

1.	Title of the course	Advanced Microwave Engineering
2.	Course number	EE529L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To EE5052/16
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	January 2022
8.	Prerequisite	CoT
9.	Course Objective(s): To introduce the field theory and circuit theory concepts in the analysis and design of microwave guiding structures and passive components.	
10.	Course Content: Transmission lines and waveguides: review of Maxwell's equations, TEM mode transmission lines, quasi-TEM mode lines, surface waveguides; Microwave circuit theory principles: equivalent voltages and currents, Z, Y, S, and ABCD parameters, equivalent circuit representation of microwave junctions, scattering parameters of junctions, coupling of waveguides through probes, loops, apertures; Impedance transformers: review of single-, double- and triple-stub tuners, quarter-wave transformers, design of transformers, tapered transmission lines; Power dividers and couplers: T-junction and Wilkinson power dividers, hybrids; Filters: periodic structures, filter design/theory; Resonators: principles, open and shorted TEM lines as resonators, microstrip resonators, dielectric resonators.	
11.	Textbook(s): 1. Collin R E, <i>Foundations of Microwave Engineering</i> , 2nd Edition, John Wiley & Sons (2000). 2. Pozar D M, <i>Microwave Engineering</i> , 4th Edition, John Wiley & Sons (2010).	
12.	Reference(s): 1. Ludwig R and Bretchko P, <i>RF Circuit Design</i> , 1st Edition, Pearson Education (2000). 2. Mishra D K, <i>Radio-frequency and Microwave Communication Circuits</i> , 1st Edition, John Wiley & Sons (2001).	