



## Course Specification Document

<b>Title</b>	Introduction to Electrical Circuits
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<b>Credits</b>	2.5 ECTS
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<b>Aims</b>	This course aims to enable the student to find solutions to electrical circuit problems with a constant current source problem and those in transient or steady sinusoidal states and to introduce the concept of filters. This knowledge would support his future studies in physics and engineering sciences.
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### Intended learning outcomes

On successful completion of this course, the student will be able to:

- Analyze the electrical network.
- Handle transient-states.
- Analyze the electrical network in the steady sinusoidal state.
- Analyze the working mechanism of a number of electrical devices.
- Devise solutions to some problems in practical life.

### Syllabus

- **Electric Network:** Dipole, The current-voltage curve, Kirchhoff's law, Superposition Theorem, Thevenin's theorem, Norton's theorem.
- **Electrical transients:** RC circuit, RL circuit, RLC circuit, RC and LC time constants.
- **Steady sinusoidal state:** Nodal impedance, RLC circuit quality factor, filter concept, transfer function, Bode diagram.