**Philadelphia University**
**Faculty of Engineering and Technology**
Department of Electrical Engineering

# Course Information

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| **Course Title:** | Electric Circuits (1) |
| **Prerequisite:** | General Physics (2) |
| **Textbook:** | • Charles K. Alexander and Matthew N.O. Sadiku, Fundamentals of Electric Circuits, 7th edition, 2022. |
| **References:** | • W. Hayt and J. Kemmerly, Engineering Circuits Analysis, 8th edition, Mcgraw-Hill College, 2023.<br>• James Nilson and Susan Riedel, Electric Circuits, 12th edition, 2023, Pearson. |
| **Course Objectives:** | At the completion of this course the student should be able to:<br>• able to state Ohm's law, Kirchhoff's current law, and Kirchhoff's voltage law, and be able to use these laws to analyze simple circuits.<br>• Solve the electrical circuits using several techniques.<br>• Understand the theoretical to analyze different circuit configuration.<br>• Understand the transient and steady state response of capacitors and inductors. |

| Course Topics | | |
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| **CLOs** | **Outcomes** | **Week** |
| 1 | Introduction of electrical circuit (symbols, Ohms law, and Kirchhoff's) | 1 |
| 2 | Apply Nodal method to analyze electrical circuits. | 2 |
| 3 | Apply Mech method to analyze electrical circuits. | 3 |
| 4 | Use linearity theory in electrical circuits. | 4 |
| 5 | Use Superposition theory in electrical circuits. | 5 |
| 6 | Use source transformation theory in electrical circuits. | 6 |
| 7 | Use Thevenin and Norton's theory in electrical circuits. | 7 |
| 8 | Use Maximum power transfer in electrical circuits. | 8 |
| 9 | Introduction to capacitor and inductor in electrical circuits. | 9 |
| 10 | Discharge capacitor and inductor in electrical circuits. | 10 |
| 11 | Step response of capacitor and inductor in electrical circuits. | 11 |