

**EEL 3112**  
**Advanced Circuits with Computers**  
Fall 2019

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**Instructor:** Dr. Charalambos (Harrys) Konstantinou, Office: B371, E-mail: [konstantinou@eng.famu.fsu.edu](mailto:konstantinou@eng.famu.fsu.edu)

**Class Schedule:** 08:00 - 9:15 am, Monday and Wednesday (3 credit hours) Room: COE B135

**Course Textbook:** Basic Engineering Circuit Analysis, 11th Edition ISBN: 9781118539293, J. David Irwin and R. Mark Nelms (required)

**Office Hours:** 9:15am to 10:45am on Monday and Wednesday (or by appointment) at B371

**Course Objectives:**

After completing the course the student will be able to:

1. Calculate the average power absorbed by an element in an AC circuit.
2. Identify the relationships between the phase voltages, line voltages, the phase currents, and the line currents of a three-phase circuit.
3. Calculate average power absorbed by a balanced three-phase load.
4. Derive the transient response of a first-order circuit and of a second-order circuit.
5. Plot the transient response of an RLC circuit with a SPICE-based program.
6. Identify the characteristics of an ideal transformer.
7. Introduce the characteristics of a two-port network using two-port parameters.
8. Derive the transfer function of a RLC circuit.
9. Construct the Bode plots for a given transfer function.
10. Plot the frequency response of an RLC circuit with a SPICE-based program.

**Topics Covered:**

1. Review of AC steady-state circuit analysis
2. Steady-state power analysis
3. Transient and forced response of RL, RC and RLC circuits
4. 3-phase AC circuits with an introduction to transformers
5. Frequency response of linear circuits
6. Circuit simulation using computers (PSPICE or Matlab)
7. Introduction to two-port networks

**ABET Student Outcomes:** H (The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.). The assessment tool is a research paper on a contemporary topic related to global and societal problems and how the advancements in electrical and computer engineering are helping in solving these problems.

**Academic Honor Code statement:**

Students are bound by their university's Academic Honor Code and are subject to sanctions if they are found in violation of the Code. Possible sanctions include but are not limited to: (1) a failing grade on an exam or assignment, (2) a failing grade in the course, (3) dismissal from the academic program, or (4) dismissal from the university.

**Americans with Disabilities Act:**

Students with disabilities needing academic accommodation should:

(1) Register with and provide documentation to the appropriate university office. For FAMU students, this is the Learning Development and Evaluation Center (LEDC). For FSU students this is the Student Disability Resource Center (SDRC); and

(2) Bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

### **Grading System:**

Final grade depends on

1. **HW:** Weightage 10 %. Several homework assignments will be given throughout the semester. The homework is due before the class on the due date. Late assignments are not accepted.
2. **Quizzes:** Weightage 10 %. Quizzes will be announced one class in advance.
3. **Research Report:** Weightage 10 %
4. **3 Tests:** Weightage 70% (2 midterm tests 25% each and a final 20%)

### **Grading Scale:**

A = 90 ~ 100

B = 80 ~ 89

C = 70 ~ 79

D = 60 ~ 69

F = < 60

### **Missed Assignments or Tests:**

If you miss a test without either a certified medical excuse or prior instructor approval, a zero will be averaged into your grade. Tests missed with certified medical excuse or prior instructor approval will be dealt with individually. In the majority of cases, a make-up test will not be given, but the final exam weight will be adjusted to account for the missed test. If you miss the final exam without a valid departmental excuse, a zero will be averaged into your grade.

### **Grade Disputes:**

Disputes in grading of homework, quizzes, and tests must be made within one week after the graded work has been returned to the student. The student will have the burden of proof to show why her/his solution method is correct.

### **Attendance:**

First day attendance is mandatory for FSU students, and first week attendance is mandatory for FAMU students. Students not in class during the first day (FSU) or first week (FAMU) should be dropped from the course. This is a Title IV requirement involving federal financial aid. However, a student dropped from the course **may** re-register for it.

### **Miscellaneous:**

1. Out of courtesy to the instructor and fellow classmates cell phones are to be muted during class. There will be no answering of cell phone, conversations on cell phones, or text messaging during class.
2. Use of profanity, ethnic, racial, or sexual remarks in my class will not be tolerated and will result in a reduction in your grade.

### **Syllabus Change:**

Except for changes that substantially affect implementation of the grading policy or grading scale, this syllabus is a guide for the course and is subject to change with advance notice.