

**TENTATIVE TEACHING PLAN**

Name of Teacher: **Dr. Badar Muneer**

Subject: **Microwave Engineering**

Batch: **14TL** Year: **3<sup>rd</sup>** Term: **2<sup>nd</sup>**

Term Starting Date:

Term Suspension

<b>Sr. #</b>	<b>Topic</b>	<b>No. of Lectures required</b>
1.	Introduction about syllabus/Real world applications of Microwave Engineering/Grading policy/Recommended Books.	02
2.	Microwave Definition, Microwave Frequencies spectrum and its utilization, Properties of microwaves.	02
3.	General description of waves on Transmission line E-waves, H-waves, group velocity, phase velocity.	02
4.	Lumped element model, transmission line equation, Impedance /Admittance Relationship of transmission line.	02
5.	Wave Propagation in lossy/lossless/special cases of lossless transmission lines, calculation of attenuation constant, Phase Constant and propagation constant	02
6.	Travelling waves and Standing waves, derivation of generalized equation for travelling waves and standing waves, basic problem solving related to standing waves	02
7.	VSWR, reflection coefficient, return loss and understanding the return loss curves	02
8.	Microwave Network Analysis : Z and Y parameters analysis	02
9.	ABCD and S representation of microwave networks	02
10.	Transmission lines, discontinuities and S-parameters, using S-Parameters in microwave problem solving (Class Test No.1)	02
11.	Smith Chart analyzing rules, mathematical construction of Smith Chart	02
12.	Finding the transmission line length and matching networks problem solving using Smith Chart.	02
13.	Type of waveguides, Cylindrical Wave-guide, Elliptical wave-guides, modes in waveguide TM, TE, TEM modes of propagation	02
14.	Rectangular wave-guide, general design equations, problems on rectangular wave guide. Propagation characteristic wave-guide.	02
15.	Planar circuit technology: Microstrip lines and their design, microstrip coupled line filters	02
16.	Printed antennas and arrays, matching network design for planar antennas, applications of printed antennas in RADAR and beamforming systems (Class Test No.2)	02
17.	Principles and operation of one cavity and two cavity klystrons, multi-cavity Klystron.	02
18.	Microwave Tubes: High frequency limitations of conventional tubes. Travelling Wave tubes. Backward Wave Oscillator.	02
19.	Solid State Devices. Varactor diode, PIN diode. GUNN diode and IMPATT diode. Planning.	02
20.	Power combiners, power dividers, microwave couplers and rat-race hybrid couplers, applications of couplers in microwave devices.	02
21.	Introduction to Electronic Warfare, smart technologies such as smart antennas, advanced reconfigurable and flexible electronic technologies.	02
Total Lectures		<b>42</b>

Signature of Teacher:

Dated:

Remarks of DMRC:

Signature of Chairman:

Dated: