lboe2196

2021

Experimental design

2.00 credits	12.0 h + 18.0 h	Q2

Teacher(s)	. SOMEBODY ;Govaerts Bernadette ;
Language :	French
Place of the course	Louvain-la-Neuve
Learning outcomes	
Evaluation methods	The evaluation of the course is based on 4 assignments and an oral presentation each worth approximately 1/4 of the points. The student will have to : 1. Read a text on the principle of design of experiments and put it in perspective with his thesis project (via an online questionnaire). 2. Analyze a dataset with R and Rmarkdown. 3. Review a research question related to an experimental or research study already conducted in the laboratory (and related to the thesis), describe it in a report and (re)analyze the related data. This project is also presented orally to the other students. 4. Prepare and describe in a paper the data acquisition and collection protocol of his/her thesis as well as the data analysis plan he/she plans to use.
Teaching methods	The pedagogical approach of the course is to bring the student to realize the 4 projects planned for the evaluation and thus advance in his thesis work. • Some "lecture" presentations are made by the professor. • Students are invited to discover some of the material by themselves • Computer room sessions allow students to develop their data processing skills with R. • Each student works in collaboration with other students who are doing their thesis in the same lab as him/her to complete the proposed projects. • The professor and the course assistants accompany each student individually in their projects.
Content	The main objective of this course is to provide the student with a maximum of concepts and tools to be able to carry out the collection and analysis of data related to your thesis. New material on experimental design and the use of R is covered, but the main objective is to allow the student to apply the topics covered and the tools already acquired in other courses to the realization of his thesis. Some of the topics covered are : • General principles of planning and conducting an experiment or observational study. • Classes of experimental designs useful in biology and related statistical models. • Use of Excel, R and JMP to process and manipulate data. Introduction to the RMarkDown reporting tool and graphing with the ggplot package. • Review of some descriptive statistics tools, testing, multivariate analysis and modeling in R.
Inline resources	**See the moodle site :** https://moodleucl.uclouvain.be/course/view.php?id=12613
Faculty or entity in charge	BIOL

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Biology of Organisms and Ecology	BOE2M	2		🔍