

SABANCI UNIVERSITY

Faculty of Engineering & Natural Sciences

ENS203 – Electronic Circuits I

Summer 2021/2022 Syllabus

Instructor

Ömer Ceylan

omer.ceylan@sabanciuniv.edu

Office Hours: Thursday 13:40-14:30

Teaching Assistant

Selim Ahmet İz

izselim@sabanciuniv.edu

Office Hours: Monday 19:40-20:30

<https://sabanciuniv.zoom.us/j/8429469355?pwd=MG1jL3FjTjBWcFFSWXROamJESGc4UT09>

Class Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
<p>ENS 203R-A 30109 Class 8:40 am-11:30 am FENS L067</p>				<p>ENS 203-0 30108 Class 8:40 am-11:30 am FENS L029</p>
<p>ENS 203R-B 30110 Class 11:40 am-2:30 pm FENS L065</p>				
			<p>ENS 203-0 30108 Class 2:40 pm-5:30 pm FENS L029</p>	

Textbook: Allan R. Hambley. Electrical Engineering: Principles & Applications.

Course Content: Basic Circuit Analysis using Kirchhoff's voltage and current (KVL & KCL) laws, Thevenin and Norton Equivalent Circuits, Passive components, First-order RL and RC circuits, Second-order RLC circuits, Phasors, Frequency response, Bode plot, Series and parallel resonance, operational amplifiers and their applications, active filters, diodes, wave shaping circuits.

Learning Outcomes:

- To apply basic principles of circuit design through KVL and KCL circuit laws to any circuits problem.
- To apply node voltage and/or mesh current analysis methods to analyze circuits.
- To learn the concepts of Thevenin and Norton Equivalent Circuits and apply these to simplify complex circuits.
- To be familiar with first order differential equations and solving first order circuits such as RC and RL circuits.
- Understand sinusoidal steady state analysis, phasors and apply these concepts to analyze first and second-order circuits.
- To learn the concepts of frequency response and bode plot, and apply these concepts to sinusoidal circuits
- To learn the concept of amplification, be able to design operational amplifier based circuits.
- To learn the concept of diodes and apply this knowledge to design wave shaping circuits.

Tentative Course Schedule:

Date	Subjects
Week 1 (21-22 July)	Introduction, KCL, KVL, Series / Parallel Resistive Circuits, Voltage and Current Dividers
Week 2 (28-29 July)	Node Voltage Analysis, Mesh Current Analysis, Thevenin and Norton Equivalent Circuits, Superposition
Week 3 (4-5 August)	Capacitors, Inductors, First-order RC / RL Circuits, Steady State, Second-order Circuits (RLC Circuits), Series RLC, Parallel RLC
August 11	Midterm 1
Week 4 (August 12)	Phasors, Frequency Response, Transfer Function
Week 5 (18-19 August)	Bode Plot, First-order Filters, Series Resonance, Parallel Resonance, Second-order Filters
August 25	Midterm 2
Week 6 (August 26)	Amplifiers, Instrumentation Amplifier
Week 7 (1-2 September)	Integrator, Differentiator, Active Filters, Diodes, Wave Shaping Circuits

Course Policies:

- Attendance is extremely important. Attendance will be graded. Missing each 3 days of lectures will result in 1% reduction out of 100 in your final total grade.
- Cheating will not be tolerated.
- For homework no late submission is accepted.
- Only selected questions will be graded for the homework. Selection of the questions will happen after the homework deadline. Policy will be announced with each homework.
- There will be random quizzes during the lectures and recitations. Their date will not be announced. So, you need to attend all lectures and recitations not to miss any points from quizzes.

Grading Policy:

Midterm 1	25%
Midterm 2	25%
Quizzes	10%
Homeworks	5%
Final	35%
Every three-day absence in lectures	-1%

Important Notes:

- In case of an online or hybrid education, your webcam and microphone should be on during the exams. In the case of non-compliance with this and other declared exam procedures, your exam will be void. Make sure to check that your webcam and microphone function properly before the exam.
- You may be given an oral exam to check the authenticity of the written exam by going through the questions of the written exam.
- You must attend the synchronous Zoom lectures, recitations, etc. and real-time online exams with your SU email account in case of an online or hybrid education.