Syllabus: Electric Circuits II (ECE 2620, Sec. 400)
Summer 2019

Time and Location
Online, June 26-August 5, 2019.

Instructor
Richard E. Groff
regroff@clemson.edu  (Prefix subject line with “ECE2620:"
Office Location: Riggs Hall, Room 302
Office Phone: 864-656-5906
Office Hours: Posted on Canvas. Check Canvas for any changes.

Prerequisites: ECE 2020, MATH 2060, PHYS 2210, each with a grade of C or better
Prerequisite or Concurrent: MATH 2080 with a grade of C or better

Common Policies
See the ECE Common Course Syllabus for policies that apply to all ECE courses at Clemson.

Textbook:

Class Email
I will use an auto-generated course email list and Canvas announcements to communicate with the class. You should check both your email and Canvas daily, since important information and reminders will be delivered this way.

The auto-generated email listserv will use your clemson.edu address. Please make sure that your email is properly configured at http://ccitutil.sites.clemson.edu/email_forwarding to deliver to the email account you wish to use. (By default, email should be sent to your g.clemson.edu address. Using the link above, you can also have email forwarded to other addresses, including non-Clemson addresses.) If you have any trouble receiving email, let the instructor know AND contact CCIT http://www.clemson.edu/ccit/help_support/ for assistance.

Canvas
Canvas (http://www.clemson.edu/canvas/) is an electronic course management system that will be used to post major announcements, video lecture links, class notes, assignments, homework clarifications and hints, supplemental readings, links to other resources, grades, and so on. Canvas will also be used to collect homework assignments and submit exam answers. Canvas Discussion Boards will be used to post hints about homework problems and can be used to discuss homework problems and course concepts with other students in the course.

Calculator
For this course you will need a calculator that is capable of performing matrix operations with both complex numbers and symbolic quantities and of performing partial fraction expansion. Both the TI-89 Titanium and the TI-Nspire CX CAS support all these features. (The TI-84 does not easily support matrices of complex numbers or symbolic computation. The TI-Nspire CX, without the “CAS”, does not support symbolic computation.) A cell phone or tablet may NOT be used as a calculator on exams. Please note that before each exam, the memory on your calculator must be cleared and checked by your proctor. A short comparison of calculators, calculator tutorial materials, and complex number calculator exercises are available on Canvas. It is your responsibility to learn how to use your calculator!
Course Description
The goals for this course are to provide the student with an understanding of, and a proficiency in the analysis of, electrical circuits containing both active and passive components under both steady-state and dynamic (time-varying) conditions. These goals will be accomplished by studying and applying the topics found in the topical outline below.

ECE 2620 is a “core” (fundamental, essential) course for all electrical and computer engineering majors. It is the second of two courses on basic electrical circuit analysis, the first course being ECE 2020 –Electric Circuits I. These two courses are among the most fundamental and important courses you will take in the ECE curriculum. Many future courses, both lecture and laboratory, are built on this material. Success in the junior level coursework requires mastery of this material, not only solving circuit problems but also understanding why the methods work and when they should be applied. Mastering the material will require study of the text and class notes, participation in discussions, and especially diligent practice of the homework problems.

Topical Outline
1. Sinusoidal Steady-State Circuit Analysis (9 hours)
2. Sinusoidal Power Calculation (6 hours)
3. Introduction to Three-Phase Networks (3 hours)
4. Laplace Transforms (6 hours)
5. Laplace-Domain Circuit Analysis (6 hours)
6. Frequency-Selective Circuits (Filters) (4 hours)
7. Two-Port Circuits (2 hours)
8. Ideal Op Amps (2 hours)
9. Tests (3 hours)

Online Course Procedures
ECE-2020 is an online course this summer
• You will interact with the content, instructor, and classmates in some way every weekday through a combination of videos, homework assignments, and discussion boards as indicated in the syllabus.
• All materials, except for the textbook, will be provided through the university’s learning management system, Canvas.
• See the “Proctored Exams” section below for further information on proctors.
• Several mandatory forms will be collected, including the Student Information Form and the Proctor Approval Form. Failure to accurately and truthfully complete and submit these forms may result in being dropped from the course or receiving an F in the course.
• In addition to the discussion boards, the instructor will be available through email, phone, and video conferencing. Details on how to arrange contact will be posted in the syllabus tab on Canvas.
• A Topical Outline and Schedule, available on Canvas, will list content coverage for each day, including the dates of the three exams and the final exam. This schedule will hopefully help you with time management, which is crucial for the summer session version of this course.
• Please note that by department policy, Clemson University ECE courses are intended for students living within three time zones of Clemson University (±3 hours). All posted times, e.g. for homework submission deadlines, exam times, etc., will be provided in local time for Clemson University, i.e. Eastern Daylight Time. The student is responsible for translating the posted times into the corresponding times in the local time zone.
Grading

Grading will be based on a weighted average of the homework, three midterm exams, and a final exam. The expected weights and grade boundaries are:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight (%)</th>
<th>Grade Boundaries</th>
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</thead>
<tbody>
<tr>
<td>Homework</td>
<td>10%</td>
<td>A 90% - 100%</td>
</tr>
<tr>
<td>Midterm Exams</td>
<td>55%</td>
<td>B 80% - 89%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>35%</td>
<td>C 70% - 79%</td>
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<tr>
<td></td>
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<td>D 60% - 69%</td>
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<tr>
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<td></td>
<td>F 0% - 59%</td>
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</tbody>
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Further details on calculation of the Midterm Exams grade and Homework grade are provided below.

Exams

- There will be three midterm exams and a final exam. Due to the compressed schedule during Summer II Session, there will be an exam about every 8 weekdays. Further information on dates and times is provided in the Proctored Exams section below.
- All exams are closed book and closed notes. You are permitted a handwritten one-page (front and back, 8.5”x11”) note sheet of diagrams and formulas. The note sheet may NOT contain worked problems. The note sheet may contain diagrams and formulas for standard circuits, such as parallel and series combinations of impedances and the standard linear transformer circuit. Your name should be printed in the upper right corner of the note sheet.
- The exam format is multiple choice with answers collected using Canvas. The proctor will provide you with a printed version of the exam which you use to work the problems. After you are finished working the exam, you will transcribe the multiple choice answers from your written exam to Canvas using a laptop or computer. The proctor will ensure that Canvas is the only site visited during answer entry.
- The proctor will collect your formula sheet and worked exam. The formula sheet and exam question sheet may be retrieved from the proctor at 48 hours after the exam time or later.
- For all midterm exams and the final exam, students are permitted 1) writing utensils, 2) a calculator, and 3) note sheet as described above.
- Use of additional materials on exams is strictly forbidden. Absolutely no collaboration is permitted on exams.
- You will be required to clear your calculator memory before each exam.
- If you cannot take an exam at the scheduled time for any reason, the instructor should be notified in advance if possible, otherwise at least on the day of the exam. Except under very unusual circumstances, no makeup will be given without appropriate notification. For an excused absence, the missed midterm grade will be replaced by the grade on the final exam.
- The Midterm Exams portion of the final grade will be computed as a weighted average of the midterm exam scores. The highest midterm percentage score will be weighted by 5/12, the middle score by 4/12, and the lowest score by 3/12. Note that Canvas is used to post grades, but does not support this weighting. The midterm average will be calculated off-line and uploaded to Canvas.

Proctored Exams

- The dates and times for the midterms and final will be posted on Canvas. Midterms and the final MUST be taken at the specified dates and times. All times are Eastern Daylight Time, the local time zone for Clemson University.
- To maintain integrity, exams must be taken either (i) on campus at Clemson University in a common exam room arranged by the instructor or (ii) remotely with a physically present proctor arranged by the student.
• Students who live or work within 50 miles of Clemson University are required to take exams on campus.
• Students taking the exam remotely must make arrangements to take the exam with an approved proctor. The instructor will make the final decision on whether a proctor is acceptable.
  o Camera-based video proctoring services are not allowed.
  o Testing centers at accredited universities or colleges are the preferred source of proctors. Private testing centers are not allowed. Many students find community college testing centers especially convenient. Any fees associated with proctoring are the student’s responsibility.
  o If you are participating in a coop assignment or technical internship, i.e. a job connected to your engineering studies, then a work supervisor or HR representative may serve as a proctor.
  o Under special circumstances, alternative sources for proctors may be considered. If you believe your circumstances merit an alternative source of proctor, please contact the instructor as soon as possible via email to explain your case.
  o Further information about proctors and the approval process is provided in the Proctor Approval/Agreement Form, available on Canvas.

**Homework**

Homework provides the *necessary practice* for mastering the concepts of the course. An important component of homework is learning how to start previously unseen problems given the concepts you have seen in class (as opposed to just using an example problem as a problem-solving “template”). Developing this skill will prepare you not only for exams in this course but also for subsequent courses that build on Circuits II material.

• Homework problems will be assigned and collected for credit via Canvas.
• Homework assignments:
  o Are assigned daily and focused on that day’s video(s). (Homework will post to Canvas a few days before it is officially assigned.)
  o Are typically due a few days after they are assigned.
  o Must be prepared and submitted in accordance with the “ECE2620 Homework Submission Guidelines” document posted in the Syllabus tab on Canvas.
  o Multiple assignments will be open simultaneously. Be careful to submit the correct problems to the correct submission location!
• You should attempt every problem on your own. You are encouraged to discuss homework with your peers, in person or on the discussion boards, but you should start and finish problems yourself. All submitted work must be completed by you individually.
• Homework answers (not solutions, just the numeric answers) will be posted a few days before the assignment is due.
• Hints and tips for working selected homework problems will be posted on the Canvas Discussion Boards.
• Any resources other than the provided course materials used while solving homework must be properly cited (including solutions).
• Homework Grading
  o Homework problems and subproblems are graded out of 4 points according to the following scale: 0 – no answer, 2 – several major and minor errors, 3 – major error or several minor errors, 4 – correct or minor error.
• Late homework will be penalized 25% per 12 hour period after the Homework Deadline.
• The Homework grade used to calculate the course grade is computed as the average of the percentage scores on homework assignments, i.e. each assignment is weighted equally.
• There will be approximately 20 homework assignments. **Failing to submit 6 or more homework assignments will result in an automatic F in the course.**
Study and Exam Preparation Tips

- Videos: Annotate a printed copy of the notes or take your own notes. Be sure to capture the thought process for examples in writing.
- Immediately after videos: Briefly review notes to reinforce high level concepts and problem solving approaches. Review any calculations or derivations that remain confusing or that went by too fast.
- Homework:
  - Review assigned problems immediately after watching the corresponding video to identify what you know how to do directly and what you are still unsure of. Thinking, actively or even passively, about the problems will improve learning and make the homework easier.
  - To keep on track in the course, watch videos on the day they are assigned, start the corresponding homework that day, and try to complete the homework by the day after (rather than by the due date which might be a few days later). This will ensure that you have time to ask questions about material and to study for exams.
  - If at all possible, draft rough solutions to the problems as you work on them, and then write up neat solutions for submission. In writing up the neat version, you may identify better solution methods, improve the efficiency of calculations, etc. Neat solutions (written by you) are an excellent resource for exam preparation.
- Exams:
  - Sample exams (and answers) from previous semesters will be posted on Canvas.
  - Performing well on exams requires both a solid grasp of the concepts and the ability to perform calculations correctly and efficiently. Use the sample exams to assess your preparedness, NOT to learn the material in the first place. Take the sample exams under conditions similar to the actual midterm, i.e. timed with access to just a note sheet and calculator.
  - Recommended study process: First, review the notes, textbook, and homework. Make a note sheet, and then take a timed sample exam. Review your performance on the sample exam to identify information missing from your note sheet, areas for further study, and computations which need to be done more efficiently. Repeat the cycle.
  - Exams are graded on the basis of multiple choice answers, but I generally find that students who write clear, logical solutions tend to score better. This is likely because it is easier to track down mistakes when the important problem solving steps have been written down.

Academic Integrity

See the ECE Common Course Syllabus for general policies related to academic integrity. The additional guidelines below are specific to this course.

Collaboration between students on homework assignments is allowed under the guidelines presented above. Keep in mind that the exams will draw from the material covered in the homework, thus it is advantageous for each student to understand every homework assignment. Absolutely no collaboration is permitted on exams.

Note: Use of stored equations or other course material in a calculator during an exam is a violation of academic integrity.

Access Accommodations

See the ECE Common Course Syllabus for general policies related to access accommodations. The additional guidelines below are specific to this course.

Please submit accommodation letters for ECE2620 as soon as possible. In order to receive accommodations on an exam, an accommodations letter must be received by the instructor at least 5 days before the exam date.