**UCLouvain**

| lstat2020 2022 | Statistical softwares and basic statistical programming |
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| 4.00 credits | 15.0 h + 15.0 h | Q1 |
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| Teacher(s) | Bugli Céline (compensates Govaerts Bernadette) ;Govaerts Bernadette ; |
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| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Prerequisites | Basic notions of probability, descriptive statistics, statistical inference and matrix calculation. |
| Main themes | Main themes: - Steps of a statistical data analysis with a statistical software - Classes of statistical software - Statistical graphics: main classes of graphics and efficient use - Basic statistical analysis with "point and click" statistical software. Data cleaning. - Programming in the R language. - Programming in SAS. |
| Learning outcomes | **At the end of this learning unit, the student is able to :** |
| | 1   At the end of this course, the students will have gain a critical view of the different classes of statistical software available on the market and basic culture on statistical algorithms and graphics. They will also be able to realise basic statistical analysis with different software (SAS, R, Excel, SPSS, JMP) and write programs in the R and SAS programming languages. |
| Evaluation methods | In this course, students are evaluated in two ways: <br><br> • Activity A: continuous assessment consisting of two compulsory assignments to be submitted during the term according to a timetable set at the beginning of the term (15% of the final grade) <br> • Activity B: a written exam on computer during the exam's session (85% of the final mark) <br><br> The final grade is the weighted average of grades for parts A and B. In the final grade, part A is worth 3/20 and part B is worth 17/20. <br> **Details of Activity A :** <br> The two MANDATORY assignments are programming projects in SAS and R. Please note that the mandatory assignments are to be carried out during the first quarter of the academic year according to a schedule that will be communicated at the beginning of the course. In case of non-completion of at least one of the assignments or late submission, an absence grade "A" will be the final grade of the course in the January session and similarly in September if the assignments are still not completed. <br> **Details of Activity B:** <br> The written, open book, computer-based examination consists of 2 parts: <br><br> 1. solving basic statistical case studies with SPSS or JMP, <br> 2. SAS programming and SAS Enterprise Guide software manipulation questions, and R programming questions. <br> The final grade of the written exam will consist of two integrated parts. Passing both parts is essential to demonstrate the skills and knowledge defined in the learning outcomes of the course unit. The written examination can only be passed if each part of the assessment is passed. |
| Teaching methods | The course consists of lectures with demonstrations of statistical software and software use exercises sessions designed to give the student maximum autonomy: each student works at his own pace on the basis of evolving documents. |
| Content | Lecture: Steps in statistical analysis of computer data. Introduction to the different classes of statistical software. Graphical presentation of data. Introduction to statistical software, Introduction to the use of the computer room. Case studies of data set analysis using basic statistical methods. Generation of random numbers. Numerical problems encountered in regression. Introduction to R and SAS. Communication between different software and languages (R, SAS, etc...). <br><br> Exercises: SAS and R programming exercises. Case studies with SPSS or JMP software. |
| Inline resources | Site Moodle: https://moodleucl.uclouvain.be/course/view.php?id=7551 |
| Faculty or entity in charge | LSBA |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Master [120] in Data Science : Statistic | DATS2M | 4 | | 🔍 |
| Master [120] in Biomedical Engineering | GBIO2M | 4 | | 🔍 |
| Master [120] in Statistics: Biostatistics | BSTA2M | 4 | | 🔍 |
| Master [120] in Forests and Natural Areas Engineering | BIRF2M | 4 | | 🔍 |
| Master [120] in Environmental Bioengineering | BIRE2M | 4 | | 🔍 |
| Master [120] in Mathematics | MATH2M | 3 | | 🔍 |
| Master [120] in Statistics: General | STAT2M | 4 | | 🔍 |
| Approfondissement en statistique et sciences des données | APPSTAT | 4 | | 🔍 |
| Master [120] in Mathematical Engineering | MAP2M | 4 | | 🔍 |
| Minor in Statistics, Actuarial Sciences and Data Sciences | MINSTAT | 4 | | 🔍 |
| Certificat d'université : Statistique et science des données (15/30 crédits) | STAT2FC | 4 | | 🔍 |
| Master [120] in Agricultural Bioengineering | BIRA2M | 4 | | 🔍 |