**MECE 233 SYLLABUS (2018-2019 Fall)**

MECE 233 Electrical Circuits Analysis + Lab (3 2 4) (4 ECTS)

Lecturer: Ulaş Beldek (Room: L-327)

Lab assistant: Hilal Bingöl (Room: L-325)

Course web site: <http://mece233.cankaya.edu.tr>

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| **Course Outline**  *List the topics covered within each week.* | |
| Week | Topic(s) |
| 1 | Fundamental Circuits Quantities, (Charge, Current, Voltage, Energy, Power, Sources), Ohm’s Law, Kirchhoff’s Current Law (KCL), & Kirchhoff’s Voltage Law (KVL), Series & Parallel Resistance and Voltage & Current Division |
| 2 | Node Analysis (Node voltage method), Mesh Analysis (mesh current method), Superposition, Maximum power transfer, Delta-Y conversion, Thevenin and Norton equivalent circuits, Source transformation |
| 3 | Basic periodic waveforms (Sine wave, Triangular wave, Square wave), Root mean square and average values, Simple resistive AC+DC circuits, complex numbers |
| 4 | Unit step function, Unit ramp function, Impulse function, Doublet function, |
| 5 | Capacitors, inductors, initial condition models |
| 6 | First order circuits (RC, RL circuits) |
| 7 | First order circuits (RC, RL circuits) |
| 8 | Second order circuits (RLC, LC circuits) |
| 9 | Second order circuits (RLC, LC circuits) |
| 10 | Second order circuits (RLC, LC circuits), Switching Circuits, Switching Operations |
| 11 | Switching Circuits, Switching Operations |
| 12 | Basic diode circuits, Starting AC analysis, Representation and characterization of higher order circuits (State space representation, Stability, Steady state and Sinusoidal steady state, phasors). |
| 13 | Starting AC analysis, Representation and characterization of higher order circuits (State space representation, Stability, Steady state and Sinusoidal steady state, phasors). |
| 14 | Starting AC analysis, Representation and characterization of higher order circuits (State space representation, Stability, Steady state and Sinusoidal steady state, phasors). |

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| **Textbook**(s)  *List the textbook(s), if any, and other related main course materials.* | | | | |
| Author(s) | Title | Publisher | Publication Year | ISBN |
| James W. Nilsson, Susan A. Riedel | Electric Circuits | Pearson Prentice Hall | 2001 | 0131989251 |

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| **Reference Book**s  *List the reference books as supplementary materials, if any.* | | | | |
| Author(s) | Title | Publisher | Publication Year | ISBN |
| John O'Malley, | Schaum's Outline of Basic Circuit Analysis | McGraw-Hill. | 1992 | 0131733494 |
| Charles. Alexander & Matthew. Sadiku | Fundamentals of Electric Circuits | McGraw-Hill Science | 2008 | 978-0077263195 |
| Charles J. Monier | Electric Circuit Analysis: | Prentice Hall | 2000 | 978-0126912951 |

**Attendance:** 70% attendance for the theoretical lecture hours is compulsory, 70% attendance for the practical lecture hours is compulsory.

**Grading Policy:**

30% Laboratory Applications: Attendance to the laboratory, performance, weekly lab reports, quiz, lab exam. All these sub items corresponding to grading of laboratory applications will be determined by Hilal Bingöl.

40% Final Exam

30% Midterm Exam