SABANCI UNIVERSITY
Faculty of Engineering & Natural Sciences
ENS203 – Electronic Circuits I
Summer 2022/2023 Syllabus

Instructor: Ömer Ceylan
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Office Hours: TBD

Teaching Assistant: Tahsin Alper Özkan
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Office Hours: TBD

Zoom Link: https://sabanciuniv.zoom.us/j/9757380583
Zoom Meeting ID: 975 738 0583

Class Schedule

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<th>Type</th>
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<td>Class 11:40 am</td>
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<td>Fac. of Engin. and Nat. Sci. L063</td>
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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:

Week 1: Introduction, KCL, KVL, Series / Parallel Resistive Circuits, Voltage and Current
Dividers

Week 2: Node Voltage Analysis, Mesh Current Analysis, Thevenin and Norton Equivalent
Circuits, Superposition

Week 3: Capacitors, Inductors, First-order RC / RL Circuits, Steady State, Second-order
Circuits (RLC Circuits), Series RLC, Parallel RLC

Midterm 1

Week 4: Phasors, Frequency Response, Transfer Function

Week 5: Bode Plot, First-order Filters, Series Resonance, Parallel Resonance, Second-order
Filters

Midterm 2

Week 6: Amplifiers, Instrumentation Amplifier

Week 7: Integrator, Differentiator, Active Filters, Diodes, Wave Shaping Circuits

Course Policies:

• Attendance is extremely important. Top Hat application will be used to take attendance.
• Cheating will not be tolerated.
• For homework no late submission is accepted.
• 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:

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<td>Quizes</td>
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<td>Homeworks</td>
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<td>Final</td>
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<td>Attendance (Bonus)</td>
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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.