EE-406 **Fundamentals of electrical circuits and systems I**

Thiran Jean-Philippe

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

Language of teaching	English
Credits	2
Session	Winter
Semester	Fall
Exam	During the semester
Workload	60h
Weeks	14
Hours	**2 weekly**
Lecture	1 weekly
Exercises	1 weekly
Number of positions	

Summary

This course gives you an introduction to signal processing, focusing on the Fourier transform, on signal sampling and reconstruction and the Discrete Fourier transform.

Content

Signal Processing
- What is a signal: typology
- Analysis and synthesis of deterministic signals
- Projection theorem
- Fourier series
- Fourier Transform
- Sampling, quantization and reconstruction
- Discrete Fourier Transform (DFT) and Fast Fourier Transfrom (FFT)

Keywords

Signal processing, Fourier series, Fourier Transform, sampling, Shannon, DFT

Learning Prerequisites

Important concepts to start the course

Linear Time Invariant Systems, impulse reponse, convolution.

Teaching methods

Ex cathedra lectures, exercise and lab sessions

Assessment methods

Written exam

Resources

Bibliography

John G. Proakis and Dimitris G. Manolakis, «Digital Signal Processing», Prentice All, 2007

Ressources en bibliothèque

- John G. Proakis and Dimitris G. Manolakis, «Digital Signal Processing», Prentice All, 2007

Moodle Link

- https://go.epfl.ch/EE-406