Department of Electrical and Electronic Engineering, California State University, Sacramento

***EEE 117 Network Analysis****, 3 units*
Spring 2019, Section 1, Call No. 32570, Mon/Wed 11:00 – 11:50 A.M. Amador Hall, Room 152
Fri Web Online – individual preparation

**Course Content:** Review of Sinusoidal steady state, phasors, complex power, three phase power, mutual inductance, series and parallel resonance. Introduction to application of Laplace transforms in network analysis, transfer functions, Bode plots, Fourier series.

**Prerequisite:** Engr 17 – Introductory Circuit Analysis,
EEE 64 - Introduction to Logic Design (EEE 64 may be taken concurrently)

**Corequisite:** EEE 117 Lab (EEE 117L)

**Textbook:** ***Electric Circuits***, Nilsson and Riedel, 10th Edition, 2014, Prentice Hall,
ISBN: 978-0133760033

**Instructor:** Russ Tatro Office: Riverside 5030
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Office Hours: See my website for current office hours.

**Grading:**

| | |
|---|---|
| Midterm I | 15% |
| Midterm II | 15% |
| Final Exam | 20% |
| Homework | 30% |
| Quizzes | 20% |

**Course Goals**: Introduce the fundamental tools of linear circuit analysis which is useful to all engineers. Develop the fundamentals of circuits, including wires, resistors, capacitors, inductors, voltage and current sources, and operational amplifiers. Prepare students for more advanced courses in electronic applications and circuit analysis.

**Hybrid Course**: This course will be offered in a hybrid format with both in classroom sessions and online events. We will meet in the classroom on Monday and Wednesday. The Friday time is dedicated self-paced online material includes pre-recorded videos, outside class reading assignments and other online sessions. All course materials will be available on the ECS Moodle: https://moodle2.ecs.csus.edu/login/index.php. You will be able to join the "EEE 117" site on Moodle during the first week of the semester.

**Homework:** Homework assignments will be completed online using ECS Moodle activities in the course Moodle site. There is a homework every week and each chapter will have at least one homework assignment. Problems shall either be from the textbook or created by the instructor. Most assignments are released Monday mornings at 6 am. Most homework assignments are due on Monday mornings at 5:00 am. All homework material is testable whether covered in class or only in the homework assignment.

**Quizzes:** There will be a quiz each week (except for exam weeks). The quizzes are self-paced online between the hours of 6 am and midnight each Wednesday in the ECS Moodle Quiz activity. The quiz must be completed in one session (no starting nor stopping with a break) in timed one continuous hour.

**Exams:** There will be two midterm exams and a final exam during the semester. The exams are a timed online test completed online using the ECS Moodle Quiz activity as scheduled in the syllabus. The student will use the online access of their choice during the regular class time. Exams are not self-paced and are taken ONLY during the scheduled class time. **Prior written permission** is required for all make-up exams and then only with compelling reasons in accordance with and as outlined by University policy.

**Grading Policy:** The course will be graded in accordance with University guidelines using the "+" and "-" method as called for by the University. Grades may be curved at the instructor's discretion. The class average is usually in the C+ range. Typical (meaning somewhere around this region) grades ranges are:

| | | |
|---|---|---|
| "A" 94.5 and above | "A-" 89.5 to 94.49 | |
| "B+" 87.5 to 89.49 | "B" 83.5 to 87.49 | "B-" 79.5 to 83.49 |
| "C+" 77.5 to 79.49 | "C" 73.5 to 77.49 | "C-" 69.5 to 73.49 |
| "D+" 67.5 to 69.49 | "D" 63.5 to 67.49 | "D-" 59.5 to 63.49 |

F Below 59.5

**ECS Moodle Course sign-up**

1. Obtain valid ECS ID and password if you don't already have one.
2. Your ECS email will be the contact method for the course. So use an email that you monitor frequently.
3. Log onto ECS Moodle: https://moodle2.ecs.csus.edu/
4. Go to "EEE117-2019S-Tatro"
5. Self-enroll into the EEE 117 course by entering the section appropriate code:
   Section 1 – use the code: 32570_Sec-1

# EEE 117 - Section 1 - Course Outline – Spring 2019

| **Week** | Date | Chapter | Topics: |
|---|---|---|---|
| 1 | 1-21<br>1-23<br>1-25 | <br>9.1 – 9.3<br>9.4– 9.5 | **Martin Luther King, Jr. Holiday – Campus Closed**<br>EEE 117 Introduction and Phasor Domain Review<br>Phasor Domain Review |
| 2 | 1-28<br>1-30<br>2-01 | 9.7 – 9.9<br>10.1 – 10.3 | Phasor Domain review<br>Instantaneous, Average Power and rms |
| 3 | 2-04<br>2-06<br>2-08 | 10.4 – 10.6<br>11.1 – 11.2 | Complex Power, Power Calculations, Max Power<br>Balanced Three-Phase |
| 4 | 2-11<br>2-13<br>2-15 | 11.3 – 11.4<br>11.5 – 11.6 | Analysis of Wye-Wye and Wye-Delta<br>AC Power Calculations |
| 5 | 2-18<br>2-20<br>2-22 | 12.1 – 12.2<br>**Exam 1** | Defn of Laplace, Step Function<br>**Chapters 9, 10, 11 – Online 11:00 am to 12:00 pm** |
| 6 | 2-25<br>2-27<br>3-01 | 12.3 – 12.4<br>12.5 | Impulse Function and Functional Transforms<br>Operational Transforms |
| 7 | 3-04<br>3-06<br>3-08 | 12.6<br>12.7 | Applying Transforms<br>Inverse Transforms and PFE |
| 8 | 3-11<br>3-13<br>3-15 | 12.8 – 12.9<br>13.1 | Poles, Zeros, Initial and Final Value Theorems<br>Circuit Elements in the s Domain |
| 9 | 3-18<br>3-20<br>3-22 | | Spring Recess |
| 10 | 3-25<br>3-27<br>3-29 | 13.2 – 13.3<br>13.4 – 13.7 | Applications using s Domain analysis<br>The Transfer Function and Steady State Response |
| 11 | 4-01<br>4-03<br>4-05 | **Exam 2** | **Cesar Chavez Birthday Observed – Campus Closed**<br>**Chapters 12, 13 – Online 11:00 am to 12:00 pm** |
| 12 | 4-08<br>4-10<br>4-12 | Appendix E<br>14.1 – 14.2 | AC Analysis with Bode Diagrams<br>Low-Pass Filter |
| 13 | 4-15<br>4-17<br>4-19 | 14.3<br>14.4 – 14.5 | High-Pass Filter<br>Band-pass Filters & Band-reject Filters |
| 14 | 4-22<br>4-24<br>4-26 | 15.1 – 15.3<br>16.1 – 16.2 | First-Order Active Filter Circuits<br>Fourier Series |
| 15 | 4-29<br>5-01<br>5-03 | 16.3<br>16.4 – 16.7 | Use of symmetry in Fourier Series<br>Alternate Trigonometric Form of the Fourier Series<br>Average and rms value of a Periodic function |
| 16 | 5-06<br>5-08<br>5-10 | | **Bode Diagram – in-class Final Exam Problem**<br>Course wrap-up |
| 17 | 5-14 | **Final Exam** | **Bode Diagrams, Chapters 14, 15 and 16**<br>Monday May 13, 2019 10:15 a.m. – 12:15 p.m. |

# EEE 117 – Quiz, homework, and video assignments

| Week | Date | Online Quiz | Homework | Videos/Lecture Notes |
|---|---|---|---|---|
| 1 | 1-21<br>1-23<br>1-25 | | | Chapter 9 |
| 2 | 1-28<br>1-30<br>2-01 | Q1 – Chapter 9 | H1 - Chapter 9 | Chapter 10 |
| 3 | 2-04<br>2-06<br>2-08 | Q2 - Chapter 9 | H2 - Chapter 9 32625 | Chapter 11 |
| 4 | 2-11<br>2-13<br>2-15 | Q3 – Chapter 10 | H3 – Chap 10 | |
| 5 | 2-18<br>2-20<br>2-22 | **Exam 1** | H4 – Chapter 11 | Chapter 12 |
| 6 | 2-25<br>2-27<br>3-01 | Q4 – Chapter 12 | H5 – Chapter 12 | |
| 7 | 3-04<br>3-06<br>3-08 | Q5 - Chapter 12 | H6 - Chapter 12 | |
| 8 | 3-11<br>3-13<br>3-15 | Q6 - Chapter 12 | H7 - Chapter 12 | Chapter 13 |
| 9 | 3-18<br>3-20<br>3-22 | Spring Recess | | |
| 10 | 3-25<br>3-27<br>3-29 | Q7 - Chapter 13 | H8 – Chapter 12 & 13 | |
| 11 | 4-01<br>4-03<br>4-05 | **Exam 2** | H9 - Chapter 13 | Bode Plots – Appendix E |
| 12 | 4-08<br>4-10<br>4-12 | Q8 – Bode Diagrams | H10 – Bode Diagrams | Chapter 14 |
| 13 | 4-15<br>4-17<br>4-19 | Q9 – Chapter 14 | H11 – Bode Diagrams and Chapter 14 | Chapter 15 |
| 14 | 4-22<br>4-24<br>4-26 | Q10 - Chapter 15 | H12 - Chapters 14 | Chapter 16 |
| 15 | 4-29<br>5-01<br>5-03 | Q11 – Chapter 16 | H13 - Chapters 15 & 16 | |
| 16 | 5-06<br>5-08<br>5-10 | Q12 - Chapter 16 | H14 - Chapters 16 | |
| 17 | 5-14 | **Final Exam** | | |

**ECS Moodle Tips and Hints**

1. The homework is available three weeks prior to the due date. You can "Submit" the homework as many times as you wish with the highest grade counting to your course score. I suggest you start the homework early and bring questions into class. You will NOT be able to see any assignment you did not complete (by submitting the assignment).
2. All quizzes are ONE submission only. The quiz is available every Wednesday from 6 am to 11:59 pm. During the quiz you will be able to "check" your answer. Wrong answers will receive a penalty of about 33% and you will be allowed at least three tries for each part of a problem. The computer will automatically submit your quiz at the end of the 60 minutes allowed for the quiz.
3. All exams are ONE submission only at the scheduled class time. During the exam you will be able to "check" your answer. Wrong answers will receive a penalty of about 33% and you will be allowed up to three tries for each part of a problem. The computer will automatically submit your exam at the end of the 60 minutes allowed for the exam. You must quickly send me your original work for my review if you feel a question was scored incorrectly or incompletely.
4. Periodically review your grade in the Moodle Gradebook. Bring to my attention any error or anomaly as soon as possible.

Entering questions answers into Moodle:
In most cases, you will be entering a number into Moodle as the answer to a calculation.
The following table shows you acceptable and not acceptable forms of an answer.

| Intended Answer | Acceptable alternatives | Non-Acceptable |
|---|---|---|
| 0.5 | .5, 0.5, 0.500, 5e-1, 5E-1 | 1/2, 50%, 10/20, 20/40, …. |
| 10,000 | 10000, 10E3, 10e3 | 10,000 (no comma allowed) |
| -40 | -40, -40.00, -4E1, -4e1 | |
| $\pi$ (pi) | 3.14159 (as many digits as you care to use) | pi |
| Algebraic symbols | I will not ask you to enter equations symbolically into Moodle. | Do not enter common math symbols such as +, -, X, /, ln, e, and so on as an equation.<br>2+2 is not acceptable, enter "4"<br>2-2 is not acceptable, enter "0"<br>And so on. |