UCLouvain

lstat2370
2019

Data Management II : SAS ADVANCED PROGRAMMING

In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

6 credits	15.0 h + 10.0 h	Q2

Teacher(s)	Kabacinski Christophe ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	« Base SAS Programming » certificate or equivalent knowledge. Basic English comprehension (a case study presented in English will be used during the evaluations, syllabus and exercises written in English). *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*
Main themes	• Utilization of the SQL language via SAS to access and write SAS tables or database tables (Oracle, Excel, MySQL…), report creation, • Utilization of the SAS Macro language in order to automate the underlying SAS code, • Introduction to SAS code optimization, • Discovery of the latest SAS release : SAS Viya. • Utilization of a Case Study to develop and improve practice. Possibility to pass the « SAS Advanced Programming » certificate (this course covers 50% of the theory, the other 50% have to be auto-discovered by the student.) [https://www.sas.com/en_be/certification/credentials/foundation-tools/advanced-programmer.html]
Aims	1 A. Regarding the AA reference of the master in Statistics program, major "general" this activity contributes to the development and the acquisition of the following AA: With priority manner : 5.3 With secondary manner : 1.3, 2.2, 3.3 Regarding the AA reference of the master in Statistics program, major "Biostatistic" this activity contributes to the development and the acquisition of the following AA: With priority manner : 3.5 With secondary manner : 1.3, 2.2, 3.3. B. Specific formulation of this activity in the program: At the end of this course, the student will be familiar with different SAS advanced programming tools including the SAS macro language and SAS SQL language. He/she will moreover have an overview of the latest SAS release: SAS Viya. He/she will be able to use practically the various tools through a case study. Finally, he/she will learn 50% of the theory required to pass the « SAS Advanced Programming » certificate. - - - - *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".*
Evaluation methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** The exam of this course consist on an end-to-end real life case study where the student will have to apply the advance programming technics learned in this course. The case study will be described in English.
Teaching methods	**Due to the COVID-19 crisis, the information in this section is particularly likely to change.** This course is divided in 5 X 3 hours of lecture, 5 X 2 hours of exercise and 2 coaching sessions (full presentation and detailed correction of a case study). A large part of the course is realized individually thanks to a syllabus, the SAS documentation and an E-learning modules delivered by SAS.
Content	SAS SQL • query and subset data • summarize and present data

- combine tables, including complex joins and merges
- create and modify table views and indexes
- replace multiple DATA and PROC steps with one SQL query

SAS Macro

- perform text substitution in SAS code
- automate and customize the production of SAS code
- conditionally or iteratively construct SAS code
- use macro variables and macro functions

Introduction to SAS Optimization Technics:

- Identifying computer resources related to efficiency

SAS Viya

- Introduction to SAS Viya
- Loading data in SAS Viya via SAS Studio programming interface
- Accessing the data in other tools: Visual Analytics (VA) and Visual Data Mining and Machine Learning (VDMML)
- Integration of Python and R in SAS Viya

Inline resources	Moodle
Other infos	This course is born from a partnership between the UCLouvain and the SAS Institute. It is open to all students issued from a Belgian university after inscription to the academic program (master students or Phd), who succeeded the Base SAS Programming certification(or who could demonstrate an equivalent knowledge). This course is also accessible to the students of the « Certificat Universitaire en Statistique » under certain conditions.
Faculty or entity in charge	LSBA

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Approfondissement en statistique et sciences des données	LSTAT100P	6		🔍
Advanced Master in Quantitative Methods in the Social Sciences	LMQS2MC	6		🔍
Master [120] in Mathematical Engineering	MAP2M	6		🔍
Master [120] in Data Science : Statistic	DATS2M	6		🔍
Master [120] in Statistic: Biostatistics	BSTA2M	6		🔍
Certificat d'université : Statistique et sciences des données (15/30 crédits)	STAT2FC	6		🔍
Master [120] in Statistic: General	STAT2M	6	LDATS2360	🔍