

ECEn 360: Electromagnetic Fields and Waves

Catalog Description:	ECEn 360. Electromagnetic Fields and Waves. (4:4:2) F,W Prerequisite: Math 214, 334, ECEn 212 Properties and application of transmission lines. Introduction to electric and magnetic field theory and development of Maxwell's equations.	
Course Type:	Engineering Topics	
Prerequisites:	Math 214: Multivariable Calculus Math 334: Ordinary Differential Equations ECEn 212: Circuits	
Textbooks and/or other required materials	F. T. Ulaby, <i>Fundamentals of Applied Electromagnetics</i> , Prentice Hall, 2004 Edition.	
Topics Covered:	<ol style="list-style-type: none"> 1. Transmission Lines 2. Electrostatics 3. Magnetostatics 4. Plane Waves 5. Reflection and Transmission 6. Waveguides – rectangular and dielectric slab 7. Antennas – dipole and arrays 	
Course Competencies:	1. Application of differential equations to wave propagation.	Outcome 1
	2. Application of integral multivariate calculus to solve for electromagnetic fields.	Outcome 1
	3. Application of complex variables to phasor solutions of wave equations.	Outcome 1
	4. Ability to analyze the interaction of electromagnetic fields with structures and materials.	Outcome 1
	5. Ability to design and connect transmission lines with devices.	Outcome 3
Schedule:	Lectures: One hour MWThF Laboratory: (See ECEn 361) TA Recitations: 2 hours per week (optional)	
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