S.Y. B.Tech Electronics and Telecommunication Engineering

AY 2023-24   SEM-I

Course Outcomes:

Course 1: Applied Mathematics –III (SMH22401)

On completion of the course, students will be able to:

CO SMH22401.1: Understand basic concept of L.D.E., Complex Variables, Fourier Series, Fourier Transform, Laplace Transform, Z-Transform, Vector differentiation & integration

CO SMH22401.2: Apply concept of higher order linear differential equation to solve LDE of electrical circuits using appropriate techniques, perform contour integration in the study of electrostatics, signal and image processing.

CO SMH22401.3: Apply concept of Fourier series, Laplace transform, Fourier transform & Z-transform and its applications to continuous & discrete systems, signal & image processing and communication systems, apply vector calculus to electro- magnetic fields & wave theory.

CO SMH22401.4: Analyzing of electrical circuits and control systems by modeling and solving higher order LDE, Analyze Complex functions, conformal mappings

CO SMH22401.5: Fourier series representation and harmonic analysis for design and analysis of periodic continuous and discrete systems. Analyze the vector fields and apply to electro-magnetic fields & wave theory

Course 2: Embedded Systems (ET222002)

On completion of the course, students will be able to:

CO ET222002.1: Understand design metrics embedded system

CO ET222002.2: Study architecture 8 bit microcontrollers

CO ET222002.3: Interface different devices to 8 bit microcontroller

CO ET222002.4: Apply software used in embedded system

CO ET222002.5: Select hardware and software of embedded system

CO ET222002.6: Carry out experiments as an individual and in a team, comprehend and write a laboratory record and draw conclusions at a technical level.

Course 3: Digital System Design using HDL (ET222003)

On completion of the course, students will be able to:

CO ET222003.1: Design and implement combinational logic circuits

CO ET222003.2: Design and implement sequential circuits

CO ET222003.3: Design sequential circuits using Mealy, Moore state machines.

CO ET222003.4: Understand structure of VHDL program and statements.

CO ET222003.5: Design and test digital logic circuits using VHDL.

Course 4: Electrical Circuits and Machines (ET222004)

On completion of the course, students will be able to:

CO ET222004.1: Analyze the simple DC and AC circuit with circuit simplification techniques.

CO ET222004.2: Formulate and analyze driven and source free RL and RC circuits.

CO ET222004.3: Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.

CO ET222004.4: Explain construction, working and applications of DC Machines / Single Phase & Three Phase AC Motors.

CO ET222004.5: Explain construction, working and applications of special purpose motors & understand motors used in electrical vehicles.

CO ET222004.6: Analyze and select a suitable motor for different applications.

Course 5: Electronic Circuits (ET222005)

On completion of the course, students will be able to:

CO ET222005.1: Analyze DC and AC circuits of MOSFET.

CO ET222005.2: Apply and explain the concepts of both positive and negative feedbacks in electronic circuits and their applications.

CO ET222005.3: Analyze and design the applications of op-amp for performing various operations.

CO ET222005.4: Design and analyze the application of op-amp as an Active Filter.

CO ET222005.5: Understand and compare the principles of various data conversion techniques. Also Analyze and assess the performance of linear and switching regulators, with their variants, towards applications in regulated power supplies.

Course 6: UHV-II (ET222006)

On completion of the course, students will be able to:

CO ET222006.1: Evaluate the significance of value inputs in formal education and start applying them in their life and profession

CO ET222006.2: Distinguish between values and skills, happiness and accumulation of physical facilities, the Self and the Body, Intention and Competence of an individual, etc.

CO ET222006.3: Analyze the value of harmonious relationship based on trust and respect in their life and profession

CO ET222006.4: Examine the role of a human being in ensuring harmony in society and nature.

CO ET222006.5: Apply the understanding of ethical conduct to formulate the strategy for ethical life and profession**.**

Course 7: Lab work in Electrical and Electronic Circuits (ET222007)

On completion of the course, students will be able to:

CO ET222007.1: Design, build and test the applications of op-amp for performing various operations.

CO ET222007.2: Implement and test the circuits for amplifier and voltage regulator applications.

CO ET222007.3: Carry out experiments as an individual and in a team, comprehend and write a laboratory record and draw conclusions at a technical level.

CO ET222007.4: Analyze simple AC/DC circuits, driven and source free RL and RC circuits.

CO ET222007.5: Formulate & determine network parameters for given network and analyze the given network using Laplace Transform to find the network transfer function.

CO ET222007.6: Analyze characteristics of various types of motors and speed control techniques.

Course 8: Lab work in Digital System Design using HDL (ET222008)

On completion of the course, students will be able to:

CO ET222008.1: Design and implement and test combinational logic circuits.

CO ET222008.2: Design and implement and test sequential circuits.

CO ET222008.3: Write and simulate VHDL codes to implement digital circuits

Course 9: Lab work in Embedded Systems (ET222009)

On completion of the course, students will be able to:

CO ET222009.1: Interface different devices to microcontroller 8051

CO ET222009.2: Write, compile and execute program in assembly language and embedded C of 8051

CO ET222009.3: Interface ADC and DAC with 8051 for different application

Course 10: Electronic Workshop (ET222010)

On completion of the course, students will be able to:

CO ET222010.1: Identify various active and passive electronic components and select proper components as per applications based on datasheet specifications.

CO ET222010.2: Use various electronic equipment and tools for building, testing and troubleshooting of electronic circuits

CO ET222010.3: Identify various core components of PC

CO ET222010.4: Use various troubleshooting preventive maintenance tools for maintenance of PC and peripherals

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Course 11: Digital Signal Processing (ET222011)

On completion of the course, students will be able to:

CO ET222011.1: Understand mathematical description and representation of continuous and discrete time signals and systems.

CO ET222011.2: Develop input output relationship for linear shift invariant system and understand the convolution operator for continuous and discrete time system

CO ET222011.3: Analyze discrete time signals and systems using Discrete Fourier transforms.

CO ET222011.4: Develop algorithms for linear filtering of signals.

CO ET222011.5: Design different types of IIR and FIR digital filters

Course 12: Communication Engineering (ET222012)

On completion of the course, students will be able to:

CO ET222012.1: Improve the ability to understand the performance of a AM & FM transmitter

CO ET222012.2: Identify various components and analyze the Performance Characteristics of AM & FM receiver

CO ET222012.3: Explore different pulse modulation techniques and design of scramblers in digital communication.

CO ET222012.4: Analyze the performance of a pass band digital communication system in terms of error probability and power spectra.

CO ET222012.5: Explain & calculate signal to noise ratio, noise figure and noise temperature for single and cascaded stages in a communication system.

Course 13: VLSI Design and Technology (ET222013)

On completion of the course, students will be able to:

CO ET222013.1: Understand the basic architecture of various PLDs

CO ET222013.2: Explain the role of Verilog in digital system design

CO ET222013.3: Develop effective HDL coding for digital design and Model digital circuit with HDL, simulate, synthesis and prototype in PLDs

CO ET222013.4: Design CMOS circuits for specified applications and Implement subsystem using CMOS Technology

CO ET222013.5: Apply knowledge of chip level issues , faults and testability in design

Course 14: Control Systems (ET222014)

On completion of the course, students will be able to:

CO ET222014.1: To Introduce basic sensors. To introduce elements of the control system and their modeling using various Techniques.

CO ET222014.2: To get acquainted with the methods to determine stability of a system using root locus.

CO ET222014.3: To Introduce and analyze the time and frequency response and stability of system using bode plot

CO ET222014.4: To Introduce state variable analysis method.

CO ET222014.5: To get acquainted with Concepts of actuators and controllers

Course 15: Industrial Management (ET222015)

On completion of the course, students will be able to:

CO ET222015.1: Get Comprehensive theoretical knowledge about Management & organization.

CO ET222015.2: Explain principle role & operation of Business sectors & organizations

CO ET222015.3: Recognize the need for work-study and importance of quality control.

CO ET222015.4: Discuss role of supply chain management, role of IT tools in SCM.

CO ET222015.5: Describe management information system (MIS) & government policies.

Course 16: Professional Communication and Aptitude Technics/ Foreign Language 1 (ET222016)

On completion of the course, students will be able to:

CO ET222016.1: Demonstrate aptitude skills.

CO ET222016.2: Demonstrate communication skills.

Course 17: Lab work in DSP and CS (ET222017)

On completion of the course, students will be able to:

CO ET222017.1: Experiment concepts of DSP, Control system and its applications using MATLAB software.

CO ET222017.2: Determine impulse response of LTI system by means of convolution.

CO ET222017.3: Design FIR and IIR filters for real time DSP applications.

CO ET222017.4: Evaluate the various parameters of transient analysis of a control system

CO ET222017.5: Examine the stability criteria for a control system using various techniques.

Course 18: Lab work in VLSI (ET222018)

On completion of the course, students will be able to:

CO ET222017.1: Develop programs using HDL & handle the hardware proficiently by writing & simulating for combinational & sequential circuits in various modeling styles and implementation of programs in PLDs.

CO ET222017.2: Design CMOS circuits for specified applications and Implement subsystems using CMOS Technology.

CO ET222017.3: Design CMOS circuits for specified applications and Implement subsystems using CMOS Technology**.**

Course 19: Lab work in Communication (ET222019)

On completion of the course, students will be able to:

CO ET222019.1: Demonstrate the generation and detection of FM systems and compare with AM systems.

CO ET222019.2: Analyze Pulse modulation and different data formats

CO ET222019.3: Implement different analog and digital modulation techniques.

Course 20: PBL (ET222020)

On completion of the course, students will be able to:

CO ET222020.1: Implement basic electronic circuits on suitable simulation software

CO ET222020.2: Identify relevant tools/libraries and Simulate electronic circuits

CO ET222020.3: Create a suitable solution based on the fundamentals of electronics and communication engineering by possibly the integration of previously acquired knowledge

CO ET222020.4: Apply advanced technology in proposed work and demonstrate learning in oral and written form.

CO ET222020.5: Develop ability to work as an individual and as a team member