

1.	Title of the course	Microwave Theory and Techniques
2.	Course number	EE539L
3.	Structure of credits	3-0-0-3
4.	Offered to	UG
5.	New course/modification to	Modification To EE5046/16
6.	To be offered by	Department of Electrical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	Course Objective(s): To provide a comprehensive introduction to microwave theory and techniques of basic microwave devices and passive components.	
10.	Course Content: Design considerations for microwave tubes, principle of operation of multi-cavity and reflex klystron, magnetron and traveling wave tube; Equivalent voltages and currents, concept of impedance, impedance and admittance matrices of microwave junctions, scattering matrix representation of microwave networks, ABCD parameters, excitation techniques for waveguides; Scattering matrix of 3- and 4-port junctions, T-junction power divider, Wilkinson power divider, qualitative description of two-hole and multi-hole waveguide couplers, hybrid junctions; Faraday rotation, ferrite circulators, isolators and phase shifters; Principles of Gunn diode, IMPATT diode, PIN Diode, and Schottky barrier diode; Microwave BJT, MESFET, HEMT and their applications.	
11.	Textbook(s): 1. Liao S Y, <i>Microwave Devices and Circuits</i> , 3rd Edition, Pearson Ed. (2003). 2. Pozar D M, <i>Microwave Engineering</i> , 4th Edition, John Wiley & Sons (2012).	
12.	Reference(s): 1. Bahl I and Bhartia P, <i>Microwave Solid State Circuit Design</i> , 2nd Edition, John Wiley & Sons (2003). 2. Collin R E, <i>Foundations for Microwave Engineering</i> , 2nd Edition, John Wiley & Sons (2000).	