Middle East Technical University
EE 281 Electrical Circuits - Fall 2020

Course Content:

Circuit laws and basic elements. Resistive circuits, analysis methods. Network theorems. First order and second order circuits. Sinusoidal steady-state analysis.

Instructors:

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Course Organization:

This semester, as in all university courses, EE281 course's organization will be based on distance and online education principles, including all of the exams, course sessions, and lab work.

In this course, we follow a hybrid (asynchronous and synchronous) lecturing strategy for teaching the technical content of the course.

Each week, we will share pre-recorded video lectures (via METU-class page of the course) which will cover the main content of the course for the associated week. Also, in some weeks, we will offer interactive sessions. In some of the online meetings, we (instructors) will organize question & answer sessions. Course TAs could offer online tutorials (e.g., computational tools) or interactive recitations hours in other sessions.

Online Schedule:

All Sections: Tuesday 15:40-17:30, Thursday 15:40-16:30

Textbook:

Electric Circuits, 8th Ed. James W. Nilsson, Susan A. Riedel, Prentice Hall, 2008.

Web resources:

- Announcements, homeworks, resources and grades will be posted on METU-Class.
- EE 281 Laboratory page: http://ee281.eee.metu.edu.tr/
- O. Keysan, Lecture Notes on Electrical Circuits (EE281), METU: http://keysan.me/ee281/
- M. M. Ankarali, Open Source Lecture Notes on Electrical Circuits (EE209), METU: https://github.com/mertankarali/Lecture-Notes/tree/master/METU-EE209

Reference books:

- Introduction to Electrical Circuit Analysis, Özgür Ergül, John Wiley and Sons Ltd, 2017.
- Fundamentals of Electric Circuits, C. K. Alexander and M. N. O. Sadiku, McGraw-Hill, 2013.

Grading:

- 5 Midterm Examinations: 50%
- Final Examination: 30%
- Laboratory Work: 20%

Midterms & Final Exam:

- We will proctor all midterms and the final exam via the METUclass page of the course.

- In exams, we will be monitoring you via a video conference system. Your camera and microphone should be open during the defined time frames of the quizzes.

- In each exam, we will define separate online quizzes for each question. Each question will have a different time slot, and you will have to submit your answer before the time limit for the corresponding question ends. Once you submit your answer to a question, you will not have access to that quiz question anymore. The system will not allow you to go back to a previous question.

Laboratory Work:

Unfortunately, this semester you won't be able to work in the circuit laboratory physically. Instead of physical laboratory works, your lab studies will be mainly composed of simulations and lab demonstrations. Similar to previous years, there will be 6 "experiments". For each experiment

- You will perform some simulations and submit a lab report based on these simulations. We will provide the details of the simulation environment later. We are also planning to offer an online tutorial regarding the simulation framework.

- After you submit your simulation report, TA(s) will organize an online physical lab demonstration. After the demo, you will submit a report and/or a video assignment based on the content in the lab demos.

Course Outline (with corresponding Nilsson & Riedel Chapters):

1) Basic Concepts (Ch. 1)
2) Basic Laws (Ch. 2)
3) Resistive Circuits (Ch. 3)
4) Methods of Analysis (Ch. 4)
5) Circuit Theorems (Ch. 4)
6) Operational Amplifiers (Ch. 5)
7) Capacitors and Inductors (Ch.6 up to 6.5)
8) First Order Circuits (Ch. 7)
9) Second Order Circuits (Ch. 8)
10) Phasors and Sinusoids (Ch. 9)

Tentative Lab & Midterm Distribution

Week	Date	Lab Simulation/Demo	MT
1	12-16 Oct		
2	19-23 Oct	**L1**	
3	26-30 Oct		**MT1**
4	2-6 Nov	**L2**	
5	9-13 Nov		**MT2**
6	16-20 Nov	**L3**	
7	23-27 Nov		**MT3**
8	30 Nov - 4 Dec	**L4**	
9	7-11 Dec		**MT4**
10	14-18 Dec		
11	21-25 Dec	**L5**	
12	28 Dec - 1 Jan		**MT5**
13	4-8 Jan	**L6**	
14	11-15 Jan		