FSAB1501 project 1

[0h+60h exercises] 6 credits

This course is taught in the 1st semester

Teacher(s):	Charles Pecheur, Benoît Raucent (coord.), Charles Trullemans, Vincent Wertz
Language:	French
Level:	First cycle

Aims

Content-oriented objectives :
" Being able to build the cinematic model of a robot and to use this model to relate the rotation speeds of the motors to the movement of the robot
" Being able to compute the internal forces by means of a simplified robot model (2D mesh)
" Being able to produce hand-drawn design drawings and CAD-based communication schematics of the robot
" Being able to design and write a Java program which pilots the robot in order for it to follow a chosen trajectory at a given scale
Method-oriented objectives:
" Being able to analyze a problem statement, to extract its significant components, and to formulate an abstract version
" Being able to make an effective oral presentation of the significant parts of work that has been performed
" Being able to contemplate various ways to answer a given question
" Being able to contribute to the work within a group
" Being able to manage time and meet deadlines.

Main themes

The project aims to enable every student to get acquainted with some of the essential aspects of the various activities typical of the engineering professions. This will help students get a better understanding of the methodological and discipline-oriented objectives within the curriculum.
A second objective is an initiation to the methodological aspects of project work.
A third objective is the topping up and equalization of knowledge acquired in high school (mathematics, physics, drawing, English, ...) and the application of new knowledge acquired during the term (computer programming).

Content and teaching methods

The project consists in the design, modeling, and prototype-based validation of a robot:
" establish the requirements
" propose a structure for the robot
" model and simulate the physical behaviour of the robot
" design a program-based command system for the robot
" show the technical feasibility of the proposed solution by means of a prototype using Lego MindStorms building blocks and the RCX processor.
The project is a problem-based situation which is specific because of its duration (a full term) and because of the opportunities it provides for integration of knowledge and competencies. The project aims to provide a context both for the content learned during the term and for previously acquired knowledge and competencies.
Other information
See the course Web site for more information: http://www.icampus.ucl.ac.be/FSAB1501/

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

none

Other credits in programs

FSA11BA	Première année de bachelier en sciences de l'ingénieur, orientation ingénieur civil	(6 credits)	Mandatory