

Faculty of Applied Sciences



FSAB1502 Project 2

[0h+60h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Anne-Marie Anckaert (coord.), Piotr Sobieski
Language: French
Level: First cycle

Aims

Aims

Disciplinary aims integrated to the project :

Basic electrical circuit concepts and physical principles : fundamental components, energy, power, ...

First and second order differential equations.

Usage of the MATLAB tool (library functions) : statistical handling of experimental data, graphical data visualization, computation of ordinary differential equations.

Design of a printed circuit board with professional software.

Basic methodological aims :

Develop models for descriptive as for predictive usage.

Apply problem resolution techniques.

Organize efficiently practical experiments.

Main themes

The practical work in the laboratory help students to precise and fix knowledge of physics lectures and exercises. Experiments allow to compare theory and practice, and to qualify the used models. Special attention should be given to a correct usage of the measurement equipment.

The models proposed by the circuit physics leads to a representation based on first and second order differential equations, which are part of the Q1 and Q2 main objectives. These equations will be applied to various practical problems, characterized by particular limit conditions.

Experimental results, mathematical models and numerical simulations will be compared and analyzed in the context of the knowledge resulting from the course "Calcul Scientifique". The project will be a good opportunity to discover and use statistical and numerical tools to handle experimental data, empirical modeling and ordinary differential equations.

Main themes

Content and teaching methods

Building on the brilliant initiative and interest of new students in a practical and funny realization, the P2 project has, as main objective, to invite them to discover new concepts and techniques, and also to reinforce old ones, too rapidly surfed or not sufficiently applied. It will be an encounter point for the various objectives of the semester, in a unique realization.

Practical realization and laboratory experiments are the basic methodological components of the project, which will lead to a specific circuit design and validation.

Content and teaching methods

The practical work in the laboratory help students to precise and fix knowledge of physics lectures and exercises. Experiments allow to compare theory and practice, and to qualify the used models. Special attention should be given to a correct usage of the measurement equipment.

The models proposed by the circuit physics leads to a representation based on first and second order differential equations, which are part of the Q1 and Q2 main objectives. These equations will be applied to various practical problems, characterized by particular limit conditions.

Experimental results, mathematical models and numerical simulations will be compared and analyzed in the context of the knowledge resulting from the course "Calcul Scientifique". The project will be a good opportunity to discover and use statistical and numerical tools to handle experimental data, empirical modeling and ordinary differential equations.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Other information (pre-requisite, evaluation, course material, ...)

Pre-requisite :

Mathematics (FSAB 1101) and physics (FSAB 1201) courses of Q1

Other credits in programs

FSA11BA Première année de bachelier en sciences de l'ingénieur,
orientation ingénieur civil

(6 crédits) Obligatoire

Version arrêtée au 02/12/2004 UCL - Programme d'études : FSAB1502

p. 1

Other credits in programs

ARCH11BA	Première année de bachelier en sciences de l'ingénieur, orientation ingénieur civil architecte	(5 credits)	
FSA11BA	Première année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(5 credits)	Mandatory