



Department of ECE
M. Tech COMMUNICATION & RADAR
Description of Course Outcomes
2018-2020

S.N O	COURSE CODE	COURSE NAME	CO No	CO Description
1	18EC5101	Modern Digital Communication Techniques	1	Understand different modern digital modulation techniques and probability of error statistics.
			2	Analyze the performance of baseband and pass band data transmission in terms of signaling schemes.
			3	Understand the concepts of block and convolution codes with respect to transfer functions and decoding operations.
			4	Analyze the spread spectrum signals and signal analysis for different digital communication technologies.
			5	Interpret different digital communication modules with respect to signal analysis in application orientation.
2	18EC5102	Microwave Antennas	1	Understand the basic antenna parameters and radiation mechanism for different types.
			2	Identify the significance of aperture of antenna models and their feeding mechanism.
			3	Design microstrip radiators with different shapes, slots and feeding techniques for communication applications.
			4	Analyze the concepts of beam formation with respect to gain, directivity, impedance and polarization.
			5	Estimate the performance characteristics of microwave antennas with the help of electromagnetic tools.

3	18EC5103	EMI/EMC	1	Describe the concept of electromagnetic interference, compatibility and sources of EMI.
			2	Understand the electromagnetic interference in circuits and measurement techniques with open area test sites.
			3	Interpret the conducted and radiated interference and measurements.
			4	Utilize the techniques like grounding, shielding, bonding and EMI filters in the usage of cables , connectors and components.
4	18EC5104	Radar Engineering	1	Understand the concept of radar communication and its ground environment.
			2	Analyze the transmitter characteristics like output power, spectrum analysis and harmonics from transmitter.
			3	Identify the factors outside the radar and analyze the propagation mechanism with scattering and clutter.
			4	Classify different steps in receiver design and its parameters for determination of position.
5	18EC51A2	Microwave Semiconductor Devices and Applications	1	Understand the behavior of high frequency equivalent circuits and operation of varactor, schottky diodes with applications.
			2	Outline the functionality of tunnel and IMPATT diodes with performance characteristics.
			3	Estimate the applications of Gunn and PIN diodes in microwave integrated circuits.
			4	Categorize different microwave transistors and their applications.
6	18EC51B2	Global Navigation Satellite System	1	Understand GPS and UTC Time, Signal Structure and Get an idea about Receiver Components and Specifications.
			2	Perform Mathematical Analysis to estimate Clock Errors, Total Electron Content and Dual Frequency.
			3	Discussion on GPS Data Processing and Position Fixing.
			4	Understand GNSS Principle of Operation and Architecture.
			5	Understand Different Satellite Navigation Systems like Galileo, GLONASS, IRNSS Space, Control and Ground Segments.
7	18EC5205		1	Classify different microwave circuits based on applications.

		Microwave and Millimetric wave circuits	2	Estimate the importance of transformers and resonators in microwave circuit design.
			3	Design of microwave filters and periodic structures.
			4	Understand the feeding principles and excitation techniques in waveguide design.
			5	Construct millimeter wave circuits using electromagnetic tools.
8	18EC5206	Antenna Measurements	1	Understand the concepts of antenna pattern measurements and modeling techniques.
			2	Estimate antenna testing in different environments like elevated, ground, near and radar cross section.
			3	Examine the far field testing of antenna for gain, directivity and patterns.
			4	Analysis of compact ranges and near field testing with cylindrical and spherical scanning.
			5	Determine antenna parameters using measurement instruments like VNA and SR in real time environment.
9	18EC5207	Wireless Cellular Communications	1	Understand the basic elements of cellular mobile radio system design.
			2	Identify different applications of speech coding in wireless systems.
			3	Understand the radio propagation and cellular engineering concepts
			4	Identify digital modulation and demodulation principles and architectures, interference in wireless communication systems.
10	18EC5208	Modern RADAR Systems	1	Summarize the advanced techniques in modern radar system.
			2	Categorize advanced pulse compression waveform modulations and techniques.
			3	Understand the concept of MIMO radar system and applications.
			4	Realize the radar applications related to sparse reconstruction and compressed sensing and digital beam forming.
11	18EC52C1	Estimation and Detection Theory	1	Classify different criteria associated to detection theory at receiver.
			2	Understand the concepts of integration of optimum receiver and matched filter receiver.

			3	Analyze the maximum likelihood estimation methods.
			4	Understand the concepts of estimation in the presence of Gaussian noise and prediction with Kalman filters.
12	18EC52D1	RF and Microwave System Design	1	Understand the importance of RF & Microwave System design with passive components.
			2	Understand Smith chart concept for analyzing S, Y, Z parameters.
			3	Analyze S-parameters with conversions and modeling.
			4	Design of RF- filters, amplifiers and oscillators.