

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 : **NO**

Main study domain : **Sciences**

Organized by: **Faculty of Science (SC)**

Programme acronym: **STAT2M**

STAT2M - Introduction

Introduction

Introduction

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

STAT2M - Teaching profile

Learning outcomes

Acquérir de solides bases méthodologiques en probabilité et statistique et les appliquer, à maintes occasions, dans des domaines comme l'économétrie, la finance, le data mining, les sciences humaines, ... tels sont les défis que l'étudiant en master en statistique, se prépare à relever.

L'étudiant maîtrisera les concepts fondamentaux de la probabilité et de la statistique. Il développera des compétences en

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 des statistiques qu'il rencontrera dans sa profession, en respectant les contraintes imposées par le contexte.

4. S'il choisit l'option "Fundamentals", maîtriser plusieurs domaines de la probabilité ou statistique actuelle et ses problématiques.

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

Démontrer des résultats classiques et plus avancés de probabilité et statistique mathématique.

4.4

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

4.5

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

5. S'il choisit l'option "Statistics in Action", gérer un projet de consultation statistique.

5.1

Communiquer avec un client d'une autre discipline, 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 client et y apporter des réponses adéquates, originales, documentées en l'invitant à l'autonomie.

5.3

Gérer de grandes bases de données.

5.4

Planifier et gérer un projet de consultation statistique.

5.5

Ecrire un rapport clair, succinct et rigoureux d'un projet de consultation statistique.

5.6

Expliquer les résultats d'un projet de consultation statistique aux clients 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.

STAT2M Programme

Detailed programme by subject

CORE COURSES

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊙ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
- 🚫🌐 Not open to incoming exchange students
- 🇫🇷 Teaching language (FR, EN, ES, NL, DE, ...)

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

Year

1 2

o Cours obligatoires de statistique (32 credits)

○ LSTAT2020	Statistical softwares and basic statistical programming	Céline Bugli	FR [q1] [15h+15h] [4 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	Benjamin Colling	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	
○ LSTAT2140	Non parametric statistics	Eugen Pircalabelu	FR [q1] [15h+5h] [4 Credits] 🌐	X	X

				Year	
				1	2
⌘ LFILO2003E	Ethics in the Sciences and technics (sem)		EN [q2] [15h+15h] [2 Credits] 🌐	x	x
⌘ LSC2001	Introduction to contemporary philosophy	Peter Verdée Peter Verdée (compensates Charles Pence)	EN [q2] [30h] [2 Credits] 🌐	x	x
⌘ LSC2220	Philosophy of science	Alexandre Guay	EN [q2] [30h] [2 Credits] 🌐	x	x

STATISTICS IN ACTION

- Mandatory
- ⊗ Optional
- △ Not offered in 2024-2025
- ⊖ Not offered in 2024-2025 but offered the following year
- ⊕ Offered in 2024-2025 but not the following year
- △ ⊕ Not offered in 2024-2025 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...)

Year

1 2

o Content:

● LSTAT2390	Applied statistics workshops	Christian Ritter Laura Symul	EN [q1+q2] [15h] [3 Credits] 🌐 > <i>French-friendly</i>	x
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⊗ Stage ou travail d'application

⊗ LSTAT2920	Stage ou travail d'application
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Supplementary classes

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

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- △ ⊕ Not offered in 2024-2025 or the following year
- Activity with requisites
- 🌐 Open to incoming exchange students
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- (FR) Teaching language (FR, EN, ES, NL, DE, ...)

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

From 0 to 60credit(s)

⊗ Bloc intégré de probabilité, statistique et mathématique

○ LSTAT2011	Éléments de mathématiques pour la statistique	Nathan Uyttendaele (compensates 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 mathématique

⊗ LINGE1114	Mathematics I: analysis	Heiner Olbermann	FR [q1] [30h+30h] [5 Credits] 🌐
⊗ LINGE1121	Mathematics II: algebra and matrix calculus	Cécile Coyette (compensates Tom Claeys)	FR [q2] [30h+30h] [5 Credits] 🌐

⊗ Cours d'informatique

⊗ LECGE1215	Information Technology in Economics and Management	Manuel Kolp Marco Saerens	FR [q2] [30h+20h] [4 Credits] 🌐
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⊗ Cours de Probabilité et Statistique

⊗ LINGE1113	Probability		FR [q2] [30h+15h] [4 Credits] 🌐
⊗ LINGE1214	Further Statistics	Christian Hafner	FR [q1] [30h+15h] [4 Credits] 🌐
⊗ LINGE1221	Econometrics	Sébastien Van Bellegem	FR [q2] [30h+15h] [5 Credits] 🌐
⊗ LINGE1222	Multivariate Statistical Analysis	Antoine Soetewey	FR [q2] [30h+15h] [4 Credits] 🌐
⊗ LMAT1271	Calculation of probability and statistical analysis	Rainer von Sachs	FR [q2] [30h+30h] [6 Credits] 🌐 > English-friendly
⊗ 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 Céline Bugli Nathalie Lefèvre	FR [q2] [30h+Nathalie Lefèvre

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 purposes 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](#).

Prerequisites list

LSTAT2920 "Stage ou travail d'application" has prerequisite(s) LSTAT2020 AND LSTAT2110 AND 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 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.

Ingénieur civil (sauf ingénieur civil architecte) Sciences informatiques Sciences économiques Sciences de gestion Ingénieur de gestion Sciences actuarielles Sciences physiques Sciences mathématiques Bioingénieur	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 Statistics in a single year.
Tous les autres masters	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 Statistics 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 (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>) .

Evaluation

The evaluation methods comply with the [regulations concerning studies and exams](#). 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.

Contacts

Curriculum Management

Entity

Structure entity

Denomination

Faculty

Sector

Acronym

Postal address

SST/SC/LSBA

(LSBA)

Faculty of Science (SC)

Sciences and Technology (SST)

LSBA

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1348 Louvain-la-Neuve

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<https://uclouvain.be/fr/facultes/sc/lsba>

Website

Academic supervisor: [Eugen Pircalabelu](#)

Jury

- Foreman of the jury: [Christian Hafner](#)
- Secretary of the jury: [Rainer von Sachs](#)
- Study advisor: [Eugen Pircalabelu](#)

Useful Contact(s)

- Secretary of the.608001J /F1 8 Tf ye0 06sv20 06e.60T-87o0 0Biots under 4aye0 06sv20 06e.60T-87o0 0Biots under0rm Manage06e.60T-87o0 0Bi

