

## COURSE PLAN

Name of the Course Teacher : Shashi Kant Dargar  
Subject : RF and Microwave Engineering  
Branch : E&C  
Semester : VI  
Year : III  
Course Code : EC 309  
L-T-P-C : 3-0-1-4 w.e.f. 29.12.2009

Sr. No.	Topic	Contact Hours (Lectures)
1.	<b>Introduction to RF:</b> Introduction of Microwaves and their applications.	1
2.	Microwave signal propagation. Band designation in RF	1
3.	Detection of microwaves	1
4.	Microwave power Measurement	1
5.	Measurement of scattering parameters	1
6.	Impedance measurement	1
7.	Frequency measurement	1
8.	VSWR measurements	1
9.	<b>Waveguide Components:</b> Scattering matrix representation of networks.	1
10.	Rectangular cavity and circular cavity resonators, Waveguide Tees	1
11.	Waveguide Tees	1
12.	Magic Tees	
13.	Hybrid rings	1
14.	Waveguide corners, Bends and twists,	1
15.	Directional couplers	1
16.	Circulators and isolators	1
17.	<b>Klystrons :</b> Construction and operation of two cavity & multicavity klystrons	1
18.	Velocity modulation and electron bunching (analytical treatment)	1
19.	Applegate diagram and applications of two cavity Klystrons	1
20.	practical consideration of helix type TWT, Introduction to CW power, pulsed dual	1

21.	Construction, working and operation of Reflex klystron, Velocity modulation	1
22.	power output and frequency characteristics of a Reflex klystron, Electron admittance	1
23.	<b>Traveling Wave Tubes (TWT):</b> Construction, operation	1
24.	practical consideration of helix type TWT	1
25.	Introduction to CW power, pulsed dual mode TWT	1
26.	Coupled cavity TWT, Applications of TWT	1
27.	<b>Magnetron:</b> Types of Magnetron. Construction, operation	1
28.	analysis and practical consideration of cavity or traveling wave magnetron	1
29.	Introduction to coaxial, frequency angle	1
30.	voltage tunable magnetrons	1
31.	Backward cross field oscillator	1
32.	Forward wave cross field amplifier.	1
33.	<b>Striplines:</b> Introduction to microstrip lines	1
34.	Parallel striplines	
35.	Coplanar striplines, Shielded striplines, Slot lines	1
36.	Non-radiative guide, Transitions, Bends and Discontinuities.	1
37.	<b>Microwave Semiconductor Devices:</b> Construction, Operation	1
38.	and Practical applications of Gunn diode	1
39.	IMPATT	
40.	TRAPTT diodes	1
<b>TOTAL</b>		<b>40</b>

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(Shashi Kant Dargar)