Term B.Tech ECE VI semester Course Name: Microwave and Radar Engineering		Faculty name: Preet Kaur	
Course objective	To introduce the students about the concepts of waveguides, about various types of Microwave Components, Microwave tubes, solid state devices, microwave measurements techniques and basics of radar.		
UNIT	Topic	Duration (in hours)	Reference
I	Waveguide:Introduction, comparison with transmission lines, propagation in TE & TM mode	2	1
	Rectangular wave guide, TEM mode in rectangular wave guide,	3	1
	Characteristic impedance, introduction to circular waveguides and planar transmission lines.	2	2
II	Microwave components:Directional couplers, tees, hybrid ring	2	1
	S-parameters, attenuators, cavity resonators	3	1
	Mixers & detectors, matched Load, phase shifter	2	2
	Wave meter, Ferrite devices: Isolators, circulators	3	2
III	Microwave tubes: Limitation of conventional tubes	2	2
	Construction, operation and properties of Klystron amplifier, reflex Klystron	3	2
	Magnetron, TWT, BWO , crossed field amplifiers	3	2
IV	Microwave solid state devices:Varactor diode, Tunnel diode	2	1
	Schottky diode, GUNN diode	2	2
	IMPATT, TRAPATT and PIN diodes	2	2
	MASER, parametric amplifiers	2	2
V	Microwave measurements:Power measurement using calorimeter & bolometers	2	1
	measurement of SWR, frequency , wavelength and impedance, Microwave bridges	2	1
VI	Introduction to radar:Block Diagram and operation, Radar Frequencies	2	2
	Simple form of Radar Equation, Prediction of Range Performance	2	2
	Pulse Repetition frequency and Range Ambiguities, Applications of Radar	2	2
	Total Lectures	43	
Text Book	Microwave devices and circuits: Samuel Liao;PHI		
	Microwave devices & Radar Engg :M .Kulkarni;Umesh		
Reference Book	Microwaves and Radar : A.K. Maini; Khanna		