







Due to the COVID-19 crisis, the information below is subject to change, in particular that concerning the teaching mode (presential, distance or in a comodal or hybrid format).

5 credits	15.0 h + 10.0 h	Q2
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Teacher(s)	Kabacinski Christophe ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	<i>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.</i>
Main themes	-Data bases handling in SAS: writing of SQL requests to other data base systems (Oracle). Use of the SQL language in SAS. - Development of SAS macros: description of the SAS macro language, creation and use of macros, macro programming and debugging. - SAS advanced and efficient programming: efficient storage and manipulation of big datasets, memory optimisation, efficient programming techniques. - Application of all the tools on advanced case studies.
Aims	<p>1 At the end of this training, the student will be trained to the various advanced SAS programming tools like SAS macros, SAS SQL and ETL Studio. He will be able to apply them on complex and multiple data bases.</p> <p>-----</p> <p><i>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".</i></p>
Evaluation methods	<b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b> 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	<b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b> 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	<p>SAS SQL</p> <ul style="list-style-type: none"> <li>• query and subset data</li> <li>• summarize and present data</li> <li>• combine tables, including complex joins and merges</li> <li>• create and modify table views and indexes</li> <li>• replace multiple DATA and PROC steps with one SQL query</li> </ul> <p>SAS Macro</p> <ul style="list-style-type: none"> <li>• perform text substitution in SAS code</li> <li>• automate and customize the production of SAS code</li> <li>• conditionally or iteratively construct SAS code</li> <li>• use macro variables and macro functions</li> </ul> <p>Introduction to SAS Optimization Technics:</p> <ul style="list-style-type: none"> <li>• Identifying computer resources related to efficiency</li> </ul> <p>SAS Viya</p> <ul style="list-style-type: none"> <li>• Introduction to SAS Viya</li> <li>• Loading data in SAS Viya via SAS Studio programming interface</li> <li>• Accessing the data in other tools: Visual Analytics (VA) and Visual Data Mining and Machine Learning (VDMML)</li> <li>• Integration of Python and R in SAS Viya</li> </ul>
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
Master [120] in Data Science : Statistic	<a href="#">DATS2M</a>	5		
Certificat d'université : Statistique et sciences des données (15/30 crédits)	<a href="#">STAT2FC</a>	5		
Advanced Master in Quantitative Methods in the Social Sciences	<a href="#">LMQS2MC</a>	5		
Master [120] in Mathematical Engineering	<a href="#">MAP2M</a>	5		
Approfondissement en statistique et sciences des données	<a href="#">APPSTAT</a>	5		
Master [120] in Statistic: General	<a href="#">STAT2M</a>	5	<a href="#">LDATS2360</a>	
Master [120] in Statistic: Biostatistics	<a href="#">BSTA2M</a>	5		