

# EECE2210— Electrical Engineering— Fall 2021

## Syllabus

<b>INSTRUCTOR:</b>	Charles A. DiMarzio, Associate Professor Electrical and Computer Engineering Lab: 352 Egan Mail: 409 Dana Office: 302 Stearns Northeastern University Boston, Massachusetts 02115 Phone: 617-373-2034 Electronic Mail: dimarzio@ece.neu.edu Course Website: <a href="http://www.ece.neu.edu/courses/eece2210/dimarzio/">http://www.ece.neu.edu/courses/eece2210/dimarzio/</a> Faculty Website: <a href="http://www.ece.neu.edu/faculty/dimarzio/">http://www.ece.neu.edu/faculty/dimarzio/</a> Research Lab Website: <a href="http://www.ece.neu.edu/groups/osl">http://www.ece.neu.edu/groups/osl</a>
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<b>OFFICE HOURS:</b>	6:00-7:00pm Tue (Online) and 11:00-12:00am Wed (Online or in Person) Feel free to email questions as well. If you are a remote student, please email me to let me know what your time zone is.
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<b>LOCATION:</b>	322HA
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<b>Lab Teaching Assistants</b>	TBD Office Hours TBD
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<b>Undergraduate Course Assistants</b>	These three will be your undergraduate course assistants. Their office hours are listed. Please feel free to connect with them for help on homework or preparing for quizzes and exams.  Susmitha Bumadi, bumadi.s@northeastern.edu
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<b>RECORDING:</b>	Lectures will be in the classroom but will also be recorded. Recordings will only be available to students, faculty, and staff associated with the course.
<b>TEXT:</b>	<p>Hambley, Allan R., <i>Electrical Engineering: Principles and Applications, 7th Ed.</i>, Pearson. 2014. with Mastering Engineering.</p> <p>For help getting access to homework, see  <a href="https://portal.mypearson.com/course-home/handout/dimarzio99346/Student_Registration_Handout_dimarzio99346.pdf">https://portal.mypearson.com/course-home/handout/dimarzio99346/Student_Registration_Handout_dimarzio99346.pdf</a></p>
<b>QUIZZES:</b>	Quizzes will be given approximately weekly. Each quiz will take approximately 20 minutes.
<b>EXAMS:</b>	Two exams will be given, one at the middle and one at the end of the course.
<b>HOMEWORK:</b>	Homework Assignments will use Mastering Engineering. Collaboration among students on homework is acceptable and encouraged.
<b>GRADING:</b>	<p>20 % on homework (Equal weight on best <math>n - 1</math> of <math>n</math> assignments)</p> <p>30 % on quizzes</p> <p>30 % on better of two exams</p> <p>20 % on other exam</p>

<b>LAB:</b>	<p>The associated Laboratory course, EECE2211, must be taken concurrently.</p> <ul style="list-style-type: none"> <li>• Students will work in groups of two. If you know students in the class, please self-organize. Please be sure both members of your team are assigned to the same lab section. After the first week we will help you organize. You must keep the same team through the semester.</li> <li>• There will be short lectures by the teaching assistants at the beginning of some lab periods.</li> <li>• Pre-Lab assignments will be submitted on dates indicated by the teaching assistants.</li> <li>• Students will maintain a record of their work in a lab notebook. These will be submitted at the end of the semester.</li> </ul>
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<b>LAB GRADING:</b>	<p>10 % on lab notebook  10 % on Pre-Lab assignments  50 % on performance  30 % on reports</p>
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<b>COVID-19:</b>	<p>Eating or drinking in the classroom is not permitted according to University rules.</p> <p>If you wish to speak with me after class, please do so outside the building.</p> <p>Appropriate masks must be properly worn at all times inside the classroom as in any other indoor space. Lectures will be discontinued in the event of a violation, and the student will be reported to the University.</p> <p>The mask requirement applies to me too. I plan to use a microphone and I've been told that I am loud. If you have trouble understanding me, please say something.</p>
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<p><b>ACADEMIC INTEGRITY:</b></p>	<p>A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.</p> <p>As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.</p> <p>Go to <a href="http://www.northeastern.edu/osccr/academic-integrity-policy/">http://www.northeastern.edu/osccr/academic-integrity-policy/</a> to access the full academic integrity policy.</p>
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<p><b>SPECIAL NEEDS:</b></p>	<p>Northeastern University and the Disability Resource Center (DRC) are committed to providing disability services that enable students who qualify under Section 504 of the Rehabilitation Act and the Americans with Disabilities Act Amendments Act (ADAAA) to participate fully in the activities of the university. To receive accommodations through the DRC, students must provide appropriate documentation that demonstrates a current substantially limiting disability.</p> <p>For more information, visit <a href="http://www.northeastern.edu/drc/getting-started-with-the-drc/">http://www.northeastern.edu/drc/getting-started-with-the-drc/</a>.</p>
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<p><b>DIVERSITY AND INCLUSION:</b></p>	<p>Northeastern University is committed to equal opportunity, affirmative action, diversity and social justice while building a climate of inclusion on and beyond campus. In the classroom, members of the University community work to cultivate an inclusive environment that denounces discrimination through innovation, collaboration and an awareness of global perspectives on social justice. It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diversity that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability, and other visible and non-visible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class. Your suggestions are encouraged and appreciated.</p> <p>Please visit <a href="http://www.northeastern.edu/oidi/">http://www.northeastern.edu/oidi/</a> for complete information on Diversity and Inclusion.</p>
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<p><b>TITLE IX:</b></p>	<p>Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance.</p> <p>Northeastern’s Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty and staff.</p> <p>In case of an emergency, please call 911.</p> <p>Please visit <a href="http://www.northeastern.edu/titleix">www.northeastern.edu/titleix</a> for a complete list of reporting options and resources both on- and off-campus.</p>
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## Tentative Schedule

EECE2210  
Northeastern University

Fall 2021  
Chuck DiMarzio

<b>1</b>	8,9 Sep	<p>ADMINISTRIVIA. INTRODUCTION, CIRCUITS: Circuit, Current, Voltage, Kirchoff's Current Law (KCL). PSPICE</p> <p><b>Reading:</b> 1.1-1.4.</p> <p><b>Homework:</b> 1. (Due by End of Next Wednesday )</p>
<b>2</b>	13,15,16 Sep	<p>MORE CIRCUITS: Kirchoff's Voltage Law (KVL), Circuit Elements, Introduction to Circuits.</p> <p><b>Reading:</b> 1.5-1.7.</p> <p><b>Homework:</b> 2. (Due by End of Next Wednesday ) Quiz 1 Monday</p>
<b>3</b>	20,22,23 Sep	<p>RESISTIVE CIRCUITS: Series and Parallel, Network Analysis, Voltage and current dividers. Node-Voltage Analysis.</p> <p><b>Reading:</b> 2.1-2.4.</p> <p><b>Homework:</b> 3. (Due by End of Next Wednesday ) Quiz 2 Monday</p> <p><b>Lab:</b> Experiment 1.</p>
<b>4</b>	27,29,30 Sep	<p>MESH ANALYSIS, EQUIVALENT CIRCUITS: Mesh-Current analysis, Thevenin and Norton equivalents, Superposition, Wheatstone bridge.</p> <p><b>Reading:</b> 2.5-2.8.</p> <p><b>Homework:</b> 4. (Due by End of Next Wednesday ) Quiz 3 Monday</p> <p><b>Lab:</b> Experiment 2.</p>

5	4,6,7 Oct	<p>SPICE, OPAMPS: OP Amp. basics. Simple circuits. Positive and negative feedback.</p> <p><b>Reading:</b> 13.1-13.4.</p> <p><b>Homework:</b> 5. (Due by End of Next Wednesday)</p> <p>Quiz 4 Monday</p> <p><b>Lab:</b> Experiment 2.</p>
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Monday 11 Oct — Columbus Holiday: No class

6	13,14 Oct	<p>OPAMP DETAILS: Saturation, DC effects, Finite gain.</p> <p><b>Reading:</b> 13.5-13.8.</p> <p><b>Homework:</b> 6. (Due by End of Next Friday Delayed bc of Exam 1.)</p> <p>Quiz 5 Monday</p> <p><b>Lab:</b> Experiment 3.</p>
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**Midterm Exam: Wednesday 20 Oct 2021**

7	18,20,21 Oct	<p>Mid-Term Review Mon, Exam Wed.</p> <p>CAPACITORS: Capacitance, Series and parallel, physics.</p> <p><b>Reading:</b> 3.1-3.3.</p> <p><b>Homework:</b> 7. (Due by End of Next Wednesday)</p> <p>Quiz 6 Monday</p> <p><b>Lab:</b> Experiment 4.</p>
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8	25,27,28 Oct	<p>INDUCTORS: Inductance, series and parallel, mutual inductance.</p> <p><b>Reading:</b> 3.4-3.7.</p> <p><b>Homework:</b> 8. (Due by End of Next Wednesday)</p> <p>Quiz 7 Monday</p> <p><b>Lab:</b> Experiment 5.</p>
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<b>9</b>	1,3,4 Nov	<p>TRANSIENTS: First order RC circuit, Steady state, RL circuit</p> <p><b>Reading:</b> 4.1-4.3.</p> <p><b>Homework:</b> 9. (Due by End of Next Wednesday)</p> <p>Quiz 8 Monday</p> <p><b>Lab:</b> Experiment 5.</p>
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Thursday 11 Nov — Veterans Holiday: No class

<b>10</b>	9, 12 Nov	<p>SECOND ORDER CIRCUIT TRANSIENTS: Equations, Matlab.</p> <p><b>Reading:</b> 4.5-4.6.</p> <p><b>Homework:</b> 10. (Due by End of Next Wednesday)</p> <p>Quiz 9 Monday</p> <p><b>Lab:</b> Experiment 5.</p>
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<b>11</b>	15,17,18 Nov	<p>SINUSOIDS: Circuits, phasors, complex impedance, average power.</p> <p><b>Reading:</b> 5.1-5.5.</p> <p><b>Homework:</b> 11. Quiz 10 Monday</p> <p><b>Lab:</b> Experiment 5.</p>
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W,Th 24,25 Nov — Thanksgiving Holiday: No class

<b>12</b>	22 Nov	<p>PHASOR CIRCUIT ANALYSIS: Thevenin and Norton again, Matlab.</p> <p><b>Reading:</b> 5.6.</p> <p><b>Homework:</b> None. Quiz 11 Monday</p> <p><b>Lab:</b> No Lab This Week.</p>
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<b>13</b>	29 Nov, 1,2 Dec	<p>FOURIER ANALYSIS: Fourier transforms, transfer functions and impulse response. Decibels, Bode plots.</p> <p><b>Reading:</b> 6.1-6.2.</p> <p><b>Homework:</b> 12. (Due by End of Next Wednesday)</p> <p><b>Lab:</b> Experiment 6.</p>
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W 9 Dec — Classes End

<b>14</b>	6,8 Dec	<p>BODE PLOTS:</p> <p><b>Reading:</b> 6.3-6.4.</p> <p><b>Lab:</b> Final Lab Reports Due This Week.</p>
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**Final Exam: TBD**