



THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Microwave Engineering

ECE 5017

Credit Hours:

4.00

Course Levels:

Undergraduate (1000-5000 level)

Graduate (5000-8000 level)

Course Components:

Lecture

Lab

Course Description:

Transmission line theory; multiconductor; S-parameters; transformers, couplers, filters, resonators, circulators; electromagnetic interference and compatibility; computer-aided design; microstrip realization and testing with a network analyzer.

Prerequisites and Co-requisites:

Prereq: 3010, and enrollment in ECE major; or Grad standing in Engineering, Biological Sciences, or Math and Physical Sciences.

Course Goals / Objectives:

- Give the student a comprehensive introduction to microwave circuit design which provides practical design theories for the design and synthesis of passive microwave circuits
 - Introduce the use of CAD tools to verify the microwave circuits designed, account for real world implementation effects, and optimize the microwave circuits designed
 - Expose the students to the measurements of microwave circuits using a network analyzer
 - Involve the students in a team oriented design project where they design, fabricate, and test a microwave circuit and present their results to the class
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Course Topics:

- Transmission lines (review) and multiconductor lines
 - Waveguides
 - Broadband impedance matching
 - Scattering parameters
 - Passive devices components (tee, divider, couplers)
 - Resonators and narrowband filters
 - Broadband and periodic filters
 - Circulators and isolators
 - Introduction to electromagnetic interference and compatibility (EMI/EMC)
 - Design, simulation, fabrication and testing of a microwave circuit
 - In class presentation of design projects
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Designation:

Elective