

Syllabus for MAE140

Linear Circuits – Winter 2016

February 27, 2016

This is the Syllabus for MAE140 Linear Circuits – Winter 2016. Steady-state and dynamic behavior of linear, lumped-parameter electrical circuits. Kirchoff's laws. RLC circuits. Node and mesh analysis. Operational amplifiers. Signal acquisition and conditioning. Electric motors. Design applications in engineering.

Instructor

Jorge Cortés, `cortes at ucsd.edu`, office at EBUI #1608

Teaching assistants

Rudra Pratap Singh, `rudra.ptp.singh at gmail.com`

Prerequisites

Grades of C- or better in Math 20D, 20F and Phys 2B.

Text

The Analysis and Design of Linear Circuits, 7th Edition, R. E. Thomas, A. J. Rosa and G. J. Toussaint, Wiley 2012. ISBN 1118065581. Available on the Science and Engineering Library Reserves.

Important: there is a custom version of the textbook which will be sold at the UCSD bookstore at a significant discount. It should be in stock in time for the class.

Calendar

The website contains a list of downloadable PDFs with the slides used during the lectures:

Part I

- Introduction (T & R, Chapters 1 & 2)
- Equivalent circuits (T & R, Chapters 2 & 3)
- Systematic circuit analysis (T & R, Chapter 3)
- Active circuits (T & R, Chapter 4)

Part II

- Laplace transform (T & R, Chapter 6 & 9)
- Circuits in the s -domain (T & R, Chapter 6 & 10)
- s -domain circuit analysis and design (T & R, Chapter 10)
- Frequency response and filter design (T & R, Chapter 12 & 14)

It is highly recommended that your reading of the book is one set of slides ahead of what we cover in class.

Exams

The midterm will be on Friday, February 5, 2016, in class.

The final will be on Wednesday, March 16, 2016, 8:00am-11:00am, in York Hall, room 2722.

Homework

There will be a set of homework problems per week taken from the main text. The homework will be collected and returned in class on Wednesdays. Homework assignments are due weekly (specific dates for your reference are included in the webpage). 20% deduction for lateness by one day without reason, else 100%.

Homework MUST be stapled and MUST be written legibly and in logical order. You MUST include your name, your ID #, and the assignment.

You are encouraged to ask questions about homework problems in the discussion section. You are encouraged to work in groups on homework problems but each student MUST turn in homework separately.

To efficiently address questions and answers related to homework, we will use Piazza at <http://piazza.com/ucsd/winter2016/mae140>

Grading policy

The overall grade will be the **maximum** between

Grade 1: Final exam: 100%

Grade 2: Homework: 20%, Midterm: 30%, Final exam: 50%

Even if you count on getting the overall grade with option 1, you should still turn in all your homework. Past experiences reveal that it is nearly impossible to get a good grade in the final without having first done the homework.

Official solutions to the midterms and final exams will be posted online.

TritonEd

Your grades will be available via TritonEd. Check out <http://tritoned.ucsd.edu> for instructions on how to register and log in. Please check TritonEd regularly to make sure your homework scores are being transcribed correctly.

Academic honesty

No form of academic dishonesty will be tolerated. We take this very seriously. For the definition of academic dishonesty and its (ominous) consequences, refer to the UCSD General Catalogue 2015-2016 at <http://www.ucsd.edu/catalog/>

Room location and hours

Lectures take place at Center Hall (Map Building 984), room 105, Mondays, Wednesdays, and Fridays, from 9:00am to 9:50am.

Discussion sections take place at Center Hall (Map Building 984), room 212, Mondays, from 12:00pm to 12:50pm.

Office hours

Instructor: Mondays, from 3:30pm to 4:30pm, at EBUII, room 105

Teaching assistant: Tuesdays, from 12:30pm to 1:30pm, at EBUII, room 305

Course webpage

<http://carmenere.ucsd.edu/jorge/teaching/mae140/w16>

The webpage contains this syllabus and the list of homework due. Please check it periodically for updates and other announcements related to the course.