Instructor: Paul Siqueira  
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Office Hours: TTh, 9-11 am, W 3-4 pm, or by appointment

Teaching Assistant: Karuna Thulluri  
kthullur@ecs.umass.edu  
Office Hours: Marcus 214: TTh, 2:30-3:30, W 1:30-2:30, or by appointment


Signals and Noise in Microwave Systems, Chapters 10 & 13: Jan 30, Feb. 1, 6  
Friis transmission formula, Radar equation, noise temperature, noise figure

Microwave Resonators, Chapter 6: Feb 8, 13, 15, 20  
Series and parallel resonant circuits, transmission line resonators, waveguide cavity resonators, dielectric resonators.

Power Dividers and Directional Couplers, Chapter 7: Feb 22, 27, March 1, 6, 8  
T-junction, Wilkinson power dividers, directional couplers, hybrid junctions and the Magic-T

Midterm: Thursday March 8 or Tuesday, March 13

Microwave Filters, Chapter 8: March 13, 15, 27, 29, April 3, 5  
Periodic structures, filter design and transformations, filter implementation

Microwave Ferrimagnetic Components, Chapter 9: April 10, 12, 17, 19, 24  
Basic principles, isolators, phase shifters and circulators

Microwave Oscillators, Mixers and Amplifiers, and Characteristics of Distortion  
Chapter 10, 11 & 12: Apr. 26, May 1, 3, 8, 10 & 15

Final: Take Home

Grading: 20% homework (two dropped)  
20% midterm project  
30% midterm  
30% final
Course Objectives and Outcomes for ECE 585, Spring 2007

Objectives: Students completing this course will know
1. basic block diagrams that describe microwave systems
2. the characterization of signals, noise and distortion in microwave systems
3. fundamentals behind the basic building blocks of microwave systems. These building blocks consist of resonators, couplers, filters, ferromagnetic components and active non-linear components.
4. how to perform a simple microwave system design and characterize a simple microwave system.

Professional Component: Credits of engineering science: _, Credits of design: _

Relationship of course objectives to program outcomes:

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<thead>
<tr>
<th>PROGRAM OUTCOMES</th>
<th>COURSE OBJECTIVES</th>
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<tbody>
<tr>
<td>1. Well grounded in the fundamental concepts of math, physics, chemistry, computer science and engineering science</td>
<td>Y  Y  Y  N</td>
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<td>2. Able to identify, formulate and solve problems in ECE</td>
<td>N  Y  Y  Y</td>
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<td>3. Able to design and conduct experiments, and to analyze and interpret measured data</td>
<td>N  Y  N  Y</td>
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<td>4. Capable of designing analog and digital systems, components, and processes to meet desired needs</td>
<td>Y  Y  Y  Y</td>
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<td>5. Proficient in using modern engineering techniques and computing tools for effective engineering science</td>
<td>N  N  Y  Y</td>
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<td>6. Experienced in engineering teamwork and solving technically diverse problems</td>
<td>N  N  N  N</td>
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<td>7. Able to communicate effectively orally and in writing and through symbolic and graphical expression</td>
<td>N  N  N  Y</td>
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<td>8. Aware of professional and ethical responsibilities as engineers</td>
<td>N  N  N  N</td>
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<td>9. Aware of the impact of ECE technology and decisions on society</td>
<td>N  N  N  N</td>
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<td>10. Motivated about the importance of lifelong learning and professional development</td>
<td>N  N  N  N</td>
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