1	Describe the evolution and history of wireless technology and improving
CO803.2	Understand mobile radio environment, causes and effects of path loss and signal
CO803.3	Define fundamentals of Equalization, Diversity and channel coding.
CO803.4	To construct and analyze the GSM system.
CO803.5	Understand difference between wireless and fixed telephone networks and
CO803.6	Understand difference between wired LAN and wireless LAN technology and
	Embedded System (BEECE804T) Elective - II
CO804.1	To understand embedded systems design and describe the difference between the general computing and embedded system, optimization and design metrics,
CO804.2	Describe the hardware and software architecture of embedded system, memory
CO804.3	Understand the concepts of RISC, CISC processors, ARM processor organization, programming modes, operating modes and programming
CO804.4	Describe the different communication protocols and buses required for an embedded system like IEEE802.11, IEEE802.16, GPRS MODBUS CAN,
CO804.5	Understand the concepts of Real time operating system, Kernel architecture,
CO804.6	Describe the detail contextual analysis as a case study in different fields like
	Digital Image Processing (BEECE804T) Elective – II
CO804.1	Learn and understand the fundamental of digital image processing
CO804.2	To learn and understand various image enhancement technique used in digital
CO804.3	To learn and understand various image transform used in digital image
CO804.4	To learn and understand various image coding and compression used in digital

CO804.5	To learn and understand various image analysis and segmentation used in digital
CO804.6	To learn and understand various image restoration technique and methods used in
	Satellite Communication (BEECE805T) Elective –III
CO806.1	To understand the basic concepts and working principle of satellite
CO806.2	To understand the orbital aspects and components of a satellite communication
CO806.3	To analyze the link budget of a satellite communication system and study of
CO806.4	To understand the Propagation effects and Signal attenuation
CO806.5	To understand the concept and basics of Encoding and decoding on satellite
CO806.6	To get knowledge and relate different components in satellite communication and
	CMOS VLSI Design (BEECE805T) Elective –III
CO805.1	Design of PMOS and NMOS transistor.
CO805.2	Various types of CMOS Inverters.
CO805.3	Implementation of different combinational logic circuits.
CO805.4	Characterization and Performance estimation for CMOS transistor.
CO805.5	To design layout for various circuits.
CO805.6	To Detect and correct errors in VLSI Design.