

3.00 credits

22.5 h + 5.5 h

Q2

Teacher(s)	Symul Laura ;
Language :	French > English-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	Concepts and tools equivalent to those taught in teaching units LSTAT2120 Linear models LSTAT2020 Logiciels et programmation statistique de base
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: B: - Partim A: theory and exercises. - Partim B: project of application.
Learning outcomes	At the end of this learning unit, the student is able to : 1 At the end of the course, the student will be aware 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.
Evaluation methods	See course LSTAT2320
Teaching methods	See course LSTAT2320
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.
Inline resources	See the Moodle site for more information
Bibliography	• Box G. et Draper N. et H. Smith [1987], Empirical Model-Building and Response Surfaces, Wiley, New York • Khuri A. et Cornell J., [1996], Response surfaces : designs and analyses, Marcel Dekker. • Myers R.H., Douglas C. Montgomery [2002], Response Surface Methodology: Process and Product Optimization Using Designed Experiments. Wiley • Et beaucoup d'autres possibles...
Other infos	Prerequisites 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 containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Agricultural Bioengineering	BIRA2M	2		