ENG-606(a)

Design of experiments (a) - Fall semester

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Cursus	Sem.	Type
Advanced Manufacturing		Obl.
Civil & Environmental Engineering		Obl.
Energy		Obl.
Mechanics		Obl.
Robotics, Control and Intelligent Systems		Obl.

Language of teaching	English
Credits	4
Session	
Exam	Project report
Workload	120h
Hours	**56**
Courses	20
TP	36
Number of positions	**50**

Remark

Block course Fall 2018 (including a 2 days optional pre-course on Matlab)

Content

Experiment analysis and planning

Treatment of qualitative factors

- Inference of constant and random coefficient models
- Graeco-latin squares design
- Balanced bloc design
- Analysis of variance (Anova)

Treatment of quantitative factors

- Empirical models
- Matricial treatment of the multilinear regression
- Analysis of non-orthogonal estimators
- Analysis of variance

Standard designs for first and second degree models

- Hadamard, factorial, fractional factorial designs
- Normal and half normal
- Composite, Doehlert and Box Behnken design
- Canonical analysis

Note

Specifically the objectives are:

- To transfer to the student the conceptual basis for designing, performing and analyzing statistical design of experiments
- To let the student understand the methodology of response surface, with the mathematical concepts that allow the evaluation and the optimization of a matrix of experiments
- To develop a principle of know-how to evaluate, optimize and analyze design of experiments
- To develop conceptual understanding of the design of experiments that allows the PhD student to collaborate with statisticians

Given during fall semester; block course (2x3 days)
The course requires to be familiar with Excel or Matlab