

Faculty of Applied Sciences



MECA2840 Mécanical construction project II.

[30h+45h exercises] 6 credits

Teacher(s): Paul Fiset, Benoît Raucant
Language: French
Level: Second cycle

Aims

- Introduce students, via practice, to develop mechanical engineering projects
- Foster creativity and solution seeking
- Promote a synthetic spirit and combining material learned by solving a real problem
- Allow students to collaborate with industry

Main themes

- Analysis and description of a given technological problem
- Introduction to technical innovation
- Performance evaluation
- Component dimensioning
- Taking technical and safety norms into consideration
- Presentation and defense of a complete and realistic technological solution
- Drawings of schemes, Global plans and certain detailed plans

Content and teaching methods

Students must take charge all the aspects of a proposed design problem. They particularly see to proposing innovative and technically correct solutions. The project will be advanced as far as possible including prototypes and global plans.

The project starts in September and ends during the month of May. It is done in groups and involves the following steps :

- Problem analysis and writing the specification conditions
- Studying existing solutions
- Seeking original solutions
- Quantification of the performances of each of the variants
- Solution selection (i.e. choosing the best variant)
- Presentation of the pilot project
- Dimensioning
- Economic study
- Designing global plans

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

Prerequisite :

Knowledge of machines and their components, design methods, manufacturing techniques and computer-aided drawing (CAD)

References :

- RC. Juvinall and KM Marshek, Fundamentals of Machine Component Design, Wiley and Sons.

- Technical documentation and Manufacturers' catalogues

Organisation :

- Subject : students choose the subject from a list provided by teachers. Most of the subjects are proposed by industry. Students can find projects themselves by consulting industry.

- Groups : groups include a maximum of four students. Before conceptual design, the group works together. Then, each one specializes in a particular aspect.

- Accompaniment: each group has a tutor who follows them all year.

- Schedule : two hours consultation are planned each week all year long. Seminars are organized on demand

- Documentation : students have specialized technical documentation at their disposal and detailed information on the course web page

Grading criteria :

- Principally based on four presentations and the technical reports done during the year : submission of specification conditions, submission of the pilot project, presentation of the final solution, public defense

Other credits in programs

ELME22/E	Deuxième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (énergie)	(6 credits)	
MECA22	Deuxième année du programme conduisant au grade d'ingénieur civil mécanicien	(6 credits)	Mandatory