

SABANCI UNIVERSITY
Faculty of Engineering & Natural Sciences
ENS203 – Electronic Circuits I
Summer 2020/2021 Syllabus

Instructor

Ömer Ceylan

omer.ceylan@sabanciuniv.edu

Office Hours: Thursday 14:40-15:30

Teaching Assistant

Abdurrahman Burak

abdurrahman.burak@sabanciuniv.edu

Office Hours: Wednesday 14:40-15:30

Zoom Link: <https://sabanciuniv.zoom.us/j/9757380583>

Zoom Meeting ID: 975 738 0583

Class Schedule

Monday	Tuesday	Wednesday	Thursday	Friday
		ENS 203-0 30126 Class 8:40 am-10:30 am TBA	ENS 203-0 30126 Class 8:40 am-10:30 am TBA	
		ENS 203-0 30126 Class 10:40 am-11:30 am TBA	ENS 203R-C 30129 Class 10:40 am-12:30 pm TBA	
	ENS 203-0 30126 Class 1:40 pm-3:30 pm TBA	ENS 203R-B 30128 Class 1:40 pm-3:30 pm TBA		
				ENS 203R-A 30127 Class 5:40 pm-7:30 pm TBA

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		
July 1, Thursday	Introduction		
July 1, Thursday	Current, Voltage, Reference Polarities, Power, Energy, KCL		
July 6, Tuesday	KVL, Circuit Elements (Short circuit, open circuit, source types)		
July 6, Tuesday	Series / Parallel Resistive Circuits, Voltage and Current Dividers		
July 7, Wednesday	Node Voltage Analysis		
July 7, Wednesday	Node Voltage Analysis		
July 7, Wednesday	Mesh-Current Analysis		
July 8, Thursday	Thevenin and Norton Equivalent Circuits		
July 8, Thursday	Thevenin and Norton Equivalent Circuits, Source Transformation, Maximum Power Transfer		
July 13, Tuesday	Superposition, Wheatstone Bridge		
July 13, Tuesday	Capacitors, Inductors		

July 14, Wednesday	First-Order RC Circuits		
July 14, Wednesday	DC Steady State, RL Circuits		
July 14, Wednesday	RC and RL Circuits With General Sources		
July 27, Tuesday	Midterm 1	In lecture	
July 27, Tuesday	Midterm 1	In lecture	
July 28, Wednesday	Second-Order Circuits (RLC Circuits)		
July 28, Wednesday	Series RLC		
July 28, Wednesday	Parallel RLC		
July 29, Thursday	Sinusoidal Currents and Voltages		
July 29, Thursday	Phasors, Complex Impedances		
August 3, Tuesday	Circuit Analysis with Phasors		
August 3, Tuesday	Circuit Analysis with Phasors		
August 4, Wednesday	Power in AC Circuits		
August 4, Wednesday	Thevenin and Norton Using Phasors		
August 4, Wednesday	Frequency Response, Transfer Function		
August 5, Thursday	Bode Plot		
August 5, Thursday	Bode Plot		
August 10, Tuesday	First-Order Low Pass Filters		
August 10, Tuesday	First-Order High Pass Filters		
August 11, Wednesday	Series Resonance		
August 11, Wednesday	Parallel Resonance		
August 11, Wednesday	Second-Order Filters		
August 12, Thursday	Amplifiers		
August 12, Thursday	Operational Amplifiers		
August 14, Saturday	Midterm 2	Starts 14:00	In the weekend
August 14, Saturday	Midterm 2	Ends 16:00	In the weekend
August 17, Tuesday	Inverting and Non-inverting Opamps		

August 17, Tuesday	Inverting and Non-inverting Opamps		
August 18, Wednesday	Instrumentation Amplifier, Integrator, Differentiator		
August 18, Wednesday	Active Filters		
August 18, Wednesday	Diodes		
August 19, Thursday	Wave Shaping Circuits		
August 19, Thursday	Wave Shaping Circuits		

Course Policies:

- Attendance is extremely important. Attendance will be graded through Zoom participation reports. 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%
Note: We have 18 days in total	

Important Notes:

- For proctored exams, your webcam and microphone should be on during the exam. 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.