Bachelor in Mathematics

Programme mnemonic
BA-MATH

Studies level
Bachelor

Learning language
french

Schedule
office hours

Studies category / subcategory
Sciences and technics / Sciences

Campus
Plaine

Programme objectives

Mathematics play a crucial role in all domains of science and technology. Learning mathematics develops great ability for abstraction, rigor and inventiveness. After their studies former students will be able to apply existing methods,to elaborate new theories or applications and to tech their field. The ability to analyse and solve problems, both theoretically and practically, allow students to become operational in a broad variety of fields such as mathematics, economy, finance, physics, astronomy, biomathematics, informatics, images and signals...

Programme's added value

Studying maths in Brussels offers to choose immediately a secondary field amongst biology, physics, informatics and economics.

The department has developed partnerships with the VUB, the other French speaking Belgian universities and universities of the North of France; this allows a large choce of options, in particular during the Master studies.

Personnalised interactions with assistants and professors from the first year.

Special training in writing mathematics.

You will have at your disposal: computer rooms with an internet connection and a library.

Teaching methods

Most lectures are tauht on the blackboard, and seconded by exercic sessions where the students work by themselves, with the available help of an assistant.

Evaluatons of the students performance are in January and June.

Succeed in your studies

Choose

The information and guidance counsellors at the InfOR-études [https://www.ulb.be/en/studies-info-desk-1] service will help you choose your studies throughout the year.

Succeed

Take part in preparatory courses [https://www.ulb.be/en/studies-info-desk-1] or get help to succeed [https://www.ulb.be/en/studies-info-desk-1] , before or during your studies.

Get help

Apply for financial aid, look for accommodation or a student job, get support [https://www.ulb.be/fr/aides-services-et-accompagnement/aid-services-and-support-1] for your specific needs.

International/Openness

A one-year stay abroad is possible during the master's course; an "à la carte" programme is devised in conjunction with the host university in accordance with the principle of exchange programmes.

Possibilities to choose lectures given in other Belgian or French universities, mainly during the MA.

Job opportunities

If you go on to do a Master in Mathematics, you can go on to work in the following fields

- research in the fields of mathematics, mathematical physics, astronomy, economics, information technology and bioinformatics
- banking sector
- insurance companies
- consultancy
- pharmaceuticals industry
- teaching
- Image and signal processing
- The BA in mathematics is the natural way to the Master in Statistics and the Master in Actuarial Science (insurance and finance). It also provides a good background for the Master in Bioinformatics.

Contacts

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https://sciences.ulb.be/departement-mathematique

Jury President
Ignace LORIS

Jury Secretary
Joost VERCRUYSSE

Bachelor in Mathematics

Mathematics with a secondary field to be chosen amongst Biology
Physics, informatics or economics.

Bloc 1 | BA-MATH

Cours obligatoires

MATH-F101 Calcul différentiel et intégral I | Bruno PREMOSELLI (Coordinator) and Mélanie BERTELSON
15 credits [lecture: 90h, tutorial classes: 90h] first and second terms French

MATH-F104 Logique et rédaction de preuves | Dimitri LEEMANS (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 12h] second term French

MATH-F105 Probabilités I | Yves-Caoimhin SWAN (Coordinator)
5 credits [lecture: 30h, tutorial classes: 30h] second term French

MATH-F121 Géométrie analytique et calcul matriciel | Joost VERCRUYSSE (Coordinator) and Anna Vanden Wyngaerd
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F122 Algèbre linéaire | Joost VERCRUYSSE (Coordinator) and Samuel FIORINI
10 credits [lecture: 54h, tutorial classes: 54h] academic year French

An option chosen from (the same in bloc 1, bloc 2 and bloc 3) :

B1-MATH-B Module Mathématique et biologie > *page*
B1-MATH-E Module Mathématique - Economie > *page*
B1-MATH-I Module Mathématique - Informatique > *page*
B1-MATH-P Module Mathématique - Physique > *page*

Bachelor in Mathematics

Bloc 2 | BA-MATH

Cours obligatoires

LANG-F201 Anglais scientifique I | Alexander CORNFORD (Coordinator), David Albert BEST and Hugh MURPHY
5 credits [tutorial classes: 48h] second term English

MATH-F201 Calcul différentiel et intégral II | Antoine GLORIA (Coordinator) and Guillaume DUJARDIN
10 credits [lecture: 60h, tutorial classes: 60h] first and second terms French

MATH-F207 Statistique mathématique I | Davy PAINDAVEINE (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F211 Topologie | Denis BONHEURE (Coordinator) and Thibaut GROUY
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F223 Théorie des groupes | Dimitri LEEMANS (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F224 Anneaux et corps commutatifs | Joost VERCRUYSSE (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] second term French

One course chosen from the following

ETHI-F201 (optional) Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] second term French

ETHI-F301 (optional) Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] first term French

An option chosen from (the same in bloc 1, bloc 2 and bloc 3) :

B-MATH-B Module Mathématique - Biologie > *page*
B-MATH-E Module Mathématique - Economie > *page*
B-MATH-I Module Mathématique - Informatique > *page*
B-MATH-P Module Mathématique - Physique > *page*

Bachelor in Mathematics

Bloc 3 | BA-MATH

Cours obligatoires

MATH-F3001 Théorie de la mesure | Antoine GLORIA (Coordinator) and Clément Cerovecki
5 credits [lecture: 30h, tutorial classes: 30h] first term French

MATH-F3002 Espaces fonctionnels et analyse de Fourier | Bruno PREMOSELLI (Coordinator)
5 credits [lecture: 30h, tutorial classes: 30h] second term French

MATH-F302 Probabilités II | Yves-Caoimhin SWAN (Coordinator)
5 credits [lecture: 30h, tutorial classes: 30h] second term French

MATH-F305 Travail de recherche et communication scientifique | Špela SPENKO (Coordinator), Thomas Connor and Michele D'ADDERIO
5 credits [project: 60h] second term French

MATH-F306 Optimisation | Ignace LORIS (Coordinator)
5 credits [lecture: 30h, tutorial classes: 30h] second term French

MATH-F309 Statistique mathématique II | Thomas VERDEBOUT (Coordinator) and Sophie Niang
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F310 Differential geometry I | Andriy Haydys (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term English

MATH-F323 Courbes algébriques | Špela SPENKO (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

MATH-F324 Algèbre non commutative | Špela SPENKO (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

Mesure transitoire 2023-2024

Si le cours MATH-F-3003 n'a pas été crédité en 2022-23, le cours MATH-F-224 fera partie du PAE 2023-24.

MATH-F224 Anneaux et corps commutatifs | Joost VERCRUYSSE (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] second term French

An option chosen from (the same in bloc 1, bloc 2 and bloc 3) :

B-MATH-B Module Mathématique - Biologie > *page*
B-MATH-E Module Mathématique - Economie > *page*
B-MATH-I Module Mathématique - Informatique > *page*
B-MATH-P Module Mathématique - Physique > *page*

Bachelor in Mathematics

Options | BA-MATH

Module Mathématique et biologie | B1-MATH-B

Bloc 1

Module Mathématiques et biologie

BIOL-F105 (option) — Biologie générale | Martine VERCAUTEREN (Coordinator), Mélanie BOECKSTAENS, Cyril GUEYDAN, Véronique KRUYS and Karine VAN DONINCK
10 credits [lecture: 90h, tutorial classes: 6h, practical work: 20h] | first and second terms | French

CHIM-F102 (option) — Chimie organique 1 | Cécile MOUCHERON (Coordinator)
5 credits [lecture: 30h, tutorial classes: 18h] | second term | French

INFO-F206 (option) — Informatique | Olivier MARKOWITCH (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h, project: 24h] | first term | French

Bloc 2

Mathématique et biologie

BIOL-F204 (option) — Microbiologie moléculaire et cellulaire | Laurence VAN MELDEREN (Coordinator) and Anne OP DE BEECK
5 credits [lecture: 36h] | second term | French

BIOL-F208 (option) — Biochimie et physiologie de la cellule | Vincent RAUSSENS (Coordinator), Véronique KRUYS and Maud MARTIN
5 credits [lecture: 60h] | first term | French

BIOL-F210 (option) — Evolution et diversité des bactéries et archées | Isabelle GEORGE (Coordinator) and Jean-François FLOT
5 credits [lecture: 32h, practical work: 16h] | first term | French

INFO-F205 (option) — Calcul formel et numérique | Maarten JANSEN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] | second term | French

Bloc 3

Mathématique et biologie

BIOL-F308 (option) — Mécanismes de l'évolution biologique | Patrick MARDULYN (Coordinator) and Karine VAN DONINCK
5 credits [lecture: 48h, tutorial classes: 12h] | first term | French

BIOL-F323 (option) — Génétique: aspects fondamentaux et appliqués | Bruno ANDRE (Coordinator) and Benoît VANHOLLEBEKE
5 credits [lecture: 42h] | academic year | French

Options de la filière biologie

A total of five credits chosen from the following

BIOL-F309 (option/optional) — Ecologie | Pierre Jacques MEERTS (Coordinator) and Jason VLEMINCKX
5 credits [lecture: 30h, practical work: 30h] | first term | French

BIOL-F318 (option/optional) — Histolophysiologie et développement animal | Jacob SOUOPGUI (Coordinator), Eric BELLEFROID and Anna Maria MARINI
5 credits [lecture: 48h] | first term | French

ETHI-F201 (option/optional) — Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] | second term | French

ETHI-F301 (option/optional) — Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] | first term | French

INFO-F305 (option/optional) Modélisation et simulation | Gianluca BONTEMPI (Coordinator)
5 credits [lecture: 30h, tutorial classes: 24h, project: 6h] first term French

INFO-H303 (option/optional) Bases de données | Esteban ZIMANYI (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] second term French

PHYS-F517 (option/optional) How To Make (almost) Any Experiment Using Digital Fabrication | Denis TERWAGNE (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term French

Module Mathématique - Economie | B1-MATH-E

Bloc 1

Mathématique et économie

ECON-S1001 (option) Introduction à la microéconomie et à la macroéconomie | P.-Guillaume MEON (Coordinator), Renaud FOUCART and Julien RAVET
15 credits [lecture: 72h, tutorial classes: 48h] academic year French

INFO-F206 (option) Informatique | Olivier MARKOWITCH (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h, project: 24h] first term French

Bloc 2

Mathématique et économie

ECON-S201 (option) Théorie macroéconomique I : le court terme en économie fermée et ouverte | Robert KOLLMANN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

ECON-S202 (option) Microeconomic theory : consumer and producer choice | Bram DE ROCK (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] second term English

ECON-S203 (option) Théorie monétaire I | Mathias DEWATRIPONT (Coordinator), Naïm CORDEMANS and Patrick VAN ROY
5 credits [lecture: 36h] first and second terms French

INFO-F205 (option) Calcul formel et numérique | Maarten JANSEN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] second term French

Bloc 3

Mathématique et économie

GEST-S318 (option) Introduction to theoretical finance | Laurent GHEERAERT (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] second term English

STAT-S308 (option) Introduction à l'économétrie | Vincenzo VERARDI (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

Options de la filière économie

A total of five credits chosen from the following

ECON-S3002 (option/optional) Politique industrielle | P.-Guillaume MEON (Coordinator) and Michele CINCERA
5 credits [lecture: 48h] first term French

ETHI-F201 (option/optional) Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] second term French

ETHI-F301 (option/optional) Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] first term French

INFO-F305 (option/optional) Modélisation et simulation | Gianluca BONTEMPI (Coordinator)
5 credits [lecture: 30h, tutorial classes: 24h, project: 6h] first term French

PHYS-F517 (option/optional) How To Make (almost) Any Experiment Using Digital Fabrication | Denis TERWAGNE (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term French

Module Mathématique - Informatique | B1-MATH-I

Bloc 1

Mathématique et informatique

INFO-F101 (option) Programmation | Thierry MASSART (Coordinator)
10 credits [lecture: 36h, tutorial classes: 36h, practical work: 24h, project: 60h] first term French

INFO-F102 (option) Fonctionnement des ordinateurs | Gilles GEERAERTS (Coordinator)
5 credits [lecture: 36h, practical work: 12h] first term French

INFO-F106 (option) Projets d'informatique 1 | Gwenaël JORET (Coordinator) and Tom LENAERTS
5 credits [practical work: 12h, project: 120h] first and second terms French

Bloc 2

Mathématique et informatique

INFO-F103 (option) Algorithmique 1 | Olivier MARKOWITCH (Coordinator), Bernard FORTZ and Dimitrios PAPADIMITRIOU
10 credits [lecture: 36h, tutorial classes: 36h, practical work: 24h, project: 60h] second term French

INFO-F205 (option) Calcul formel et numérique | Maarten JANSEN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] second term French

MATH-F307 (option) Mathématiques discrètes | Samuel FIORINI (Coordinator) and Laurent LA FUENTE-GRAVY
5 credits [lecture: 36h, tutorial classes: 24h] first term French

Bloc 3

Mathématique et informatique

INFO-F203 (option) Algorithmique 2 | Jean CARDINAL (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, project: 30h] second term French

INFO-F302 (option) Informatique fondamentale | Emmanuel FILIOT (Coordinator)
5 credits [lecture: 36h, tutorial classes: 12h, project: 30h] first term French

Options de la filière informatique

A total of five credits chosen from the following

ETHI-F201 (option/optional) Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] second term French

ETHI-F301 (option/optional) Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] first term French

INFO-F202 (option/optional) Langages de programmation 2 | John IACONO (Coordinator)
5 credits [lecture: 24h, practical work: 24h, project: 30h] first term French

INFO-F305 (option/optional) Modélisation et simulation | Gianluca BONTEMPI (Coordinator)
5 credits [lecture: 30h, tutorial classes: 24h, project: 6h] first term French

INFO-H303 (option/optional) Bases de données | Esteban ZIMANYI (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h, practical work: 12h] second term French

PHYS-F103 (option/optional) Physique | Alain JORISSEN (Coordinator)
5 credits [lecture: 36h, tutorial classes: 24h] second term French

PHYS-F517 (option/optional) How To Make (almost) Any Experiment Using Digital Fabrication | Denis TERWAGNE (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term French

Module Mathématique - Physique | B1-MATH-P

Bloc 1

Mathématique et physique

INFO-F206 (option) Informatique | Olivier MARKOWITCH (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h, project: 24h] first term French

PHYS-F110 (option) Physique générale I et II | Pascal VANLAER (Coordinator), Michele SFERRAZZA and Sophie VAN ECK
15 credits [lecture: 96h, tutorial classes: 84h] first and second terms French

Bloc 2

Mathématique et physique

MATH-F204 (option) Mécanique analytique | Frank FERRARI (Coordinator) and Glenn BARNICH
10 credits [lecture: 60h, tutorial classes: 60h] first and second terms French

PHYS-F202 (option) Relativité, électromagnétisme et optique ondulatoire | Petr TINIAKOV (Coordinator)
10 credits [lecture: 72h, tutorial classes: 48h] first and second terms French

Bloc 3

Mathématique et physique

MATH-F3141 (option) Analyse numérique pour les équations aux dérivées partielles | Bernard KNAEPEN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term English/French

MATH-F3142 (option) Introduction aux équations aux dérivées partielles | Denis BONHEURE (Coordinator) and Clément Cerovecki
5 credits [lecture: 24h, tutorial classes: 24h] first term French

Options de la filière physique

A total of five credits chosen from the following

BIOL-F102 (option/optional) Biologie générale | Patrick MARDULYN (Coordinator) and Etienne MEYLAN
5 credits [lecture: 48h] second term French

CHIM-F101 (option/optional) Chimie générale | Laurence RONGY (Coordinator), François RENIERS and Thierry VISART DE BOCARME
5 credits [lecture: 40h, tutorial classes: 20h, project: 15h] first term French

ETHI-F201 (option/optional) Sciences, éthique, histoire et société | Grégoire Wallenborn (Coordinator) and Eric MURAILLE
5 credits [lecture: 48h] second term French

ETHI-F301 (option/optional) Science et Société : analyse de controverses scientifiques | Patrick MARDULYN (Coordinator) and Grégoire Wallenborn
5 credits [lecture: 24h, project: 70h] first term French

INFO-F302 (option/optional) Informatique fondamentale | Emmanuel FILIOT (Coordinator)
5 credits [lecture: 36h, tutorial classes: 12h, project: 30h] first term French

PHYS-F201 (option/optional) Thermodynamique | Nicolas CHAMEL (Coordinator)
5 credits [lecture: 36h, tutorial classes: 24h] second term French

PHYS-F203 (option/optional) Introduction à la mécanique quantique | Serge MASSAR (Coordinator)
5 credits [lecture: 30h, tutorial classes: 30h] second term French

PHYS-F517 (option/optional) How To Make (almost) Any Experiment Using Digital Fabrication | Denis TERWAGNE (Coordinator)
5 credits [lecture: 24h, practical work: 24h] first term French