

FOURTH YEAR

Microwave Engineering-I	COE401
Prerequisite: COE203 and COE208	(3-2-1-2)

Introduction to RF and Microwave Engineering: RF and Microwave Engineering. Communication Over Distance. Review of Electromagnetic Theory. Radio Architecture. Conventional Wireless Communications. RF Power Calculations. Transmission Lines and Wave Guides: General Solutions for TEM, TE, and TM waves. Parallel Plate Waveguide. Rectangular Waveguide, Circular Waveguide. Coaxial Line. Surface Waves on a Grounded Dielectric Sheet. Striplines, Microstrip Lines. The Transverse Resonance Technique. Wave Velocities and Dispersion. Microwave Network Analysis: Impedance and Equivalent Voltages. Impedance and Admittance Matrices. The Scattering Matrix. The Transmission (ABCD) Matrix. Signal Flow Graphs. Discontinuities and Modal Analysis. Excitation of Waveguides. Impedance Matching: Impedance Transforming Networks. The L-Matching Network. Dealing with Complex Loads. Multi element Matching. Impedance Matching Using Smith Charts. Distributed Matching. **Practical part:** *Gun Oscillator. Power Measurement in X-Band. Measurement of Frequency in X-Band. Propagation Modes, Wavelength and Phase Velocity in Waveguide. Aperture Antenna with Measurement of Gain.*