AY: 2025-2026

B.E. 3rd Semester (NEP)

Course: Electronics Devices & Circuits (PCC-I) **Course Code: 3ET200PC**

At the end of Electronics Devices & Circuits course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Describe the working of diode.	L2
2	Illustrate the applications of diode.	L3
3	Describe Bipolar Junction Transistor in detail.	L2
4	Understand basics of unipolar transistor and its operational parameters.	L2
5	Understand the feedback concepts, topologies and their applications.	L2
6	Describe Multistage amplifiers.	L2

Course: Electromagnetic Waves (PCC-II) **Course Code: 3ET201PC**

At the end of Electromagnetic Waves course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply vector calculus for solution to electric and magnetic field problems.	L3
2	Elaborate and analyze the concepts of Electrostatic fields.	L4
3	Elaborate and analyze the concepts of static magnetic fields.	L4
4	Describe and analyze Boundary conditions in electromagnetic and Maxwell's equations.	L4
5	Describe the electromagnetic wave and its propagation in different homogeneous media.	L2
6	Illustrate and analyze the concept of electromagnetic radiation.	L4

Course: Signals & Systems (PCC-III) **Code: 3ET202PC**

At the end of **Signals & Systems** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Understand the continuous time signals and systems mathematically and their classification along with the mathematical operations.	L1
2	Understand the spectral characteristics of continuous-time periodic signals using Fourier series.	L1
3	Analyse the spectral characteristics of continuous-time aperiodic signals and systems using Fourier Transform.	L4
4	Apply the Laplace transform for analysis of continuous-time systems.	L3
5	Understand the Discrete Time signals and systems mathematically and analysis their classification with the mathematical operations.	L3
6	Analysis the spectral characteristics of Discrete Time signals and systems using Discrete Time Fourier Transform.	L4

Course: Electronics Devices & Circuits Lab (PCC-II) **Code: 3ET203PC**

At the end of **Electronics Devices & Circuits Lab**, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate the characteristics of various diodes and transistor.	L2
2	Demonstrate the application of diodes and transistors.	L2
3	Compare the characteristics of diode, transistor.	L4

Course: Signal and System Lab (PCC-III **Code: 3ET204PC**

At the end of **Signal and System Lab**, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Generate different plots and explore results to draw valid conclusions and inferences in Signal Processing.	L4
2	Enable on how to approach for requirement of signal processing and system design using simulation.	L2
3	Familiarize with the concepts of different operations on signal.	L3

Course: Comm. Engg. Project/ Field Project **Code: 3ET400EL**

At the end of **Comm. Engg. Project/ Field Project** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Acquired knowledge within the chosen area of technology for project development.	L2
2	Identify, reproduce, improve and refine the technical aspects of the chosen project with a comprehensive and systematic approach.	L6
3	Work as an individual or in a team in development of technical projects and communicate and report effectively project related activities and findings.	L3
4	Do the social survey, analyses it, identify problem and find probable solution for the befit of society.	L4

Course: Multidisciplinary Minor –I **Code: 3ET205MD**

At the end of **Fundamentals of Digital Electronics** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Use Number systems & its conversions.	L3
2	Use Boolean algebra to solve logic functions, minimization techniques and arithmetic functions.	L3
3	Identify, analyses and design combinational & Sequential circuits	L6

Course: Open Elective-I **Code: 3ET206OE**

At the end of **Digital Communication** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Explain the block diagram of digital communication.	L2
2	Explain the concepts of information theory.	L2
3	Illustrate the different pulse modulation techniques.	L4
4	Illustrate the different digital modulation techniques.	L4
5	Explain the pulse code modulation.	L2
6	Explain the various multiple access techniques and spread spectrum.	L2

Course: Entrepreneurship Development **Code: 3ET207EM**

At the end of **Entrepreneurship Development** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Explain the fundamentals of entrepreneurship and its role in economic development.	L2
2	Apply innovation and design thinking to develop business ideas.	L3
3	Prepare a feasibility study and basic business plan for entrepreneurial ventures	L6

Course: Environmental Science **Code: 3AL208VE**

At the end of **Environmental Science** course, the students will be able to

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate an interdisciplinary understanding of environmental issues and explain their relevance to various engineering domains.	L2
2	Identify and compare, renewable and non-renewable resources, and analyze their usage and limitations from an engineering perspective, Evaluate the impact of engineering activities and industrialization on ecosystems, biodiversity.	L4
3	Apply critical thinking and problem solving skills to propose eco-friendly and sustainable solutions, engineering design and planning.	L3

AY: 2025-2026

B.E. 4th Semester (NEP)

Course: Analog & Digital Communications (PCC-I) **Course Code: 4ET209PC**

At the end of **Analog & Digital Communications** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply various Amplitude Modulation (AM) techniques, their mathematical principles, and practical applications in communication systems.	L3
2	Illustrate the knowledge of Frequency Modulation (FM) and design FM transmitters for communication systems.	L2
3	Analyse the characteristics of radio receivers and evaluate detection techniques for AM and FM signals.	L4
4	Assess the impact of noise and random processes on communication systems and their effect on signal integrity and performance.	L2
5	Apply pulse modulation techniques (PAM, PWM, PPM) in digital communication systems.	L3
6	Illustrate the digital communication concepts and apply digital modulation techniques (PSK, FSK, QAM) in real-world systems.	L2

Course: Analog Circuits (PCC-II) **Course Code: 4ET210PC**

At the end of **Analog Circuits** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Comprehend the knowledge of basic concepts and parameters of Op-Amp-741.	L2
2	Understand the use of Op-Amp for implementation of linear applications.	L3
3	Understand the use of Op-Amp for implementation of non-linear applications.	L3
4	Explore various types of Filters.	L2
5	Analysis of various analog circuits using Voltage regulator IC723.	L4
6	Comprehend the knowledge of Timers, PLL and its applications.	L2

Course: Network Theory (PCC-III) **Course Code: 4ET211PC**

At the end of **Analog Circuits** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply Mesh and Node analysis to find unknown mesh current and unknown node voltage.	L3
2	Apply a suitable Network Theorem to analyze electrical circuits.	L3
3	Analyze electrical networks using graph theory concepts such as tie-set, and cut-set Matrices.	L4
4	Apply Laplace transform techniques to analyze RL, RC and RLC circuits with and initial conditions and verify initial and final value theorems.	L4
5	Analyze the network functions, poles and zeros, and obtain time-domain response.	L4
6	Apply and analyze Two-Port network parameters for electrical network analysis.	L4

Course: Analog & Digital Communications Lab (PCC-I) **Course Code: 4ET212PC**

At the end of **Analog & Digital Communications Lab**, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate the Analog Modulation and demodulation techniques.	L3
2	Apply the Digital Modulation and demodulation techniques.	L2
3	Illustrate the multiplexing and Demultiplexing Techniques.	L2

Course: Analog Circuits Lab (PCC-II) **Course Code: 4ET213PC**

At the end of **Analog Circuits Lab**, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate linear applications of Op-Amp.	L3
2	Demonstrate Nonlinear applications of Op-Amp.	L3
3	Implement PLL in certain applications.	L3

Course: Multidisciplinary Minor –II* **Course Code: 4ET214MD**

At the end of **Digital ICs and applications** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply CMOS logic principles to implement simple Boolean functions using CMOS logic gates.	L3
2	Explain the operation of combinational circuits such as adders, comparators, decoders, encoders, multiplexers and demultiplexers using TTL 74XX ICs.	L2
3	Explain the operation of sequential circuits such as flip-flops, shift registers and counters using TTL 74XX ICs.	L2

Course: VSEC-III: Object Oriented Programming **Course Code: 4ET215VS**

At the end of **Object Oriented Programming** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply Object Oriented approach to design software.	L5
2	Implement programs using classes and objects.	L3
3	Specify the forms of inheritance and use them in programs.	L2
4	Analyze polymorphic behavior of objects.	L1
5	Design and develop GUI programs.	L1
6	Develop Applets for web applications	L5

Course: Open Elective- II **Course Code: 4ET216OE**

At the end of **Satellite Communication** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Visualize the architecture of satellite systems as means of high speed, high range communication system.	L2
2	State various aspects related to satellite systems such as orbital equations, sub-systems in a satellite.	L2
3	Learn advanced techniques and regulatory aspects of satellite communication and Understand role of satellite in various applications like VSAT and GPS.	L2

Course: Management Related: Engg. Economics **Course Code: 4ET217EM**

At the end of **Engg. Economics** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Describe the concepts of Engineering Economics and Production.	L2
2	Explain the different types of cash flow and Engineering alternatives.	L2
3	Understand the depreciation analysis and Banking system	L2

Course: Modern Indian Language **Course Code: 4AL218AE**

At the end of **Modern Indian Language** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Communicate in Marathi in both formal and Informal way.	L3
2	Write technical and professional documents in Marathi.	L6
3	Express and co-relate technical terms in Marathi language.	L2

Course: Environmental Science/UHV/VE **Course Code: 4AL219VE**

At the end of **Environmental Science/UHV/VE** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Understand the concept of self, differentiate physical and mental needs, and apply human values for personal well-being and ethical awareness in engineering	L2
2	Understand and apply trust, empathy, conflict resolution, and ethical principles in relationships, family, and society	L2
3	Apply professional ethics, promote sustainability in engineering practices, and understand corporate and global ethical responsibilities including CSR	L3

AY: 2025-2026

B.E. 5th Semester (CBCS)

Course: Microcontroller **Course Code: (5ETC01)**

At the end of **Microcontroller** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Categorize addressing modes of Microprocessor 8085.	L4
2	Illustrate Interfacing of various peripheral devices with Microprocessor 8085	L3
3	Distinguish organization of Microcontroller 8051.	L4
4	Implement the programming for Microcontrollers using assembly language & C Programming	L3
5	Demonstrate Interfacing of various peripheral devices with Microcontroller 8051.	L3
6	Compare advanced Microcontrollers with applications.	L4

Course: Control System **Course Code: (5ETC02)**

At the end of Control System course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply mathematical models of electrical, mechanical and electromechanical systems.	L3
2	Determine transfer functions from block diagrams and signal flow graphs.	L4
3	Evaluate transient response and steady state response parameters	L5
4	Analyze stability of the LTI system using Routh criterion and root locus	L4
5	Analyze stability of the LTI system using bode plot and Nyquist criterion	L4
6	Analyze the state model and response of the system using state variable method.	L4

Course: Digital Signal Processing **Course Code:5ETC03**

At the end of Digital Signal Processing course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Calculate the discrete time signals and identify the type system.	L3
2	Compute the Z-transform of a sequence, identify its region of convergence and compute the inverse Z- transform.	L3
3	Evaluate the Fourier transform of a signal.	L5
4	Analyze the FIR and IIR filters.	L4
5	Apply the concepts of Multirate Digital Signal Processing and the need of Filter banks.	L4
6	Illustrate the application of Digital Signal Processing.	L3

Course: Professional Elective III **Course Code: 5ETC04**

At the end of **Power Electronics** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the working of SCR.	L2
2	Sketch & explain the characteristics of power electronics devices.	L2
3	Demonstrate the working of Phase Controlled Rectifiers.	L2
4	Illustrate the working of Inverters.	L2
5	Demonstrate the working of Choppers.	L3
6	Explain the working of cyclo-converter and applications of power converters in DC drives.	L2

Course: Open Elective I **Course Code: 5ETC05**

At the end of **Sensors and Transducers** course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Understand the basic aspect of transducers and sensors.	L2
2	Gain knowledge of statistical characteristics and Errors of the system.	L2
3	Realize the fundamental concept about temperature and Velocity measurement.	L2
4	Acquire knowledge of measurement of displacement and Humidity.	L2
5	Familiarize the basic information about measurement of Pressure, Flow, Level	L2
6	Aware about the basics of Strain gauge and smart sensors.	L2

Lab: Microcontroller **Lab Code: 5ETC06**

At the end of Microcontroller Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Implement assembly language programming of microprocessor	L3
2	Demonstrate microprocessor interfacing with peripheral devices	L3
3	Evaluate embedded C program for the microcontroller programming.	L5

Lab: Digital Signal Processing **Lab Code: 5ETC07**

At the end of Digital Signal Processing Lab, the students will be able to

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply MATLAB software for DSP & its applications.	
2	Demonstrate the various basic digital signals.	L3
3	Analyze the digital filters.	L4

AY: 2025-2026

B.E. 6th Semester (CBCS)

Course: Communication Network **Course Code: 6ETC01**

At the end of Communication Network course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Analyze different types of network devices and their functions within a network.	L4
2	Evaluate the basic functions of data logical link control and media access control protocol.	L5
3	Analyze the layers of the OSI and TCP/IP model.	L4
4	Analyze routing strategies for an IP based networking infrastructure.	L4
5	Evaluate the concept of reliable and unreliable transfer protocol of data and how TCP and UDP implement these concepts.	L5
6	Analyze various Application layer Protocols.	L4

Course: Computer Architecture **Course Code: 6ETC02**

At the end of Computer Architecture course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy))
1	Illustrate how computers work.	L3
2	Categorize the performance of computers.	L4
3	Calculate floating point arithmetic operations and design ALU as per the requirement.	L3
4	Compare how computers are designed & built.	L4
5	Illustrate different types of memory system.	L3
6	Illustrate issues affecting recent processors.	L3

Course: Satellite Communication (PE-II) **Course Code: 6ETC03**

At the end of Satellite Communication course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the frequency bands used in satellite communication	L3
2	Apply the basics of orbital mechanism, the types of satellite orbits and orbital aspects of Satellite communication.	L3
3	Distinguish the various typical phenomena in satellite communication.	L4
4	Compare different satellite channel parameters.	L4
5	Illustrate the working of different satellite subsystems	L3
6	Illustrate the various services of satellites.	L3

Course: Engineering Economics **Course Code: (6ETC05)**

At the end of Engineering Economics course, students will be able to

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the basic concept of Engineering Economics.	L3
2	Analyze the theory of production & production cost.	L4
3	Compare the different cash flow methods.	L4
4	Evaluate Engineering alternatives & project evaluation.	L5
5	Compare the depreciation methods & depreciation analysis.	L4
6	Illustrate the Indian Banking System & balance sheet reading.	L3

Course: WIRELESS COMMUNICATION **Course Code: (6ETC04)**

At the end of WIRELESS COMMUNICATION course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the evolution of cellular mobile system andunderstand the basic cell fundaments	L2
2	Understand the basic cellular concepts and Cell improvement techniques	L2
3	Analyze and compare propagation mechanisms and multiple access technique	L4
4	Discuss the operation of GSM in detail. L2	L2
5	Describe the architecture of CDMA and compare CDMA with GSM	L2
6	Understand the WiFi and Bluetooth technology.	L2

Lab: Communication Network Lab **Code: (6ETC06)**

At the end of Communication Network Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Configure and manage file, folder, printer, and remote desktop sharing between multiple PCs on a Local Area Network (LAN) with appropriate security settings.	L3
2	Demonstrate installation, partitioning, and formatting of PC hard disks, installation of network drivers, and verification of network interfaces including MAC address identification.	L3
3	Design and implement simple LANs using network devices, network cables, and various topologies (Bus, Ring, Mesh, Star) practically and through simulation software (Packet Tracer), and test connectivity using network commands like Ping.	L3

Lab: Electronic Circuit Design **Lab Code: (6ETC07)**

At the end of Electronic Circuit Design Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate verilog code for various digital electronic circuits.	L3
2	Simulate and Extract the layouts of digital circuit Blocks using ASIC tools.	L4
3	Implement simulate for digital electronic circuit on PLD.	L3

Lab: Python Programming **Lab Code: (6ETC08)**

At the end of Python Programming Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply core syntax and semantics of Python programming language.	L3
2	Illustrate the process of structuring the data using Lists, Tuples, Sets and Dictionaries.	L3
3	Implement the regular expressions and built-in functions to navigate the file system.	L3

Lab: Mini Project **Lab Code: (6ETC09)**

At the end of Mini Project, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply the practice acquired knowledge within the chosen area of technology for project development.	L3
2	Analyze the technical aspects of the chosen project.	L4
3	Demonstration of the project.	L3

AY: 2025-2026

B.E. 7th Semester (CBCS)

Course: Cryptography and Network Security **Course Code: (7ETC01)**

At the end of Cryptography and Network Security course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate security concepts and techniques.	L3
2	Illustrate the Symmetric key cipher techniques.	L3
3	Illustrate the Asymmetric key cipher techniques.	L3
4	Illustrate cryptographic Hash Function.	L3
5	Analyze web security considerations and transport level security.	L4
6	Illustrate the email security concepts.	L4

Course: Digital Image and Video Processing (DIVP) **Course Code: 7ETC02**

At the end of Digital Image and Video Processing course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the fundamentals concept of digital image processing.	L3
2	Apply knowledge of spatial domain and frequency domain filtering to digital images.	L3
3	Analysis of image segmentation and morphological techniques.	L4
4	Analyze image compression techniques based on redundancy features, apply image degradation model and its restoration.	L4
5	Apply the Fundamentals steps of digital video processing.	L3
6	Apply motion estimation model for video processing applications.	L3

Course: Project Management & Entrepreneurship **Course Code: 7ETC03**

At the end of Digital Image and Video Processing course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate basic concept of Project management.	L3
2	Illustrate the Project Financing.	L3
3	Analyze the Cost Sheets, balance sheets and Cash Flow statements, project report.	L4
4	Illustrate the Entrepreneurial competencies & traits.	L3
5	Analyze the Management skills for Entrepreneurs.	L4
6	Illustrate Social Entrepreneurship.	L3

Course: (PE -III) Mobile Communication and Networks (MCN) **Course Code: 7ETC04**

At the end of Mobile Communication and Networks course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Explain basic concept of Cellular systems and standards.	L2
2	Demonstrate knowledge of Signal propagation model.	L3
3	Compare different multiple access techniques in mobile communication.	L4
4	Summarize the concept of rake receiver.	L2
5	Demonstrate advance knowledge of MIMO.	L3
6	Compare different Mobile Communication Systems and standards.	L4

Course: Introduction To MEMS **PE-IV Course Code: (7ETC05)**

At the end of Introduction to MEMS course, students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate intrinsic characteristics of MEMS.	L3
2	Illustrate the material properties used in MEMS devices.	L3
3	Analyze the mechanics of solids.	L4
4	Illustrate the fabrication process utilized in MEMS.	L3
5	Distinguish sensors used in MEMS.	L4
6	Illustrate the applications of MEMS.	L3

Lab: Cryptography and Network Security **Lab Code: (7ETC06)**

At the end of Cryptography and Network Security Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Implement Cryptographic algorithms for data encryption using various algorithms.	L3
2	Implement Cryptographic algorithms for data decryption using various algorithms.	L3
3	Apply of the C & Java language for the applications of cryptography.	L3

Lab: Digital Image and Video Processing **Lab Code: (7ETC07)**

At the end of Digital Image and Video Processing Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Describe digital image representation, manipulation and Illustrate the use of histograms.	L3
2	Apply the various Linear and Nonlinear filtering methods on 2D images.	L3
3	Analyze various Morphological operations on binary images and Generate their transformed images.	L4

Lab: Project Management and Entrepreneurship **Lab Code: (7ETC08)**

At the end of Project Management and Entrepreneurship Lab, the students will be able to:

LO No.	Lab Outcome Questions	Level of Learning (as per Bloom's Taxonomy)
1	Design a real time project feasibility report containing Technical, Environmental and Market Appraisal.	L6
2	Evaluate a project Cost Estimation Sheet for any Project.	L5
3	Analyze a project financial statement and Project report for any project.	L4

Lab: Project Stage I (Seminar) **Lab Code: (7ETC09)**

At the end of Project Stage I (Seminar), the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate a sound technical knowledge of their selected seminar topic.	L3
2	Analyze problem identification, formulation and solution.	L4
3	Demonstrate the knowledge, skills and attitudes of a professional engineer	L3

AY: 2025-2026

B.E. 8th Semester (CBCS)

Course: Embedded System (ES) **Course Code: 8ETC01**

At the end of Embedded System course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the concept of Embedded Systems and its classification.	L3
2	Analyze the different building block of Embedded System and its attribute.	L4
3	Analysis of image segmentation and morphological techniques.	L4
4	Evaluate the architecture and inbuilt peripherals of AVR Microcontroller.	L5
5	Demonstrate application based on embedded system using C language.	L3
6	Evaluate hardware & software co- design of an Embedded System.	L5

Course: Microwave Theory and Techniques **Course Code: (8ETC02)**

At the end of Microwave Theory and Techniques course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the operations of microwave active and passive devices.	L3
2	Illustrate the operations of Semiconductor Microwave Devices.	L3
3	Illustrate characteristics of microwave propagation through waveguide and parallel micro strip line.	L3
4	Illustrate operations of microwave resonators.	L3
5	Use S-parameters for characterization of microwave devices.	L3
6	Calculate various parameters of the microwave system.	L3

Course: Bio-Medical Electronics (PE-V) **Course Code: 8ETC03 At**

the end of Bio-Medical Electronics course, the students will be able to:

CO. No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Apply the fundamentals of Medical Instrumentation, Biomedical Signals and Electrode.	L3
2	Identify and classify various Biomedical Transducers.	L4
3	Illustrate the significance of human signals and recording techniques.	L3
4	Analyze with Modern medical imaging systems.	L4
5	Conceptualize requirements and importance of Patient Care and Monitoring and Safety.	L5
6	Analyze the function and necessity of Physiological and electrotherapy equipment.	L4

Course:(PE -VI) 5G-6G Mobile Communication (5G-6G MC) **Course Code: 8ETC04**

At the end of 5G-6G Mobile Communication course, the students will be able to:

CO No.	Course Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Illustrate the evolution of mobile communication leading to the introduction of 5G.	L3
2	Explain the mm wave 5G and overview of MIMO.	L2
3	Elaborate the Channel access methods of 5G.	L3
4	Discuss key issues and challenges in 5G deployment.	L2
5	Understand the applications of 5G.	L2
6	Understand the concept of 6G.	L2

Lab: Embedded Systems **Lab Code: (8ETC05)**

At the end of Embedded System Lab, the students will be able to:

LO No.	Lab Outcome Questions	Level of Learning (as per Bloom's Taxonomy)
1	Analyze the peripherals of embedded systems.	L4
2	Implement embedded C program in AVR microcontroller to perform various tasks.	L3
3	Implement AVR microcontroller interfacing with peripheral devices.	L3

Lab: Microwave Theory and Techniques **Lab Code: (8ETC06)**

At the end of Microwave Theory and Techniques Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Verify and analyze characteristics of Semiconductor Microwave Devices.	L3
2	Demonstrate and analyze Passive Microwave Devices.	L3
3	Demonstrate and analyze microwave Measurements of VSWR, Insertion Loss, Attenuation and Frequency Sensitivity of Attenuator.	L3

Lab: Project stage – II **Lab Code: (8ETC07)**

At the end of Project stage II, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Identify problem identification, formulation and solution.	L1
2	Demonstrate the knowledge, skills and attitudes of a professional engineer.	L3
3	Design engineering solutions to complex problems utilizing a systems approach.	L6

Lab: Power Electronic Lab **Code: 5ETC08**

At the end of Power Electronic Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Analyze the characteristics of various power electronics devices.	L4
2	Demonstrate the operation of converter circuits.	L3
3	Demonstrate the operation of the rectifier circuit.	L3

Lab: Electronic lab based on Instrumentation Lab **Code: (5ETC09)**

At the end of Signals & Systems Lab, the students will be able to:

LO No.	Lab Outcome	Level of Learning (as per Bloom's Taxonomy)
1	Demonstrate the concepts of various Sensors.	L3
2	Analyze the various physical quantities using transducers.	L4
3	Illustrate an instrumentation amplifier.	L3