

Microwave Devices and Systems

Course Code: EE-947

Course Description

This course is designed to introduce graduate students the design and analysis of essential blocks of RF/Microwave transceiver. This covers topics on RF/Microwave active circuits such as diodes, amplifiers, oscillators and mixers.

Text Book:

1. Microwave Engineering by David M. Pozar, 4th edition, John Wiley and Sons.

Reference Book:

1. Microwave Transistor Amplifiers Analysis and Design by Guillermo Gonzalez, 2nd edition.
2. RF Power Amplifiers for Wireless Communications by Steve C. Cripps
3. Radio System Design for Telecommunications by Roger L. Freeman

Prerequisites

EE-847 Microwave Networks and Passive Components (3+0) or Equivalent

ASSESSMENT SYSTEM

Quizzes	10%
Assignments	10%
Mid Terms	30%
Project	10%
ESE	40%

Teaching Plan

Week No	Topics	Learning Outcomes
1	Introduction	Course Outline, objectives, teaching plan, assessment method, concepts review
2-6	Noise, Noise Figure, Dynamic Range, Diodes, Mixers	Noise, Noise Figure, Non-Linear Distortion, Dynamic Range, Diodes, Mixers

7-8	Mixer Circuits, Scattering Parameters, Two Port Power Gain	Mixer Circuits, Scattering Parameters, Two Port Power Gain
9	MID TERM EXAM	
10-12	Stability, matching, Gain Circles, Maximum Gain Amplifier, Specific Gain Amplifier	Stability, matching, Gain Circles, Maximum Gain Amplifier, Specific Gain Amplifier
13-17	Low Noise Amplifier, RF & Microwave Oscillators	Low Noise Amplifier, RF & Microwave Oscillators, Dielectric Resonator Oscillator
18	End Semester Exams	