

EE-407

**Fundamentals of electrical circuits and systems II**

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Cursus	Sem.	Type
Energy Science and Technology	MA1, MA3	Opt.

Language of teaching	English
Credits	2
Session	Winter
Semester	Fall
Exam	Written
Workload	60h
Weeks	14
<b>Hours</b>	<b>2 weekly</b>
Lecture	1 weekly
Exercises	1 weekly
<b>Number of positions</b>	

**Summary**

This course provides an introduction to the theory and analysis methods of electrical circuits.

**Content**

- Electrical circuit
- Basic quantities (Charge, current, voltage, power and energy)
- Basic circuit elements (Resistance, capacitance, inductance, voltage and current sources)
- Kirchhoff's laws
- Fundamental Theorems (Superposition, Thévenin, Norton, Maximum Power Transfer)
- Analysis Methods (Nodal Analysis, Mesh Analysis)
- Circuit in Sinusoidal Regime (Phasors, impedance)
- Three-Phase Circuits
- Transients Analysis

**Teaching methods**

Ex cathedra. Exercises on paper. Computer exercises using LTSpice software.

**Assessment methods**

Written exam

**Supervision**

Office hours	Yes
Assistants	Yes

**Resources****Bibliography**

C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits," McGraw-Hill, New York, 2000.

**Ressources en bibliothèque**

- [C. K. Alexander and M. N. O. Sadiku, "Fundamentals of Electric Circuits," \(7th ed. 2020\)](#)
- [Analyse des circuits électriques / \[Charles\] Alexander, \[Matthew\] Sadiku ; \[traduit par Marius Dancila et Dragos Dancila\]](#)

**Notes/Handbook**

Lecture notes

**Moodle Link**

- <https://go.epfl.ch/EE-407>