Clemson University  
Department of Electrical and Computer Engineering  
ECE 2070  
Basic Electrical Engineering  
Summer Semester II, 2016  

Professor: Dr. Apoorva Kapadia  
Office: 307 Fluor Daniel Engineering Innovation Building  
Phone: (864) 656-3946  
E-mail: akapadi@clemson.edu  
Course website: http://akapadi.people.clemson.edu/ece2070/  
Your Blackboard account can be accessed at bb.clemson.edu  

Prerequisites: MATH 2060 and PHYS 2210 with a grade of C or better.

Goals of the Course:  
The goal of this course is to provide non-Electrical Engineering majors with understanding of a few of the major topics within electrical engineering that you might need in your future career. The knowledge you acquire should enable you to then teach yourself or intelligently converse and interact with EE’s on projects in the future. This class is an overview of the basics of electrical engineering including DC and AC circuit theory, AC power distribution, and numerous electrical devices, apparatus, and digital systems.

Class Meeting Times: No assigned classroom time. Students watch the online lectures via the Blackboard interface on their own schedule.

Note About Summer Classes and Your Schedule:  
Be certain that you understand that a summer class contains the same material as a regular semester class but the amount of time is reduced from 15 weeks to 5 weeks. For a 2 credit hour class that means there are now 6 lecture hours per week. Assume that there are 3 additional hours associated with every lecture hour, that means you should budget $6 \times (1+3) = 24$ hours of your time every week for this class.  
Warning: the class is scheduled to proceed at a rapid pace, do not get complacent between tests!

Office Hours:  
The instructor will be available during most normal business hours to address any questions (9-5 M-F). Communication via email is usually most efficient for simple questions. Online sessions will be scheduled by email for more complicated questions through the Adobe Breeze server (https://connect.clemson.edu/ece2070/). All students can access these meetings through a website using a browser-based interface.

All that said, if you have a problem, contact the instructor! I want you to succeed in this course.

Attendance:  
Students will access all course materials, including tests and lectures, through the Blackboard software. No on-site attendance is required. Students are responsible for all material covered and all assignments given in every lecture. Some lectures may cover material not found in the textbook. It is the responsibility of each student to follow the schedule.

Important Administrative Dates:  
June 24 Wednesday Classes Begin  
June 29 Monday Last day to drop a class or withdraw from the University without a W grade  
July 13 Monday Last day for instructors to issue midterm evaluations  
July 17 Friday Last day to drop a class or withdraw from the University without final grades  
July 31 Friday Final Exam (on-campus testing option 5-7:30pm)

Text (required):  
As an alternative to the hardcopy, a cheaper electronic version of select chapters (the ones we need) from the textbook is available from McGraw Hill Create (www.mcgrawhillcreate.com/shop) using ISBN 9781121223257.

Distribution of Course Materials:  
All material will be distributed electronically via Blackboard. All students must have a Blackboard account (bb.clemson.edu). Non-Clemson students should have a computer account and password and access to Blackboard.
Testing Procedures:
Students may test on campus or remotely with a proctor. The tests will be made available on the specified day, known well in advance, on the web through Blackboard. You must take the test on that day (8:00AM-8:00pm) and will generally have 1 hour to complete the test from the time you start. You will need internet access to take the tests. Be prepared for this. There will be no makeup tests.

The only excuse for missing a test deadline will be in the event of true, documentable personal emergencies (i.e. hospitalization, death in the family, etc.). If such a circumstance arises, you must let me know immediately. Otherwise, a grade of zero will result from a missed or past-the-deadline test. If you have a bonafide conflict with a scheduled test, please let me know far in advance, and we can work out an alternative. The exams are offered in two possible ways:

1. We will offer a traditional exam time on the Clemson campus at 5:00-6:00 pm on the day of the test. A proctor will be supplied and you must bring your laptop to class and take the test through Blackboard. No electrical outlets are available so make certain that your laptop is fully charged.

2. You supply a Proctor at your location. The proctor will be someone in a position of authority: supervisor at work, teacher or professor, librarian, etc. This person cannot be your parent, spouse, or sibling, or other immediate family member. The proctor will be required to have email access. They will supervise you while you take the exam. The proctor will sign a statement stating that they personally supervised your examination and that all rules were followed. You must complete a proctor form available on the website.

You must administer your own time limits. You have 1 hour to complete the tests. You must stop at this time or you will be penalized. The timer will indicate that your time has expired, it is your responsibility to track the time and stop. A 2 point penalty will be assessed after each minute you have gone beyond the allotted time:

- <1 minute no penalty
- 1-2 minutes -2 pts
- 2-3 minutes -4 pts
- 3-4 minutes -6 pts
- Penalty continues to escalate

Generally, computer problems are not excusable; the Blackboard system is very reliable and documents your actions.

Testing:
The test dates are shown in the schedule.

Formula Sheets and Calculators on Tests:
You can create your own formula sheets. For each test you may add an additional front side of an 8 ½”x11” paper. That is, for Test 1 you have 1 page, Test 2 = 2 pages, etc. You may use any calculator of your choice and it is recommended that you have one that can perform complex matrix operations, e.g., TI 89. No other electronic devices including cell phones, iPods, etc. are allowed during tests.

Grading:
Final grades will be assigned according to weighted overall performance where each student’s work will be weighted according to the schedule:

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Tests:</td>
<td>16%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

The final exam will be cumulative. We keep building on the same ideas all semester. You will be given the option to replace your single lowest test score with your score on the final exam (but not vice versa). That allows you to have one bad test (or miss a test) assuming that you do well on the final exam. A final grade will be assigned based on the scale

<table>
<thead>
<tr>
<th>Score Range</th>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
<td>(student has demonstrated exceptional understanding of the material)</td>
</tr>
<tr>
<td>80-90</td>
<td>B</td>
<td>(student has demonstrated mastery of the material)</td>
</tr>
<tr>
<td>70-80</td>
<td>C</td>
<td>(demonstrated competency with the material)</td>
</tr>
<tr>
<td>60-70</td>
<td>D</td>
<td>(student has demonstrated minimal understanding of the material)</td>
</tr>
<tr>
<td>&lt;60</td>
<td>F</td>
<td></td>
</tr>
</tbody>
</table>

Any assignment or test missed will be given a grade of zero and there is no policy of dropping the lowest grades.

Academic Integrity:
No cheating will be tolerated. Collaboration on homework assignments is acceptable as long as it is a shared effort. The official statement on Academic Integrity is as follows:

“As members of the Clemson University community, we have inherited Thomas Green Clemson’s vision of this institution as a ‘high seminary of learning.’ Fundamental to this vision is a mutual commitment to truthfulness, honor, and responsibility, without which we cannot earn the trust and respect of others. Furthermore, we recognize that academic dishonesty distracts from the value of a Clemson degree. Therefore, we shall not tolerate lying, cheating, or stealing in any form.”
Students with Disabilities:
“It is University policy to provide, on a flexible and individualized basis, reasonable accommodations to students who have disabilities. Students are encouraged to contact Student Disability Services to discuss their individual needs for accommodation.” In order to obtain accommodations, the student must notify the instructor at least one week before any exam for which accommodations are needed.

Title IX:
Clemson University is committed to a policy of equal opportunity for all persons and does not discriminate on the basis of race, color, religion, sex, sexual orientation, gender, pregnancy, national origin, age, disability, veteran’s status, genetic information or protected activity (e.g., opposition to prohibited discrimination or participation in any complaint process, etc.) in employment, educational programs and activities, admissions and financial aid. This includes a prohibition against sexual harassment and sexual violence as mandated by Title IX of the Education Amendments of 1972. This policy is located at http://www.clemson.edu/campus-life/campus-services/access/title-ix/. Mr. Jerry Knighton is the Clemson University Title IX Coordinator. He also is the Director of Access and Equity. His office is located at 111 Holtzendorff Hall, 864.656.3181 (voice) or 864.565.0899 (TDD).

Tentative Course Outline:

<table>
<thead>
<tr>
<th>Topics Covered</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Electrical quantities and circuit elements</td>
<td>3</td>
</tr>
<tr>
<td>2. DC circuits, Kirchoff’s laws, network theorems</td>
<td>5</td>
</tr>
<tr>
<td>3. AC circuit analysis</td>
<td>4</td>
</tr>
<tr>
<td>4. Steady-state AC circuits, reactive power, polyphase</td>
<td>3</td>
</tr>
<tr>
<td>5. Ideal transformers</td>
<td>1</td>
</tr>
<tr>
<td>6. AC and DC motors</td>
<td>1</td>
</tr>
<tr>
<td>7. Signal processing circuits, op-amps, rectifiers</td>
<td>3</td>
</tr>
<tr>
<td>8. Logic devices and digital circuits and methods</td>
<td>3</td>
</tr>
<tr>
<td>9. Tests</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total Hours:</strong></td>
<td><strong>28</strong></td>
</tr>
</tbody>
</table>

Updated 5/7/2015