UCL Université catholique de Louvain

LSTAT2320A

2015-2016

Plans expérimentaux: cours et exercices

3.0 credits	22.5 h + 5.5 h	2q

Teacher(s) :	
Language :	Français
Place of the course	Louvain-la-Neuve
Main themes :	- Experimental cycle and strategies - Linear regression as a tool to analyse the results of a designed experiment - Problem formalisation and qualities of an experimental design - Factorial designs and derivatives - Designs for the estimation of response surfaces - Optimal designs - Experimental design as viewed by Taguchi - Designs for mixture experiments - Simultaneous optimisation of several responses - Simplex and EVOP methodology to optimise one response The course includes 2 parts. Part A of the course can be followed independently of the part B: - Partim A: theory and exercises. - Partim B: project of application.
Aims :	At the end of the course, the student will be awared of the interest of using a methodology to design experiments that provides a maximum information at the lower cost. He will gain knowledge on different possible classes of experimental designs and on the statistical methods available to analyse experiment results. Part a of the course can be followed independently of part B. *The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".*
Content :	The themes discussed in this course are : - Experimental cycle and strategies - Linear regression as a tool to analyse the results of a designed experiment - Problem formalisation and qualities of an experimental design - Factorial designs and derivatives - Designs for the estimation of response surfaces - Optimal designs - Experimental design as viewed by Taguchi - Designs for mixture experiments - Simultaneous optimisation of several responses - Simplex and EVOP methodology to optimise one response Each course subject is presented on a case study.
Other infos :	Prerequistes Basis courses in statistics. Course in linear models. Evaluation: For all: written test on the course content and practical work. For those who follow the partim B: elaboration of a personal applied (in groups of 1 or 2) with oral discussion of work. Reference : Box G. et Draper N. et H. Smith [1987], Empirical Model-Building and Response Surfaces, Wiley, New York Khuri A. et Cornell J., [1987], Response surfaces: designs and analyses, Marcel Dekker. Myers R.H., Douglas C. Montgomery [1995], Response Surface Methodology: Process and Product Optimization Using Designed Experiments. Wiley
Faculty or entity in charge:	LSBA

Programmes / formations proposant cette unité d'enseignement (UE)				
Intitulé du programme	Sigle	Credits	Prerequis	Acquis d'apprentissage
Master [120] in Agricultural Bioengineering	BIRA2M	3	-	