

Middle East Technical University

EE 281 Electrical Circuits - Fall 2021

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, EE281 course's organization will be based on hybrid education methodology. In that sense, we will adopt both distance/online and onsite education principles. Specifically, theoretical course sessions, midterm examinations, and recitation hours will be conducted online, whereas lab works, and final exams will be on site.

In this course, we will 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 these online interactive sessions, we (instructors and/or TAs) will organize question & answer sessions, interactive recitations hours etc.

Online Schedule:

All Sections: Monday 9:40-11:30, Wednesday 9:40-10:30

Textbook:

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

Web resources:

- Announcements, 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. Ankaralı, 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:

- 3 Midterm Examinations: 45%
- Final Examination: 35%
- Laboratory Work: 20% (In order to get a passing grade from the course each student must attend and submit all of the available lab work)

Midterms:

- We will proctor all midterms 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.

Final Exam:

- We will proctor the final exam on site in Campus. The date and location of the exam will be announced towards the end of the semester

Laboratory Work:

One of the core parts of this course is the laboratory work. Which helps you materialize the theoretical concepts and learn the important measurement and practical skills.

Unfortunately, last semester we could not conduct the lab work in the circuit laboratory physically. This semester we intend to do some labs work physically, however due to still persistence pandemic it is not healthy to perform the labs as we do in the past.

Normally, the course has 6 separate experiments. This semester we will reduce it to 3 experiments such that we can satisfy COVID regulations and a relatively healthy lab environment.

Please note that your cooperation will be very critical during the lab sessions, I hope that everybody will be responsible and act accordingly.

For this purpose, please note that responsibilities against the pandemic will be observed very carefully in the lab. Do not forget to bring your masks to the lab. Also, in the lab environment please try to achieve the maximum performance of keeping the social distance. We might check your HES codes as well. During the semester let us know if you feel sick or stay in contact with someone who has tested positive. We will try our best to propose you a suitable time for a make-up lab in case of such situations.

A tentative lab schedule will be shared with you in coming days/weeks.

Course Outline (with corresponding Nilsson & Riedel Chapters):

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