Course Type	Course Code	Name of Course	L	T	P	Credit
DC	NECC535	Microwave Circuits and Networks	3	1	0	4

Course Objective

The course aims to make a bridge between the different practical requirements of communication in microwave frequency and design of microwave components & systems. So, students can understand the application domain of different microwave components which they study extensively.

Learning Outcomes

- Understanding the design concept of various RF/Microwave devices.
- Knowledge of Microwave Circuit Analysis and Impedance matching.
- Understanding the behavior of non-linear RF/Microwave Devises.
- Ability to design discrete RF/ Microwave Devices.

Module No.	Topics to be Covered	Lecture + Tutorial Hours	Learning Outcome
1	Wilkinson power divider, Coupled line directional coupler, Lange coupler, Coupled line filter, Coupled resonator filter, Capacitive coupled filter.	12L+4T	Understanding of basic microwave power dividers and coupler though transmisson line concepts. Idea to find out the coupled lines and its mathematical analysis.
2	Tunnel diode, TRAPATT diode, pin diode; Varactor diode, Introduction to parametric amplifier, Manley-Rowe power relation, HEMT, HBT.	10L+3T	This unit will help student in basic components and its physics. Furthermore, student will also learn the application of these devices with its limitations such as frequency, power and phase.
3	Microwave detectors and mixers, Microwave amplifiers, Microwave oscillators.	8L+3T	Students will familiarize with different parameters of active components and also learn the synthesis of the mixer and amplifiers.
4	Reflex klystron, two cavity klystron, Helix TWT, Coaxial Magnetron, Inverted coaxial magnetron and linear magnetron.	12L+4T	Student will familiarize with fundamentals of the klystron and magnetron. Understanding of relevant mathematical modelling and physical desccriptions also.
	Total	**42L+14T**	

Text Book:

1. Microwave Engineering, by David M. Pozar, Wiley International, Fourth Edition, 2012.

Reference Book:

1. Foundation of Microwave Engineering, by R. R. Collin, Wiley International, Second Edition, 2001.
2. Microwave Devices and Circuits, by Samuel Liao, 3rd edition, 1990.
3. Microwave devices, circuits and subsystems for communications engineering, by Ian A. Glover, Steve Pennock, Peter Shepherd, 1st edition, 2007.