

**Electronics and Telecommunication Engineering**  
**Course Outcomes of All Courses of B.E. Eighth Semester**

<b>Subject</b>	<b>CO No.</b>	<b>CO Statements</b>	<b>Blooms Level</b>
8ETC01 Embedded Systems	8ETC01.1	Apply the concepts and quality attributes of Embedded Systems	Understanding (L2)
	8ETC01.2	Apply the architecture and inbuilt peripherals of AVR Microcontroller to design the application	Understanding (L2)
	8ETC01.3	Analyze the programming of AVR Microcontroller in C for various applicattion	Analysing (L4)
	8ETC01.4	Apply the concepts of RTOs and debugging in embedded systems application	Understanding (L2)
8ETC02 Microwave Theory & Techniques	8ETC02.1	Applying the Operations of Microwave Active, Passive, and Semiconductor Microwave Devices in practical applications.	Apply (L3)
	8ETC02.2	Analyze the Characteristics of Microwave Propagation in Waveguides and Parallel Microstrip Lines	Analyze (L4)
	8ETC02.3	Apply the Operations of Microwave Resonators in Practical Applications.	Apply (L3)
	8ETC02.4	Analyze the use of S-parameters for the characterization of microwave devices and evaluate various parameters of a microwave system through measurement.	Applying (L3)
8ETC03 Wireless Sensor Network	8ETC03.1	Demonstrate the basics of Ad-hoc networks and Wireless sensor networks	Understanding (L2)
	8ETC03.2	Explain the architecture and placement strategies of Sensors	Understanding (L2)
	8ETC03.3	Analyze topology and MAC layer protocols used in wireless sensor network	Analysing (L4)
	8ETC03.4	Apply the knowledge for suitable routing protocols based on network and user requirement.	Applying (L3)
	8ETC03.5	Analyze Protocols for congestion and flow control in sensor networks	Analysing (L4)
	8ETC03.6	Develop solutions to real world problems using Wireless sensor devices	Applying (L3)

8ETC04 5G-6G Mobile Communication	8ETC04.1	Construct a comparative analysis of LTE and 5G by identifying key technological advancements and designing potential use case applications.	Applying (L3)
	8ETC04.2	Analyze RF front-end technologies, including millimeter wave communication, massive MIMO, and beamforming techniques.	Analyzing(L4)
	8ETC04.3	Implement different 5G radio access technologies, waveforms, and wireless propagation channel models for various applications.	Applying (L3)
	8ETC04.4	Develop a comparative framework for 5G and 6G architectures by analyzing their key building blocks and designing potential applications for future communication systems.	Applying (L3)
8ETC05 Embedded Systems Lab	8ETC05.1	Design and implement embedded systems using microcontrollers and other embedded components, including hardware and software design.	Applying (L3)
	8ETC05.2	Develop efficient and optimized C++ code for microcontrollers, utilizing peripherals such as GPIO, timers, interrupts	Applying (L3)
	8ETC05.3	Analyze the performance of an embedded system in terms of memory usage, and execution time	Analysing (L4)
	8ETC05.4	Design a system with interfacing various sensors, actuators, and communication modules with a microcontroller to build functional embedded systems	Applying (L3)
8ETC06 Microwave Theory & Techniques Lab	8ETC06.1	Explain the fundamental principles of microwave sources and devices, including reflex klystrons and Gunn diodes, and demonstrate their V-I characteristics and frequency measurement.	Apply (L3)
	8ETC06.2	Analyze the characteristics of microwave transmission lines and components, including microstrip lines, attenuators, power dividers.	Analyze (L4)
	8ETC06.3	Evaluate the working principles of advanced microwave network components, such as E-plane, H-plane, Magic Tee, directional couplers, and circulators.	Evaluate (L5)
	8ETC06.4	Apply measurement techniques for microwave parameters, including frequency measurement using slotted lines, power-frequency relationships, and attenuation, to assess system performance.	Applying (L3)

8ETC07 Project	8ETC07.1	Analyze relevant literature and define a research problem with well-formulated objectives.	Analysing (L4)
	8ETC07.2	Plan and execute the project using appropriate methodologies and systematic work distribution.	Applying (L3)
	8ETC07.3	Demonstrate technical proficiency through structured presentations, demonstrations, and effective communication.	Applying (L3)
	8ETC07.4	Interpret and analyze feedback, refine project implementation and present meaningful results and conclusions.	Creating (L6)
	8ETC07.5	Exhibit professional ethics, teamwork, and project documentation skills through effective report writing and participation in research dissemination activities.	Analysing (L4)

  
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