UCLouvain

BSTA2M

2023 - 2024

Master [120] in Statistics: Biostatistics

At Louvain-la-Neuve - 120 credits - 2 years - Day schedule - In French
Dissertation/Graduation Project : **YES** - Internship : **optional**
Activities in English: **YES** - Activities in other languages : **NO**
Activities on other sites : **YES**
Main study domain : **Sciences**
Organized by: **Faculty of Science (SC)**
Programme acronym: **BSTA2M** - Francophone Certification Framework: 7

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BSTA2M - Introduction

Introduction

Introduction

Organized by Louvain School of Statistics, Biostatistics and Actuarial Sciences (LSBA), this Master's program offers you

- A training in the fundamental concepts of statistics, using the main technical tools and software for the analysis of statistical data and the specific statistical methods required in the field of statistics in health sciences.
- A training in applied statistics to the medical field, in clinical and pre-clinical research, pharmaceutical research, epidemiology and other life sciences oriented fields.
- Several opportunities to put in practice statistical techniques based on exercises, individual projects, analyses of real data using statistical software and the preparation of a Master's thesis, possibly in collaboration with an external industry partner.

Your profile

You

- Hold an undergraduate diploma and you wish to become a specialist in data analysis methods or to develop new innovative tools in this field;
- Hold an undergraduate diploma or Master's degree from a University or a University college and statistics is an additional competence to your actual training;
- Are looking for a training in statistics applied to the medical fields, and in particular to clinical and pre-clinical research, pharmaceutical research, epidemiology, public health or in another field of life sciences.

Your programme

The program of Master's degree in Statistics with the Biostatistics orientation is composed of a core study program of at least 63 credits of courses (UE) of general statistic and biostatistic, and of 30 credits (including the Master's thesis) of professional focus (*finalité spécialisée*). You will complete your programs with courses from the two options of the programs (Biostatistique clinique et épidémiologie ou Biométrie, technométrie et bioonformatique) as well as by other appropriate courses from other programs (upon acceptance by the jury).

Le programme est composé d'un tronc d'un minimum de 63 crédits d'unités d'enseignement (UE) de statistique générale et de biostatistique et de la finalité spécialisée de 30 crédits (dont le mémoire).

Vous le compléterez par des UE au choix proposées dans les options du programme (Biostatistique clinique et épidémiologie ou Biométrie, technométrie et bioonformatique) ainsi que par d'autres UE utiles dans le cadre du master et approuvées par le jury.

BSTA2M - Teaching profile

Learning outcomes

On successful completion of this programme, each student is able to :

1. Maîtriser un socle fondamental de la probabilité et de la statistique.

1.1

Maîtriser les calculs mathématiques fondamentaux.

1.2

Résumer un texte de méthodologie statistique et situer les limites de ses connaissances face à un problème donné.

1.3

Utiliser les outils fondamentaux de calcul et de programmation dans des problèmes de probabilité et statistique.

1.4

Reconnaître les concepts fondamentaux et transversaux d'importantes théories de probabilité et statistique actuelles et établir les liens principaux entre ces théories.

1.5

Expliquer des théories de probabilité et statistique en motivant les énoncés et les définitions par des exemples et des contre-exemples et en mettant en évidence les idées principales.

1.6

Relier des concepts de probabilité et de statistique et des problématiques associées à leur contexte historique en ayant compris le rôle de ces outils en science.

2.

S’exprimer de façon claire, précise et rigoureuse dans les activités de communication tant en français que en anglais (niveau B1 CECRL).

2.1

Saisir, résumer et interpréter l’essentiel de communications scientifiques orales en statistique et probabilité.

2.2

Résumer, par des tables et graphiques informatifs et pertinents, l’information disponible dans un ensemble de données.

2.3

Rédiger des textes statistiques selon les conventions de la discipline.

2.4

Structurer un exposé oral, mettre en évidence les éléments clés, distinguer techniques et concepts et adapter l'exposé au niveau d'expertise des auditeurs.

2.5

Utiliser des outils médiatiques et informatiques variés pour communiquer (expliquer, rédiger, publier) des résultats d’analyses statistiques et leur interprétation dans le contexte de l’étude.

2.6

Dialoguer avec des collègues d'autres disciplines.

3.

Analyser rigoureusement et dans différents contextes disciplinaires, un problème ou un système complexe pour en extraire les points essentiels et les mettre en relation avec les outils théoriques les mieux adaptés.

3.1

Utiliser des solides connaissances de la méthodologie statistique dans des contextes multidisciplinaires liés aux sciences du vivant (médecine, biologie, etc).

3.2

Analyser un problème statistique et proposer une méthode (en validant les hypothèses sous-jacentes) et des outils adéquats pour l'étudier et le résoudre de façon approfondie et originale.

3.3

Utiliser plusieurs outils informatiques d'aide à la résolution de problèmes statistiques, tout en connaissant les limitations de ces outils.

3.4

Développer une analyse rigoureuse et originale pour comprendre et résoudre des problèmes spécifiques dans tous les domaines d'application de la biostatistique qu'il rencontrera dans sa profession, en respectant les contraintes imposées par le contexte.

3.5

Gérer de grandes bases de données.

4.

Maîtriser les méthodes de base en probabilité et statistique et utiliser les outils spécifiques de la bio-statistique.

4.1

Développer de façon autonome son intuition statistique en anticipant les résultats attendus et en vérifiant la cohérence avec des résultats déjà existants.

4.2

Analyser un problème de recherche et proposer des outils adéquats pour l'étudier de façon approfondie et originale.

4.3

Etudier les propriétés de méthodes statistiques à l'aide de simulation.

4.4

Collaborer à la rédaction d'une communication scientifique pour une publication avec comité de revue.

4.5

Adapter des méthodes statistiques à des problématiques des sciences du vivant.

5.

Participer à la mise en Œuvre d'un projet de recherche avec un collaborateur issu d'une discipline des sciences du vivant.

5.1

Communiquer avec un collaborateur d'une des disciplines des sciences du vivant (médecin, pharmacien, ingénieur agronome, etc.), lui apporter un regard proactif et objectif par rapport à son problème, faire preuve de curiosité et de connaissances minimales pour sa discipline.

5.2

Cerner et reformuler les questions du collaborateur et y apporter des réponses adéquates, originales, documentées.

5.3

Planifier l'étude à mettre en oeuvre (par exemple, un essai clinique) pour apporter des réponses aux questions du collaborateur, identifier le plan d'expérience optimal.

5.4

Anticiper les différentes difficultés dans le déroulement d'une étude et proposer une solution appropriée.

5.5

Conseiller le collaborateur sur les aspects statistiques lors du déroulement de l'étude.

5.6

Ecrire un rapport clair, succinct et rigoureux présentant les résultats d'une analyse statistique appropriées des données.

5.7

Expliquer les résultats des analyses statistiques aux collaborateurs non-statisticiens.

6.

Etre autonome dans ses apprentissages et faire preuve d'esprit critique.

6.1

Rechercher dans la littérature statistique des sources et évaluer leur pertinence.

6.2

Lire et comprendre un texte statistique avancé et le situer correctement par rapport aux connaissances acquises.

6.3

Modéliser et résoudre un problème donné et être capable de s'initier à un nouveau champ de connaissances.

6.4

Juger de façon autonome de la pertinence d'une démarche statistique et de l'intérêt d'une théorie statistique.

Programme structure

The program consists of

- a common core of at least 69 credits, including 53 credits of compulsory courses and a minimum of 16 credits of elective courses.
- a finality of 30 credits including a thesis of 20 credits
- Elective courses offered in the options of the program "Clinical biostatistics / epidemiology" and "Biometrics, technometry and bioinformatics".

The student may request to include in his program other teaching units useful as part of the Master up to a maximum of 10 credits. These courses will be subject to the approval of the jury. Among these 10 credits a language course can be included for a maximum

of 5 credits. These extra-curricular courses must be relevant, of a sufficient level and adapted to the profile of the program and of the student.

The student prepares his program in consultation with a study advisor, then submits it to the jury for approval.

For a typical program, this master will count, regardless of the options and / or elective courses selected, a minimum of 120 credits spread over two annual blocks corresponding to a minimum of 60 credits each.

BSTA2M Programme

Detailed programme by subject

CORE COURSES

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Cours obligatoires de statistique générale (40 credits)

				Year 1	Year 2
LSTAT2020	Statistical softwares and basic statistical programming	Céline Bugli	FR [q1] [15h+15h] [4 Credits]	x	
LDATS2030	Statistique et data sciences avec R: Programmation avancée	Anouar El Ghouch	FR [q2] [15h+15h] [4 Credits]	x	
LSTAT2040	Statistical analysis	Anouar El Ghouch	FR [q2] [30h+15h] [5 Credits]	x	
LSTAT2190	Concepts and treatment of random vectors	Rainer von Sachs	FR [q1] [15h+7.5h] [4 Credits]	x	
LSTAT2100	Discrete data analysis.	Anouar El Ghouch	FR [q2] [30h+7.5h] [5 Credits]	x	
LSTAT2110	Data Analysis	Johan Segers	FR [q1] [30h+7.5h] [5 Credits]	x	
LSTAT2120	Linear models	Christian Hafner	EN [q1] [30h+7.5h] [5 Credits] > *French-friendly*	x	
LSTAT2130	Introduction to Bayesian statistics	Philippe Lambert	EN [q2] [22.5h+7.5h] [5 Credits]	x	
LSTAT2390	Applied statistics workshops	Christian Ritter Laura Symul	EN [q1+q2] [15h] [3 Credits] > *French-friendly*		x

Cours de statistique et biostatistique spécifiques à l'orientation biostatistique

From 21 to 25credit(s)

LSTAT2210	Mixed linear models	Catherine Legrand	FR [q1] [15h+7.5h] [4 Credits]		x
LSTAT2220	Analysis of survival and duration data	Ingrid Van Keilegom	FR [q1] [15h+5h] [4 Credits] > *English-friendly*	x	x
LSTAT2320	Design of experiment.	Patrick Bogaert	FR [q2] [22.5h+7.5h] [5 Credits] > *English-friendly*	x	x

Cours au choix

Choisir au moins deux cours parmi:

LSTAT2230	Advanced survival models	Catherine Legrand	EN [q2] [15h+5h] [4 Credits]		x

				Year 1	Year 2
LSTAT2340	Statistical Analyses of ¿omics Data	Laura Symul	FR [q2] [15h+5h] [4 Credits]	x	x
WFSP2238	Advanced epidemiology	Brecht Devleesschauwer (compensates Niko Speybroeck) Niko Speybroeck	EN [q2] [20h+20h] [5 Credits]	x	x

Cours au choix de statistique

L'étudiant choisira au minimum 8 crédits dans les cours proposés dans les programme du master en statistiques, orientation générale ou master en data sciences. En particulier, les cours suivants sont recommandés:

LSTAT2140	Non parametric statistics	Eugen Pircalabelu	FR [q1] [15h+5h] [4 Credits]	x	x
LDATS2350	Data Mining	Robin Van Oirbeek	EN [q2] [15h+15h] [4 Credits]	x	x
LSTAT2150	Nonparametric statistics: smoothings methods	Rainer von Sachs	EN [q1] [15h+5h] [4 Credits]		x
LSTAT2170	Times series	Rainer von Sachs	EN [q2] [30h+7.5h] [5 Credits]	x	x
LDATS2360	Seminar in data management: basic	Céline Bugli	EN [q1] [15h+10h] [4 Credits]	x	x
LDATS2370	Data Management II : SAS ADVANCED PROGRAMMING	Christophe Kabacinski	EN [q2] [15h+10h] [4 Credits]	x	x
LSTAT2185	Numerical Methods for Statistics: Optimization, Simulations and the Bootstrap	Eugen Pircalabelu	EN [q1] [30h+15h] [5 Credits]	x	x
LSTAT2200	Survey and Sampling	Séverine Guisset Christian Ritter	FR [q2] [15h+5h] [4 Credits]	x	x
LSTAT2450	Statistical learning. Estimation, selection and inference	Eugen Pircalabelu	EN [q1] [30h+7.5h] [5 Credits]		x

Philosophie

Choisir maximum un cours parmi:

LFILO2003E	Ethics in the Sciences and technics (sem)	Alexandre Guay (compensates Charles Pence) Hervé Jeanmart René Rezsohazy	EN [q2] [15h+15h] [2 Credits]	x	x
LSC2001	Introduction to contemporary philosophy	Peter Verdée Peter Verdée (compensates Charles Pence)	FR [q2] [30h] [2 Credits]	x	x
LSC2220	Philosophy of science	Alexandre Guay	EN [q2] [30h] [2 Credits]	x	x

Optional courses :

These credits are not counted within the 120 required credits.

LSST1001	IngénieuxSud	Stéphanie Merle Jean-Pierre Raskin (coord.)	FR [q1+q2] [15h+45h] [5 Credits]	x	x
LSST1002M	Information and critical thinking - MOOC	Myriam De Kesel Jean-François Rees	FR [q2] [30h+15h] [3 Credits]	x	x

PROFESSIONAL FOCUS [30.0]

La finalité spécialisée comprend le mémoire, l'UE de base en statistique du biostatisticien et une UE en statistique appliquée.

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Content:

				Year 1	Year 2
Cours obligatoires de la finalité					
LSTAT2828	memory in biostatistics		FR [q1 or q2] [] [20 Credits]		x
LSTAT2330	Statistics in clinical trials.	Catherine Legrand Annie Robert	FR [q2] [22.5h+7.5h] [5 Credits]	x	
Cours au choix de la finalité					
L'étudiant choisit obligatoirement une unité d'enseignement parmi les deux suivantes. L'étudiant qui désire inclure les deux unités d'enseignement à son programme ajoute l'autre dans le tronc commun.					
LSTAT2930	Training course or work of application in biostatistics		FR [q1 or q2] [] [5 Credits]	x	x
LSTAT2380	Statistical consulting	Christian Ritter	EN [q1+q2] [30h] [5 Credits] *> French-friendly*		x

OPTIONS

The student completes his program by choosing teaching units in the options and respecting the instructions of each option.

If the student chooses 15 or more credits in an option (including compulsory courses), this option will appear on the appendix of his diploma.

> Biostatistique clinique et épidémiologie [en-prog-2023-bsta2m-bbsta220o]
> Biométrie, technométrie et bioinformatique [en-prog-2023-bsta2m-lbsta210o]

BIOSTATISTIQUE CLINIQUE ET ÉPIDÉMIOLOGIE

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

The student will validate this option if he/she obtains between 15 and 30 credits among the following courses.

Content:

				Year 1	Year 2
Choisir au moins un cours parmi					
WFSP2218	Longitudinal analysis: linear, logistic and Poisson regression	Annie Robert	FR [q1] [20h+20h] [4 Credits]	x	x
WFSP2228	Systematic literature review, realist evaluation and meta-analysis	Annie Robert (coord.) Kiswendsida Clovis Sawadogo	EN [q2] [20h+10h] [3 Credits]	x	x
Cours au choix					
WESP2234	Clinical decision making	Andrea Penaloza-Baeza Annie Robert (coord.) Kiswendsida Clovis Sawadogo	FR [q1] [30h] [3 Credits]	x	x
WFSP2201	Advanced methods in public health : seminar	Niko Speybroeck	EN [q2] [15h] [3 Credits]	x	x
WFSP2202	Health survey methods	Stefaan Demarest Lydia Gisle Vincent Lorant (coord.)	EN [q1] [20h] [5 Credits]	x	x
WFARM2196	Rational therapeutic choices (Introduction to evidence-based medicine and pharmacoeconomy)	Noémie Defourny (compensates Séverine Henrard) Nathalie Dujardin Anne Spinewine (coord.)	FR [q1] [30h+10h] [4 Credits]	x	x
WFARM2513	Pharmacocinétique approfondie	Laure Elens	EN [q2] [22.5h] [3 Credits] > English-friendly	x	x

BIOMÉTRIE, TECHNOMÉTRIE ET BIOINFORMATIQUE

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

The student will validate this option if he/she obtains between 15 and 30 credits among the following courses.

Year 1 2

Content:

Choisir au moins un cours parmi

LSTAT2310	Statistical quality control.	Bernard Francq	FR [q1] [15h+5h] [4 Credits] > English-friendly	x	x
LBRTI2101A	Data Science in bioscience engineering	Patrick Bogaert Emmanuel Hanert	FR [q1] [22.5h+15h] [3 Credits] > English-friendly	x	x

Cours au choix bioinformatique et machine learning

LGBIO2010	Bioinformatics	Vincent Branders (compensates Pierre Dupont)	EN [q1] [30h+30h] [5 Credits] > French-friendly		x
LINFO2262	Machine Learning :classification and evaluation	Pierre Dupont	EN [q2] [30h+30h] [6 Credits] > French-friendly		x
WSBIM2122	Omics data analysis	Laurent Gatto	EN [q1] [30h+10h] [3 Credits]		x
LBRMC2201	Bioinformatics : DNA and protein sequence analysis	Michel Ghislain	EN [q1] [30h+15h] [4 Credits] > French-friendly		x

Cours bioinformatique : maximum 1 cours parmi

LBRAI2220A	Population and quantitative genetics, plant breeding and biotechnology	Philippe Baret Pierre Bertin Xavier Draye	EN [q2] [20h+7.5h] [3 Credits] > English-friendly	x	x
WESP2232	Genomic epidemiology	Catherine Legrand Alexandre Persu Annie Robert (coord.) Miikka Vikkula	FR [q2] [15h+15h] [3 Credits]	x	x

Cours biométrie : maximum 1 cours parmi

LBIRA2110A	Statistical analysis of multivariate data	Xavier Draye Frédéric Gaspart Laura Symul	FR [q1] [22.5h+15h] [3 Credits] > English-friendly	x	
LBRAI2222	Mixed models and experimental design	Xavier Draye (coord.) Laura Symul	FR [q2] [22.5h+15h] [3 Credits] > English-friendly		x

Cours de technométrie au choix

LGBIO2020	Bioinstrumentation	André Mouraux Dounia Mulders (compensates Michel Verleysen)	EN [q2] [30h+30h] [5 Credits] > French-friendly	x	x
LMECA2711	Quality management and control.	Nicolas Bronchart	EN [q2] [30h+30h] [5 Credits] > French-friendly	x	x

Cours de technométrie : maximum un cours parmi

LGBIO2050	Medical Imaging	Greet Kerckhofs John Lee Benoît Macq Frank Peeters	EN [q1] [30h+30h] [5 Credits] > French-friendly	x	x

				Year 1	Year 2
WSBIM2243	Digital processing of medical images	Benoît Macq	FR [q2] [30h+15h] [4 Credits]	x	x

Supplementary classes

To access this Master, students must have a good command of certain subjects. If this is not the case, students must take supplementary classes chosen by the faculty to satisfy course prerequisites.

The complementary module to the Master's degree in Statistics, Biostatistics Orientation aims to prepare a student who does not have the required knowledge of probability calculation and statistics, mathematics, computer science, biology and English to undertake the studies of the Master's degree in Statistics, Biostatistics Orientation. The proposed activities include theoretical teaching units, exercise sessions and practical exercises.

This additional module is intended for all students whose admission is not direct (see the Master's admission requirements). A study advisor will inform the student of the list of SUs to be followed and this list will be approved by the jury.

- Mandatory
- Optional
- Not offered in 2023-2024
- Not offered in 2023-2024 but offered the following year
- Offered in 2023-2024 but not the following year
- Not offered in 2023-2024 or the following year
- Activity with requisites
- Open to incoming exchange students
- Not open to incoming exchange students
- [FR] Teaching language (FR, EN, ES, NL, DE, ...)

Click on the course title to see detailed informations (objectives, methods, evaluation...)

Maximum 60 credit(s)

Bloc intégré de probabilité, statistique et mathématique

LSTAT2011	Éléments de mathématiques pour la statistique	Catherine Legrand	FR [q1] [15h+15h] [3 Credits]
LSTAT2014	Elements of probability and mathematical statistics	Eugen Pircalabelu	FR [q1] [22.5h+22.5h] [5 Credits]

Cours de mathématiques

LBIR1110	Introduction to analysis	Emmanuel Hanert	FR [q1] [30h+30h] [6 Credits]
LMAT1101	Mathematics 1	Pedro Dos Santos Santana Forte Vaz	FR [q1] [30h+20h] [4 Credits]
LMAT1102	Mathematics 2	Augusto Ponce	FR [q2] [30h+30h] [4 Credits]
LINGE1114	Mathematics I: analysis	Heiner Olbermann	FR [q1] [30h+30h] [5 Credits]
LINGE1121	Mathematics II: algebra and matrix calculus	Tom Claeys	FR [q2] [30h+30h] [5 Credits]

Cours d'informatique

LINGE1225	Programming in Economics and Management	Marco Saerens	FR [q1] [22.5h+22.5h] [4 Credits]

Cours de la spécialité

LBIO1110	Life : diversity and evolution	Michel Baguette (compensates Caroline Nieberding) Patrick Dumont	FR [q1] [30h+10h] [4 Credits]
LBIO1114	Introduction to biology	Patrick Dumont Caroline Nieberding	FR [q2] [30h+7.5h] [3 Credits]
LBIO1111	Cell and molecular biology	Patrick Dumont Charles Hachez	FR [q1] [30h+20h] [5 Credits]
LIEPR1004A	Biologie cellulaire et éléments d'histologie (partim A FSA)	Catherine Behets Wydemans Patrick Henriet	FR [q2] [45h] [4 Credits]
LPSP1005	General biology, including elements of human genetics	François Chaumont (coord.) Patrick Dumont Charles Hachez	FR [q1] [30h] [4 Credits]

WMD1102	Physique expérimentale et introduction mathématique aux sciences expérimentales (1e partie)	Fabio Maltoni Geoffroy Piroux	FR [q1] [60h+21h] [8 Credits]
WMDS1113	Epidémiologie, santé publique et soins de santé	Benoît Boland Séverine Henrard Jean Macq (coord.) Andrea Penaloza-Baeza	FR [q2] [30h+20h] [4 Credits]

Cours de probabilités et statistique

LBIR1212	Probabilities and statistics (I)	Patrick Bogaert	FR [q1] [30h+15h] [4 Credits]
LBIR1315	Probability and statistics II	Patrick Bogaert	FR [q1] [22.5h+22.5h] [3 Credits]
LINGE1222	Multivariate Statistical Analysis	Johan Segers	FR [q2] [30h+15h] [4 Credits]
LPSP1209	Statistics, inference on one or two variables	Eugen Pircalabelu	FR [q1] [22.5h+15h] [4 Credits]
LPSP1306	Statistics: descriptive analysis and GLM multivariate data modeling	Aurélie Bertrand Nathalie Lefèvre	FR [q2] [30h+15h] [4 Credits]
LMAFY1101	Data exploration and introduction to statiscal inference	Anouar El Ghouch	FR [q2] [30h+30h] [5 Credits]
LBIO1283	Statistical principles and biological data analysis	Nicolas Schtickzelle	FR [q2] [30h+40h] [4 Credits]

Cours d'anglais (3 credits)

LANGL1330	English intermediate level - 1st part	Stéphanie Brabant Estelle Dagneaux Jean-Luc Delghust Aurélie Deneumoustier Fanny Desterbecq Marie Duelz Claudine Grommersch Adrien Kefer (compensates Sandrine Mulkers) Marc Piwnik (coord.) Françoise Stas Anne-Julie Toubeau Marine Volpe	EN [q1 or q2] [20h] [3 Credits]
LANGL1853	English: Reading Comprehension	Estelle Dagneaux (coord.)	EN [q2] [30h] [3 Credits]

Course prerequisites

The **table** below lists the activities (course units, or CUs) for which there are one or more prerequisites within the programme, i.e. the programme CU for which the learning outcomes must be certified and the corresponding credits awarded by the jury before registering for that CU.

These activities are also identified **in the detailed programme**: their title is followed by a yellow square.

Prerequisites and student's annual programme

As the prerequisite is for CU registration puposes only, there are no prerequisites within a programme year. Prerequisites are defined between CUs of different years and therefore influence the order in which the student will be able to register for the programme's CUs.

In addition, when the jury validates a student's individual programme at the beginning of the year, it ensures its coherence, meaning that it may:

- require the student to combine registration in two separate CUs which it considers necessary from a pedagogical point of view.
- transform a prerequisite into a corequisite if the student is in the final year of a degree course.

For more information, please consult the Academic Regulations and Procedures (https://uclouvain.be/fr/decouvrir/rgee.html).

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 # Prerequisities list

LSTAT2930 "Stage ou travail d'application en biostatistique" has prerequisite(s) LSTAT2020 ET LSTAT2110 ET LSTAT2120

- LSTAT2020 - Statistical softwares and basic statistical programming
- LSTAT2110 - Data Analysis
- LSTAT2120 - Linear models

The programme's courses and learning outcomes

For each UCLouvain training programme, a reference framework of learning outcomes specifies the the skills expected of every graduate on completion of the programme. Course unit descriptions specify targeted learning outcomes, as well as the unit's contribution to reference framework of learning outcomes.

BSTA2M - Information

Access Requirements

Master course admission requirements are defined by the French Community of Belgium Decree of 7 November 2013 defining the hiher education landscape and the academic organisation of courses.

General and specific admission requirements for this programme must be satisfied at the time of enrolling at the university.

Unless explicitly mentioned, the bachelor's, master's and licentiate degrees listed in this table or on this page are to be understood as those issued by an institution of the French, Flemish or German-speaking Community, or by the Royal Military Academy.

In the event of the divergence between the different linguistic versions of the present conditions, the French version shall prevail.

SUMMARY

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Specific access requirements

En plus de remplir les conditions d'accès décrites ci-dessous, les candidats devront apporter la preuve d'une maîtrise suffisante de la langue française (niveau B1 du Cadre européen commun de référence)

Students who wish to be admitted on the basis of a dossier (see tables below) are invited to consult the criteria for the evaluation of application.

University Bachelors

Diploma	Special Requirements	Access	Remarks
UCLouvain Bachelors			
Bachelor in Bioengineering		Direct access	
Bachelor in Biology Bachelor in Biomedicine Bachelor in Medecine Bachelor in Pharmacy Bachelor in Dentistry Bachelor in Motor skills : General Bachelor in Physiotherapy and Rehabilitation	Supplementary classes: LSTAT2011, LSTAT2012, LSTAT2013.	Access based on application	
Bachelor : Business Engineering Bachelor in Economics and Management Bachelor in Engineering Bachelor in Computer Science Bachelor in Mathematics Bachelor in Physics	Supplementary classes: LBIO1110, LBIO1111 ou LIEPR1004A	Access based on application	
Tous les bacheliers	If student has succeeded Minor in Statistics, Actuarial Sciences and Data Sciences and LBIO1110, LBIO1111, LIEPR1004.	Direct access	In some cases, the UCLouvain Enrolment Office, after reviewing their online enrolment or re-enrolment application, will ask the students concerned to provide an enrolment

			authorisation from the faculty/ school.
Tous les autres bacheliers	if the student did not succeed Minor in Statistics, Actuarial Sciences and Data Sciences and LFSAB1221 Supplementary classes: - LBIO1110, LBIO1111 or LIEPR1004A - and/or LSTAT2011, LSTAT2012, LSTAT2013	Access based on application	
Others Bachelors of the French speaking Community of Belgium			
Bachelier en sciences de l'ingénieur, orientation bioingénieur		Direct access	
Bachelier en sciences biologiques Bachelier en sciences biomédicales Bachelier en sciences de l'ingénieur, orientation bioingénieur	Supplementary classes: LSTAT2011, LSTAT2012, LSTAT2013	Access based on application	
Bachelier en ingénieur de gestion Bachelier en sciences économiques et de gestion Bachelier en sciences de l'ingénieur, orientation ingénieur civil Bachelier en sciences informatiques Bachelier en sciences mathématiques Bachelier en sciences physiques	Supplementary classes: LBIO1110, LBIO1111 ou LIEPR1004A	Access based on application	
Tout autre bachelier	Supplementary classes: - LBIO1110, LBIO1111 or LIEPR1004A - and/or LSTAT2011, LSTAT2012, LSTAT2013	Access based on application	
Bachelors of the Dutch speaking Community of Belgium			
Bachelier en sciences de l'ingénieur, orientation bioingénieur		Direct access	
Bachelier en sciences biologiques Bachelier en sciences biomédicales Bachelier en sciences de l'ingénieur, orientation bioingénieur	Supplementary classes: LSTAT2011, LSTAT2012, LSTAT2013	Access based on application	
Bachelier en ingénieur de gestion Bachelier en sciences économiques et de gestion Bachelier en sciences de l'ingénieur, orientation ingénieur civil Bachelier en sciences informatiques Bachelier en sciences mathématiques Bachelier en sciences physiques	Supplementary classes: LBIO1110, LBIO1111 ou LIEPR1004A	Access based on application	
Tous les autres bacheliers	Supplementary classes:	Access based on application	

	- LBIO1110, LBIO1111 or LIEPR1004A - and/or LSTAT2011, LSTAT2012, LSTAT2013	
Foreign Bachelors		
Tous les bacheliers	Supplementary classes: - LBIO1110, LBIO1111 or LIEPR1004A - and/or LSTAT2011, LSTAT2012, LSTAT2013	Access based on application

Non university Bachelors

> Find out more about links to the university

Diploma	Access	Remarks
BA - technologue de laboratoire médical - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation agro-industries et biotechnologies - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation agronomie des régions chaudes - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation environnement - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation forêt et nature - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion agricoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation techniques et gestion horticoles - crédits supplémentaires entre 45 et 60 BA en agronomie, orientation technologie animalière - crédits supplémentaires entre 45 et 60 BA en automatisation - crédits supplémentaires entre 45 et 60 BA en domotique - crédits supplémentaires entre 45 et 60 BA en informatique, orientation informatique industrielle - crédits supplémentaires entre 45 et 60 BA en informatique, orientation réseaux et télécommunications - crédits supplémentaires entre 45 et 60 BA en informatique, orientation sécurité des systèmes - crédits supplémentaires entre 45 et 60 BA en informatique, orientation technologies de l'informatique - crédits supplémentaires entre 45 et 60	Les enseignements supplémentaires éventuels peuvent être consultés dans le module complémentaire.	Type court

Holders of a 2nd cycle University degree

Diploma	Special Requirements	Access	Remarks
"Licenciés"			
Licenciés belges de la communauté française: Bioingénieur Ingénieur civil (sauf ingénieur civil architecte) sciences mathématiques	LBIO1110, LBIO1111 or LIEPR1004A is supplementary classes for students who have not taken an equivalent course.	Direct access	Subject to the acceptance of the jury, a student may be exempted from a maximum of 60 activity credits and possibly complete the master's degree in Biostatistics in a single year.
Ingénieur de gestion Sciences biologiques Siences biomédicales Bioingénieur Ingénieur civil (sauf Ingénieur civil architecte) Sciences informatiques Sciences physiques Sciences mathématiques	LSTAT2011, LSTAT2012 and LSTAT2013 are supplementary classes for students who have not taken an equivalent course.	Access based on application	

Tous les autres licenciés	LBIO1110, LBIO1111 or LIEPR1004A is supplementary classes for students who have not taken an equivalent course. LSTAT2011, LSTAT2012, LSTAT2013 are supplementary classes for students who have not taken an equivalent course.	Access based on application	Subject to the acceptance of the jury, a student may be exempted from a maximum of 60 activity credits and possibly complete the master's degree in Biostatistics in a single year.
Masters			
Masters belges de la communauté française: Bioingénieur Ingénieur civil (sauf ingénieur civil architecte) Sciences mathématiques Ingénieur de gestion Sciences informatiques Sciences physiques Science des données	LBIO1110, LBIO1111 or LIEPR1004A is supplementary classes for students who have not taken an equivalent course.	Direct access	Subject to the acceptance of the jury, a student may be exempted from a maximum of 60 activity credits and possibly complete the master's degree in Biostatistics in a single year.
Sciences biologiques Sciences biomédicales	LSTAT2011, LSTAT2012, LSTAT2013 are supplementary classes for students who have not taken an equivalent course.	Access based on application	
Tous les autres masters	LBIO1110, LBIO1111 ou LIEPR1004A is supplementary classes for students who have not taken an equivalent course. LSTAT2011, LSTAT2012, LSTAT2013 are supplementary classes for students who have not taken an equivalent course.	Access based on application	Subject to the acceptance of the jury, a student may be exempted from a maximum of 60 activity credits and possibly complete the master's degree in Biostatistics in a single year.

Holders of a non-University 2nd cycle degree

Access based on validation of professional experience

> It is possible, under certain conditions, to use one's personal and professional experience to enter a university course without having the required qualifications. However, validation of prior experience does not automatically apply to all courses. Find out more about Validation of priori experience.

Access based on application

Access based on application : access may be granted either directly or on the condition of completing additional courses of a maximum of 60 ECTS credits, or refused.

Foreign students who have succeeded an university education (minimum 3 years) with strong quantitative connotation and who have obtained at least 70% (or 14/20) of average for all successful university years in their home university, without fail in mathematics/ statistics/probability, have the possibility to apply for admission to the master's program in statistics, biostatistics orientation (120 ECTS).

Students who wish to be admitted on the basis of a dossier are invited to consult the criteria for the evaluation of application.

Admission and Enrolment Procedures for general registration

The student contacts the LSBA secretariat if a faculty authorization has been requested by the registration service. The student then establishes his program with the study consultant of the purpose concerned (https://uclouvain.be/fr/facultes/sc/infos-lsba.html).

Teaching method

Most of the teaching units applied statistics methods & tools include practical work on computers and an application project involved in the evaluation. This approach allows the student to systematically implement the tools presented in the methodological presentations and thus be prepared for field work. The implementation of projects also fosters a stimulating and friendly spirit of collaboration among the students in the program. The program offers the possibility of an internship in a company or in a research laboratory that will eventually complete the methodological aspects of the thesis. Most of the teaching units provided by statistical teachers are available on moodle or on the LSBA website. Some specialized teaching units are given by professors from companies and/or in English in order to familiarize the student with this language commonly used in the field of statistics.

Evaluation

The evaluation methods comply with the regulations concerning studies and exams (https://uclouvain.be/fr/decouvrir/rgee.html). More detailed explanation of the modalities specific to each learning unit are available on their description sheets under the heading "Learning outcomes evaluation method".

Each course in the programme involves an oral or written examination. There may also be a project leading to a report which will form part of the assessment. The work placement (or work involving statistical application) and the dissertation both involve the production of a document to be defended in an oral examination with an examination board.

Mobility and/or Internationalisation outlook

Students who have achieved outstanding results in the first annual block will be allowed to participate in international exchange programs organized by the LSBA. Currently, bilateral exchange agreements are being established with several partners in and outside Europe.

Students interested in participating in an international exchange program are invited to contact the person responsible for them in the Faculty of Science or the contact person in the LSBA.

Detailled information on https://uclouvain.be/fr/facultes/sc/programmes-d-echange-d-etudiants.html (https://uclouvain.be/fr/facultes/sc/programmes-d-echange-d-etudiants.html)

Contacts

Curriculum Management

Entity

Structure entity	SST/SC/LSBA
Denomination	(LSBA)
Faculty	Faculty of Science (SC)
Sector	Sciences and Technology (SST)
Acronym	LSBA
Postal address	Voie du Roman Pays 20 - bte L1.04.01 1348 Louvain-la-Neuve Tel: +32 (0) 10 47 43 14 - Fax: +32 (0) 10 47 30 32
Website	https://uclouvain.be/fr/facultes/sc/lsba

Academic supervisor: Anouar El Ghouch (https://uclouvain.be/repertoires/anouar.elghouch)

Jury

- Foreman of the jury: Christian Hafner (https://uclouvain.be/repertoires/christian.hafner)
- Secretary of the jury: Rainer von Sachs (https://uclouvain.be/repertoires/rainer.vonsachs)
- Study advisor: Catherine Legrand (https://uclouvain.be/repertoires/catherine.legrand)

Useful Contact(s)

- Secretary of The Louvain School of Statistics, Biostatistics and Actuarial Sciences: Sophie Malali (https://uclouvain.be/repertoires/sophie.malali)