

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY
DESIGN AND MANUFACTURING (IIITDM) KANCHEEPURAM

INTRODUCTION OF NEW COURSE

Course Title	RF and Microwave Circuit Design	Course Code	ECxxxx			
Dept. / Specialization	Electronics & Communication Engineering	Structure (LTTC)	3	1	0	4
To be offered for	UG	Status	Core <input type="checkbox"/>	Elective <input checked="" type="checkbox"/>		
Faculty Proposing the course	Dr. Sreenath Reddy Thummaluru	Type	New <input type="checkbox"/>	Modification <input checked="" type="checkbox"/>		
Recommendation from the DAC		Date of DAC				
External Expert(s)	(1) Dr. Raghvendra Kumar Chaudhary, Associate Professor, Department of Electrical Engineering, IIT Kanpur (2) Dr. Ravi Kumar Gangwar, Associate Professor, Department of Electronics Engineering, IIT (ISM) Dhanbad					
Pre-requisite	(1) Engineering Electromagnetics (2) Electromagnetic Waves	Submitted for approval		50 th Senate		
Learning Objectives	The key objective of this course is to provide a comprehensive understanding of high frequency circuit design principles, and the analysis and design of passive and active RF circuits for communication systems.					
Learning Outcomes	Students gain proficiency in characterizing two-port networks using network parameters. Students can design microwave active and passive circuits such as amplifier, power divider, filter, couplers, etc					
Contents of the course (With approximate break-up of hours for L/T/P)	Introduction to Ansys HFSS and Cadence AWR Microwave Office, Designing the Microwave Devices using HFSS and AWR. (6L+2T) Microwave network analysis, scattering parameters, Lumped and distributed applications, Impedance matching, Lumped and distributed approach. (9L+3T) Isolator-circulator, Power divider, Directional coupler, Lange Coupler Filter design using insertion loss method, Coupled Line Filters (12L+4T) PIN diodes and Varactor Diodes at RF frequencies, Phase Shifters. (6L+2T) MICROWAVE AMPLIFIER DESIGN: Low-Noise Amplifier Design, Broadband Transistor Amplifier Design, Characteristics of Power Amplifiers and Amplifier Classes, Gain-Stability conditions, Design for maximum gain. (9L+3T)					
Text Book	1. Michael Steer, Fundamentals of Microwave and RF Design, 3rd edition, The University of North Carolina Press, 2019, ISBN: 978-1-4696-5688-5. 2. Reinhold Ludwig, RF circuit design, 2nd edition, Prentice Hall 2014, ISBN: 978- 0131471375.					
Reference Books	1. Samuel Y. Liao, Microwave Devices and Circuits, 3rd edition, Pearson, 2011, ISBN: 978- 8131762288. 2. David. M. Pozar, Microwave Engineering, 4th edition, John Wiley, 2011, ISBN: 978- 0470631553.					