Department of Electronics & Telecommunication Engineering

Course Outcomes

Course Name: Applied Mathematics III   **Class:Thrid Semester BE**
Course Code: BEETE301T   **CBS-2015**

CO1-Understand the concept of semiconductors and working of Diodes

CO2-Understand the BJT biasing methods by considering stability factors.

CO3-Understand the different types of negative feedback amplifiers.

CO4-Analyze and design oscillator circuits

CO5-Understand the different types of power amplifiers.

CO6-Analyze the different types of Field effect transistors.

Course Name: Electronic Devices and Circuits   **Class:Thrid Semester BE**
Course Code: BEETE302T   **CBS-2015**

C01-Understand the concept of semiconductors and working of Diodes

CO2-Understand the BJT biasing methods by considering stability factors.

CO3-Understand the different types of negative feedback amplifiers.

CO4-Analyze and design oscillator circuits

CO5-Understand the different types of power amplifiers.

CO6-Analyze the different types of Field effect transistors

Course Name: Electronic Measurement and Instrumentation   **Class:Thrid Semester BE**
Course Code: BEETE303T   **CBS-2015**

CO1-To study Fundamentals of Electronic Measurement and Instrumentation

CO2-To study various Electronic Instrument

CO3-To study various AC & DC bridges

CO4-To study different types of Transducer.

CO5-To study operation of Oscilloscope and types of Signal generator

CO6-To study signal analyzer and data acquisition system

Course Name: Object Oriented Programming and Data Structure   **Class:Thrid Semester BE**
Course Code: BEETE304T   **CBS-2015**

CO1-To understand the concept of object oriented programming and develop skills in C++ language

CO2-Access how the choice of data structures and algorithm design methods impacts the performance of programs.

CO3-To Choose the appropriate data structure and algorithm design method for a specified application

CO4-Write programs using „C++ Language".

Course Name: Network Analysis & Synthesis   **Class:Thrid Semester BE**
Course Code: BEETE305T   **CBS-2015**

CO1-To make the students capable of analyzing any given electrical network.

CO2-To make the students learn how to synthesize an electrical network from a given

Course Name: Applied Mathematics IV   **Class:Fourth Semester BE**

Course Code: BEETE401T   **CBS-2015**

CO1-Students completing this course will be able to express a logic sentence in terms of predicates, quantifiers, and logical connectives.

CO2-Students completing this course will be able to apply the rules of inference and methods of proof including direct and indirect proof forms, proof by contradiction, and mathematical induction.

CO3-Students completing this course will be able to understand group theory and ring theory.

CO4-Students completing this course will be able to evaluate Boolean functions and simplify expressions using the properties of Boolean algebra and lattices.

CO5-Students completing this course will be able to use tree and graph algorithms to solve problems.

CO6-Students completing this course will be able to use permutation, combination and generating function to solve recurrence relation.

Course Name: Power Devices & Machines   **Class:Fourth Semester BE**

Course Code: BEETE402T   **CBS-2015**

CO1-Understand the basics of different components used in Power Electronics.

CO2-Understand the working and characteristics of different power devices along with their applications in Electronic circuits.

CO3-Understand the concept of AC-DC converters, Choppers, Inverters which are widely used in industries.

CO4-Understand the different AC/DC machines and their speed control methods.

Course Name: Electromagnetic Field   **Class:Fourth Semester BE**

Course Code: BEETE403T   **CBS-2015**

CO1-Understand the concepts of Electric, Magnetic and Electromagnetic fields required to understand the concepts of Electronic Communication.

CO2-Understand the different coordinate system for mathematical analysis of Electromagnetic Engineering.

CO3-Understand the different theorems and their use in Electromagnetic field.

CO4-Understand the use of waveguides for the transmission of electromagnetic waves at higher frequencies.

CO5-Understand the basic concepts of Radiation and Elements used for radiation along with the basic terminologies.

Course Name: Digital Circuits And Fundamental Of Microprocessor
Class:Fourth Semester BE

Course Code: BEETE404T   **CBS-2015**

CO1-Understand the concept of combinational circuits for its designing and analysis.

CO2-Understand and analyse logic circuit design.

CO3-Design and analyse sequential circuits.

CO4-Understand and analyse digital logic families.

CO5-Understand the basic concept of microprocessor.

Course Name: Signals & Systems   **Class:Fourth Semester BE**

Course Code: BEETE405T   **CBS-2015**

CO1-Get knowledge about different types of signals and systems used in communication Electronics.

CO2-Understand the concept of probability and its use in communication system.

CO3-Be able to embed the use of fourier series and fourier transform for feature extraction of different electronic signals.

CO4-Understand different coding schemes and able to apply selective coding scheme for the application needed.

CO5- Understand the different analog and digital modulation schemes

Course Name: Environmental Studies   **Class:Fourth Semester BE**

Course Code: BEETE406T   **CBS-2015**

CO1-Recognize major concepts in environmental sciences and demonstrate in-depth understanding of the environment.

CO2-Develop analytical skills, critical thinking, and demonstrate problem-solving skills using scientific techniques.

Course Name: Software Workshop   **Class:Fourth Semester BE**

Course Code: BEETE407T   **CBS-2015**

CO1-Write MATLAB program for any given problem.

CO2- Plot various functions using different graphical techniques.

CO3-Make mathematical analysis for the given problem.

CO4-Get the complete expert hand on pSpice Software.

CO5-To draw, analyze and plot the electronic circuits using pSpice Software.

Course Name:Antenna & Wave Propagation   **Class:Fifth Semester BE**

Course Code: BEETE501T   **CBS-2015**

CO1-Describe transmission line characteristics.

CO2-calculate antenna parameters (radiation pattern, beam width, lobes, directivity, gain, impedance, efficiency, polarization)

CO3-Analyze wire antennas (monopoles, dipoles, and loops).

CO4-Analyze and design antenna arrays.

CO5-Describe the operation of broadband and traveling wave antennas.

CO6-Describe the operation of aperture and reflector antennas.

C07-Analyze and design Microstrip antennas.

Course Name:Microprocessor & Microcontroller   **Class:Fifth Semester BE**

Course Code: BEETE502T   **CBS-2015**

CO1-Describe internal organization of 8086/8088 microprocessors & 8051microcontrollers.

CO2-Describe the concept of addressing modes and timing diagram of Microprocessor.

CO3-Interface 8086 & 8051 with Keyboard/ Display, ADC/DAC, Stepper motor etc.

CO4-Demonstrate the concept of interrupts and its use.

CO5- Demonstrate the concept of Serial & parallel data communication

CO6-Describe Handshaking concept and interfacing with peripheral devices.

CO7- Describe the concept of DMA & Pentium.

CO8-Describe 8087 Numeric coprocessor & its use in practical application.

CO9- Interface various hardware with microprocessor.

Course Name:Analog Circuits & Design   **Class:Fifth Semester BE**

Course Code: BEETE503T   **CBS-2015**

CO1- Describe the basic differential Amplifier using transistor and its operation & characteristic.

CO2- Design linear Op-Amp circuits such as Voltage follower, Summing amplifier, scaling and averaging amplifier, Instrumentation amplifier circuits for various practical applications.

CO3-Design non-linear Op-Amp such as Comparators, Comparator IC such as LM 339, Schmitt trigger, multivibrator circuits for various practical applications using IC555.

CO4- Analyze and design amplifier circuits, oscillators, Filter, regulated power supply

Course Name: Communication Electronics   **Class:Fifth Semester BE**

Course Code: BEETE504T   **CBS-2015**

CO1. Demonstrate a basic understanding of the term bandwidth and its application in communications.

CO2. Describe quantizing and PCM signals, bandwidth and bit rate calculations, study amplitude and angle modulation and demodulation of analog signals etc.

CO3. Solve the problems involving bandwidth calculation, representation & Generation of an AM sine wave

CO4. Compare different modulation techniques of Generation of FM (Direct & Indirect Method)

CO5. Identify, formulate & solve communication engineering problems.

Course Name: Telecommunication Switching Systems   **Class:Sixth Semester BE**

Course Code: BEETE601T   **CBS-2015**

CO1. Describe the need for switching systems and their evolution from analogue to digital.

CO2. Describe the Public Switched Telephone Network.

CO3. Describe private networks.

CO4. Describe integrated networks.

Course Name: Digital Signal Processing   **Class:Sixth Semester BE**

Course Code: BEETE603T   **CBS-2015**

CO1.Represent discrete-time signals analytically and visualize them in the time domain.

CO2. Meet the requirement of theoretical and practical aspects of DSP with regard to sampling and reconstruction.

CO3. Design and implement digital filter for various applications.

CO4. Describe the various transforms for analysis of signals and systems.

CO5. Describe the concept of multi rate signal processing and how to apply it for the wavelet transform.

Course Name: Control System Engg   **Class:Sixth Semester BE**

Course Code: BEETE604T   **CBS-2015**

CO1. Analyze various control systems.

CO 2. Represent the mathematical model of a system.

CO3. Determine the response of different order systems for various step inputs.

CO4. Analyze the stability of the system using Root locus. Bode plot, Nyquist plot.

CO5. Obtain transfer function of systems using signal flow graph.

CO6. Apply the state variable approach in design.

Course Name: Digital Communication   **Class:Sixth Semester BE**

Course Code: BEETE605T   **CBS-2015**

CO1.Explain the working principles of basic building blocks of a digital communication system.

CO2. Describe a random process in terms of its mean and correlation functions and characterize special Gaussian and Rayleigh distributions.

CO3. Explain receiver techniques for detection of a signal in AWGN channel

CO4. Describe digital modulation techniques.

CO5. Demonstrate the concept of coding and decoding techniques.

CO6. Model digital communication systems using appropriate mathematical techniques.

CO7. Describe spread spectrum analysis.

Course Name: Functional English   **Class:Sixth Semester BE**

Course Code: BEETE606T   **CBS-2015**

CO1-Improve the English grammar having common errors, Transformation of sentences, phrases, Idioms and proverbs.

CO2-Prepare for competitive exam and to improve the skills of Interview Techniques.

CO3-Prepare the students in their writing skill including Business Letters, e-mail etiquettes, enquiries, job applications and Resume writing Meorandum, Circulars, notices.

CO4- Buit-up the Analytical Comprehension skill in students.

CO5-Prepare the students in Technical and scientific writing

Course Name: DSP Processor & Architecture   **Class: Seventh Semester BE**

Course Code: BEETE701T   **CBS-2015**

CO1. to describe the detailed architecture, addressing mode, instruction sets of TMS320C5X

CO2. to write program of DSP processor.

CO3. to design & implement DSP algorithm using code composer studio

CO4. to design decimation filter and interpolation filter.

Course Name: Television & Video Engineeering   **Class:Seventh Semester BE**

Course Code: BEETE702T   **CBS-2015**

CO1. analyze and understand colour T.V. System

CO2. understand fundamental techniques of Different T.V. standards.

CO3. understand Advanced T.V. Technology.

CO4. understand different video recording, display and its consumer application.

Course Name: Optical Communication   **Class:Seventh Semester BE**

Course Code: BEETE703T   **CBS-2015**

CO1. learn the basic elements of optical fiber.

CO2. understand the different kinds of losses, signal distortion in optical wave guides & other signal degradation factors.

CO3. classify various optical source materials, LED structures, LASER diodes.

CO4. learn the fiber optic receivers such as PIN, APD diodes, receiver operation & performance.

CO5. understand the operational principal of WDM, SONET, measurement of attenuation, dispersion, refractive

Course Name: Advanced Digital System Design   **Class:Seventh Semester BE**

Course Code: BEETE704T   **CBS-2015**

CO1. Design of combinational & sequential circuit.

CO2. Develop skilled VLSI front end designers

CO3. Implementation of digital system.

CO4. Experimentation on Hardware /Software co-design.

Course Name: Elective I Fuzzy Logic &Neural Network **Class:Seventh Semester BE**

Course Code: BEETE705T   **CBS-2015**

CO1. Understand the adequate knowledge about feedback neural networks.

CO2. Understand the concept fuzzy logic control to real time systems.

CO3. provide adequate knowledge about fuzzy set theory.

CO4. provide comprehensive knowledge of fuzzy logic control and adaptive fuzzy logic

CO5. study and understand defuzzification techniques.

CO6. Understand and design genetic fuzzy controller.

CO7. Gain comprehensive knowledge of adaptive fuzzy system.

Course Name: Elective I Fuzzy Logic &Neural Network   **Class:Seventh Semester BE**

Course Code: BEETE705T   **CBS-2015**

CO1 - Demonstrate the knowledge of Systems Programming

CO2 - Demonstrate the knowledge of Operating Systems

CO3 - Formulate the Problem and develop the solution for same

CO4 - Compare the different implementation approach of system programming and operating system abstractions

CO5 - Analyze the different implementation approach of system programming and operating system abstractions

CO6 - Interpret various OS functions used in Linux / Ubuntu

Course Name: Elective I   MICROELECTROMECHANICAL SYSTEMS AND SYSTEM ON CHIP Class:Seventh Semester BE

Course Code: BEETE705T   **CBS-2015**

CO1. Understand working principles of currently available microsensors, actuators used in Microsystems.

CO2. Apply scaling laws that are used extensively in the conceptual design of micro devices and systems.

CO3. Understand the basic principles and applications of micro-fabrication processes, such as photolithography, ion implantation, diffusion, oxidation, CVD, PVD, and etching.

CO4. Choose a micromachining technique, such as bulk micromachining and surface micromachining for a specific MEMS fabrication process

CO5. Consider recent advancements in the field of MEMS and devices

Course Name: Elective I Data Compression & Encryption   **Class:Seventh Semester BE**

Course Code: BEETE705T   **CBS-2015**

CO1. Implement various text, audio, video, compression technique.

CO2. Provide various authentication using digital communication.

CO3. Gain the knowledge of encryption techniques application to digital communication.

Course Name: Elective I VLSI Signal Processing   **Class:Seventh Semester BE**

Course Code: BEETE705T   **CBS-2015**

CO1. Learn various methodologies to optimize power delay and area of VLSI design.

CO2. Build Real Time processing system.

CO3. Design of algorithm structure for DSP algorithms based on algorithm transformation

Course Name: Microwave & Radar Engineering   **Class:Eighth Semester BE**

Course Code: BEETE801T   **CBS-2015**

CO1. Understand the use of active and passive microwave devices

CO2. Analyze Different UHF components with the help of scattering parameter.

CO3. Understand micro strip lines MIC design

CO4. Understand the use of different Klystrons.

CO5. Analyze the different power distribution Tees.

CO6. Analyze Scattering Matrix of different UHF components.

CO7. Do research with capabilities in the design, development and manufacture of radar systems used in a wide spectrum of applications.

CO8. Able for Acquisition of technical competence in specialized areas of Radar engineering.

CO9. Able to identify, formulate and model problems and find Radar engineering solutions based on a system approach

Course Name: Computer Communication Network　　　　**Class:Eighth Semester BE**

Course Code: BEETE802T　　　　**CBS-2015**

CO1. Understand the requirement of theoretical & practical aspect of computer network.

CO2. Understand the network traffic in computer network.

CO3. Describe various protocols used in network.

CO4. Describe the concept of computer network security.

CO5. Understand the different wired &wireless LAN stds.& Routers.

Course Name: Wireless & Mobile Communication　　　　**Class:Eighth Semester BE**

Course Code: BEETE803T　　　　**CBS-2015**

CO1. Design a model of cellular system communication and analyze their operation and performance.

CO2. Quantify the causes and effects of path loss and signal fading on received signal characteristics.

CO3. to construct and analyze the GSM system

Course Name: Elective II Wireless Sensor Network　　　　**Class:Eighth Semester BE**

Course Code: BEETE804T　　　　**CBS-2015**

CO1. Demonstrate advanced knowledge and understanding of the engineering principle of sensor design, signal processing, established digital communications techniques, embedded hardware and software, sensor network architecture, sensor networking principles and protocols.

CO2. Demonstrate a computing science approach, in terms of software techniques, for wireless sensor networking with emphasis on tiny sensors, sensor specific programming languages, RFID technology, embedded architectures, software program design and associated hardware, data fusion.

CO3. Demonstrate knowledge of the associated business, legislative, safety and commercial issues; future technological advances and the way these will impact on the engineering product enterprise process.

Course Name: Elective II Embedded System　　　　**Class:Eighth Semester BE**

Course Code: BEETE804T　　　　**CBS-2015**

CO1. design embedded based system .

CO2. design embedded system based on RTOS and communication protocols.

Course Name: Elective II Digital Image Processing　　　　**Class:Eighth Semester BE**

Course Code: BEETE804T　　　　**CBS-2015**

CO1. have an appreciation of the fundamentals of Digital image processing including the topics of filtering, transforms and morphology, and image analysis and compression.

CO2. implement basic image processing algorithms in MATLAB.

CO3. have the skill base necessary to further explore advanced topics of Digital Image Processing.

CO4. make a positive professional contribution in the field of Digial Image Processing

Course Name: Elective II Artificial Intelligence   **Class:Eighth Semester BE**

Course Code: BEETE804T   **CBS-2015**

CO1.understand the history, development and various applications of artificial intelligence;

CO2.familiarize with propositional and predicate logic and their roles in logic programming;

CO3.understand the programming language Prolog and write programs in declarative programming style; .

CO4.learn the knowledge representation and reasoning techniques in rule-based systems, case-based systems, and model-based systems;

CO5.understand how uncertainty is being tackled in the knowledge representation and reasoning process, in particular, techniques based on probability theory and possibility theory (fuzzy logic);

CO6.master the skills and techniques in machine learning, such as decision tree induction, artificial neural networks, and genetic algorithm;

CO7.apply and integrate various artificial intelligence techniques in intelligent system development as well as understand the importance of maintaining intelligent systems.

Course Name: Elective III Random Signal Theory   **Class:Eighth Semester BE**

Course Code: BEETE805T   **CBS-2015**

CO1. Apply theory of probability in identifying and solving relevant problems.

CO2. Define and differentiate random variables and vector through the use of cumulative distribution function (CDF), probability density function (PDF), probability mass function (PMF) as well as joint, marginal and conditional CDF, PDF and PMF.

CO3. Show probability and expectation computations using important discrete and continuous random variable types.

CO4. Define and specify random processes and determine whether a given process is stationary or wide sense stationary.

Course Name: Elective III Robotics & Automation   **Class:Eighth Semester BE**

Course Code: BEETE805T   **CBS-2015**

CO1. Explore 8051 microcontroller architecture

CO2. Effectively utilize instruction set for assembly language programming

CO3. Interface different on & off chip peripherals with 8051 using C language 4. Basics of 8051 can be used for robotic applications

Course Name: Elective III Satellite Communication   **Class:Eighth Semester BE**

Course Code: BEETE805T   **CBS-2015**

CO1. Do research with capabilities in the design, development and manufacture of satellite communication systems used in a wide spectrum of applications.

CO2. Experience real world experience from household appliances to sophisticated satellite communication, from electronic ignition to neural networks and signal processing chips & to integrate academic discipline with project-based engineering applications, classroom learning theory

CO3. Able for Acquisition of technical competence in specialized areas of Satellite Communication engineering.

CO4. Able to identify, formulate and model problems and find Satellite Communication engineering solutions based on a system approach.

Course Name: Elective III CMOS VLSI Design   **Class:Eighth Semester BE**

Course Code: BEETE805T   **CBS-2015**

CO1. Design PMOS and NMOS transistor.

CO2. Implementation different combinational logic circuits.

CO3. Design layout for various circuits.

CO4. Design CMOS transistor.

CO5. Experiment on CMOS logic design.

CO6. Detect and correct errors in VLSI Design

M.TECH VLSI
Course Outcomes

Course Name: VLSI Subsystem Design   **Class: First Semester M-Tech (VLSI)**

Course Code: PGVLS101T   **CBCS-2016**

CO1 - Students will be able to design different CMOS based circuits.

CO2 - Students will be able to analyze the model parameters of CMOS based circuits.

CO3 - Students will be able to Analyse variation in I/V for MOS Logic Families.

CO4 - Students will be able to Realization of Duals for CMOS.

CO5 -Students will be able to To understand transient Optimization

Course Name: Advanced Digital Signal Processing   **Class: First Semester M-Tech (VLSI)**

Course Code: PGVLS102T   **CBCS-2016**

CO1 - Students will be able to represent discrete-time signals analytically and visualize them in the time domain.

CO2 - Students will be able to meet the requirement of theoretical and practical aspects of DSP with regard to sampling and reconstruction.

CO3 - Students will be able to design and implement digital filter for various applications.

CO4 - Students will be able to estimation of Power Spectrum

CO5 -Students will be able to describe the concept of multi rate signal processing and how to apply it for the wavelet transform.

CO6 - Students will be able to describe the various transforms for analysis of signals and systems.

Course Name: VLSI Circuits   **Class: First Semester M-Tech (VLSI)**

Course Code: PGVLS103T   **CBCS-2016**

CO1 - Students will be able to describe and formulate the flow of VLSI Design for any application.

CO2 - Students will be able to simulate and Analyze the VLSI Circuits.

Course Name: Mixed Signal Processing   **Class: First Semester MTech (VLSI)**

Course Code: PGVLS104/1T   **CBCS-2016**

CO1 - Students will be able to describe the processing and analysis of mixed signals

CO2 - Students will be able to simulate the analog and mixed signals.

Course Name: Low Power VLSI Design   **Class: First Semester M-Tech (VLSI)**

Course Code: PGVLS104/2T   **CBCS-2016**

CO1 - Students will be able to use mathematical methods and circuit analysis models in analysis of CMOS digital electronics circuits, including logic components and their interconnect.

CO2 - Students will be able to design and model Low Power VLSI applications

Course Name: Embedded Systems   **Class: First Semester MTech (VLSI)**

Course Code: PGVLS104/3T   **CBCS-2016**

CO1 - Students will be able to program an embedded system

CO2 - Students will be able to design, implement and test an embedded system.

Course Name: Analog VLSI Design   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS201T   **CBCS-2016**

CO1-Students will be able to understand the concepts of analog design and to design various analog systems including data converters- CMOS amplifiers- Comparators and Switched Capacitor Circuits.

Course Name: VLSI Testing   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS202T   **CBCS-2016**

CO1 - Students will be able to do testing of various Memory Modules and Combinational & sequential logic Circuits.

Course Name: Modeling of Digital System and Testing   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS203T   **CBCS-2016**

CO1 - Students will be able to simulate different combinational and sequential circuits.

CO2 - Students will be able to test different logic circuits

Course Name: System on Chip (SoC)   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS204/1T   **CBCS-2016**

CO1- Students will be able to study and understand different Hardware and Software System Design approaches.
CO2-Students will be able to study the fundamentals of chip designing.

CO3-Students will be able to learn different design customization techniques.

Course Name: Micro Electro Mechanical Switches (MEMS)   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS204/2T   **CBCS-2016**

CO1- Students will be able to understand working principles of currently available microsensors, actuators used in Microsystems.
CO2- Students will be able to apply scaling laws that are used extensively in the conceptual design of micro devices and systems.
CO3- Students will be able to understand the basic principles and applications of micro-fabrication processes.

Course Name:High Speed Semiconductor Devices and Circuits
Class: Second Semester M-Tech (VLSI)
Course Code: PGVLS204/3T   **CBCS-2016**

CO1- Students will be able to identify different MOS devices for the specific application.

CO2- Students will be able to fabrication of different MOS devices corresponding to the requirements.

CO3- Students will be able to integrate different MOS devices.

Course Name:Foundation Course I : Research Methodology   **Class: Second Semester M-Tech (VLSI)**

Course Code: PGVLS205   **CBCS-2016**

CO1- Students will be able to get knowledge on various kinds of research questions and research designs

CO2- Students will be able to formulate research problems (task) and develop a sufficiently coherent research design

CO3- Students will be able to assess the appropriateness of different kinds of research designs

CO4- Students will be able to get knowledge on qualitative, quantitative and mixed methods of research, as well as relevant ethical and philosophical considerations

CO5- Students will be able to develop independent thinking for critically analyzing research reports

Course Name:Foundation Course II : PROJECT PLANNING, EVALUATION & MANAGEMENT
Class: Third Semester M-Tech (VLSI)
Course Code:PGFD302T   **CBCS-2016**

CO1- Students will be able to establish measures of success

CO2- Students will be able to quantify value commensurate with cost

CO3- Students will be able to optimize use of organizational resources

CO4- Students will be able to incorporate quality principles

CO5- Students will be able to put strategic plans into practice

CO6- Students will be able to ensure fast time-to-market Project Manager