

ECE 7814 (Approved): Microwave Remote Sensing

Course Description

Description of microwave remote sensing systems. Theories of scattering from random media and rough surfaces.

Transcript Abbreviation: Remote Sensing

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Graduate

Student Ranks: Masters, Doctoral

Course Offerings: Spring

Flex Scheduled Course: Never

Course Frequency: Even Years

Course Length: 14 Week

Credits: 3.0

Repeatable: No

Time Distribution: 3.0 hr Lec

Expected out-of-class hours per week: 6.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: Prereq: 6010 (719).

Exclusions: Not open to students with credit for 816.

Cross-Listings:

Course Rationale: Existing course.

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 14.1001

Subsidy Level: Doctoral Course

Course Goals

Gain experience in applying and understanding the limitations of random medium theory in remote sensing, propagation, and radar applications

Learn about microwave remote sensing systems and techniques

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Description of microwave remote sensing systems	5.0							
General capabilities of radar remote sensing	5.0							
General capabilities of microwave radiometry	5.0							
Independent scattering theory	5.0							
Scattering from continuous random media	5.0							

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Radiative transfer theory and applications	5.0							
Small perturbation method for surface scattering	5.0							
Physical optics approximation of surface scattering	5.0							
Applications to remote sensing of sea and land surfaces and planetary atmospheres	5.0							

Representative Assignments

Midterm exam
Final exam
Homeworks

Grades

Aspect	Percent
Midterm exam	40%
Final exam	40%
Homeworks	20%

Representative Textbooks and Other Course Materials

Title	Author
<i>Wave propagation and scattering in random media</i>	Akira Ishimaru

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
	i	A recognition of the need for, and an ability to engage in life-long learning.
	j	A knowledge of contemporary issues.
	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Additional Notes or Comments

Note this will probably run every 3rd year, not clear at the moment which term but Spring is preferred.

Updated course description, prereqs, exclusions, goals and topics to conform to

university format 3/29/12

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