Master in Environmental Science and Management

Focus Environmental Science

The 2024-2025 programme is subject to change. It is provided for information purposes only.

Programme mnemonic
MA-ENVI
› Focus *Environmental Science* : M-ENVIE

Exists also in
› Focus *Management of the environment* : M-ENVIG

Studies level
Master 120 credits

Learning language
french

Schedule
office hours

Studies category / subcategory
Sciences and technics / Sciences

Campus
Plaine and Solbosch

Programme objectives

Addressing the environmental problems facing our societies is one of the biggest chanllenge for the 21st century. The Master's degree aims to provide students with the knowledge and skills necessary for a critical, interdisciplinary and multidimensional approach to these problems. Throughout the program, students develop their ability to inform, lead and support socio-environmental transformations. The Master's degree is built around two distinct finalities, with complementary objectives: Environmental Management and Environmental Sciences.

The Environmental Sciences Finality is specifically directed towards the techniques of analysis, observations and modelling of the global and regional environment.. Taking place in a truly multidisciplinary structure, the training is particularly focused on the scientific analysis of the environment in order to better understand the detailed working of our Planet and its constitutive envelopes (Atmosphere-Hydrosphere-Cryosphere-Biosphere-Lithosphere). The training provides the knowledge and skills necessary to understand and diagnose complex processes taking place on various scales (i.e., climate change, air and water quality, resource management, etc.).

This Finality is intended for holders of a bachelor's degree in the field of natural sciences, exact sciences or engineering sciences. Graduates will be able to bring their scientific expertise in the societal management of environmental issues, for which they will have followed a general and in-depth training as part of the Master's degree.

Programme's added value

The Environmental Sciences finality allows candidates to flourish in a "multi-approach" scientific study (theory, laboratories, modelling, field) of the processes that govern the functioning of our environment, and to do so in a truly multidisciplinary structure, thus preparing them for professional integration.

Teaching methods

Learning is based on a set of theoretical courses as well as laboratory work, computer modelling exercises, research seminars, group work and, if the student so wishes, an internship in a public, private or associative organisation. A number of courses include field visits or excursions, or involve professionals: each year a number of people with environmental responsibilities come to share their knowledge with the students. The curriculum may also include conference cycles.

The success of the Master's degree also depends on the preparation and presentation of a final thesis. It is to be considered as an important vector for student specialization. In the best of cases, it will constitute the student's business card in the professional world. The thesis can be oriented towards research and analysis, just as it can have a more operational and practical purpose.

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

Students have the opportunity to complete their teaching programme through an exchange in Europe (Erasmus+) or abroad.

For the Environmental Science Finality, it is recommended to limit this exchange to a part (a quadrimester) of the first year. In this context, it will be necessary to plan the stay in the previous year, due to the operational structure of ULB's Erasmus programmes. In addition, it is also possible to do an internship abroad. A European grant is awarded for internships undertaken outside Belgium in the Erasmus+ area.

Job opportunities

The jobs reflect the diversity of students' origins and motivations as well as the heterogeneity of current environmental issues.

Graduates hold positions of responsibility in public bodies, consulting and engineering firms, non-governmental organisations, companies, etc. They work at different levels, from municipal to international, knowing that they have been able to work with a large network of resource persons active in these sectors as part of the Master's degree. Some graduates may also turn to university and international research groups.

Some examples:

- Project managers in the various fields of environmental management (energy, climate, biodiversity, circular economy, water management, etc.) in the private sector, local to international public administrations, associations or NGOs.
- Consultants in specialized consulting firms (impact studies, carbon off-setting, environmental management systems, etc.).
- Environmental Advisor - eco-advisor in the public service or private sector.
- Advisor/Principal to international organizations (e.g. IPCC)
- Associative workers (animation, training, neighbourhood project, environmental education) and/or social and solidarity economy workers.
- Researchers in academic or private environments.
- Secondary and higher education teacher.

Contacts

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http://www.ulb.be/facs/sciences/dges

Jury President
Thomas BAULER

Jury Secretary
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Master in Environmental Science and Management
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This Master programme uses an interdisciplinary approach, relying on both natural and human sciences (ecology, geology, economy, law, etc.). Furthermore, it is structured around environmental domains (water, soil, air, etc.), economic sectors (agriculture, industry, energy, etc.), and environmental issues (climate change, waste, etc.).

Bloc 1 | M-ENVIE | MA-ENVI

Tronc commun (avec la finalité Gestion de l'environnement)

ENVI-F405 Climat: sciences et politiques | Frank PATTYN (Coordinator)
5 credits [lecture: 40h] second term French

ENVI-F409 Economie écologique | Thomas BAULER (Coordinator)
5 credits [lecture: 24h, practical work: 12h] second term French

ENVI-F437 Systèmes biologiques | Sonia VANDERHOEVEN (Coordinator)
5 credits [lecture: 36h] first term French

ENVI-F452 Environmental impact analysis and management | Wouter ACHTEN (Coordinator)
5 credits [lecture: 24h, practical work: 12h, project: 24h] first term English/French

Cours spécifiques: Observation et modélisation du système Terre

ENVI-F432 Cycles biogéochimiques globaux : processus, quantification, attribution | Steeve BONNEVILLE (Coordinator), Goulven Gildas LARUELLE and Pierre REGNIER
5 credits [lecture: 30h] second term French

ENVI-F526 Sciences de l'atmosphère et changements climatiques | Pierre-François COHEUR (Coordinator) and Cathy CLERBAUX
5 credits [lecture: 36h, project: 24h] second term French

ENVI-F527 Matière et énergie dans l'environnement: analyse, transport et instabilités | François FRIPIAT (Coordinator) and Anne DE WIT
5 credits [lecture: 36h, practical work: 24h] second term French

GEOG-F400 The Earth system and its interactions | François FRIPIAT (Coordinator)
5 credits [lecture: 36h, tutorial classes: 24h] first term English

GEOG-F425 Télédétection | Eléonore WOLFF (Coordinator)
5 credits [lecture: 30h, practical work: 30h] first term French

Options dirigées

Choisir 20 crédits partagés entre les deux blocs.

A total of 15 credits chosen from the following

Module Glaciologie-atmosphère-climat

Le cours GEOG-F502 est à choisir en Bloc 2

A total of 15 credits chosen from the following

ENVI-F451 (optional) Télédétection des variables climatiques et environnementales | Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE
5 credits [lecture: 36h, practical work: 12h, project: 28h] second term English/French

GEOG-F408 (optional) Modélisation en géosciences : glaciologie et climatologie | Frank PATTYN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

GEOG-F410 (optional) Paléoclimatologie | François FRIPIAT (Coordinator)
5 credits [lecture: 36h, practical work: 12h] second term French

GEOG-F502 (optional) Questions approfondies de glaciologie-atmosphère-climat | François FRIPIAT (Coordinator)
5 credits [lecture: 8h, tutorial classes: 24h] academic year French
Ce cours est à choisir en bloc 2

Module Géosphère-hydrosphère-biosphère

A total of 15 credits chosen from the following

BIOL-F4005 (optional) Social-ecological systems | Farid DAHDOUH-GUEBAS (Coordinator)
5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] first term English

GEOL-F2001 (optional) Introduction à la minéralogie et à la pédologie | Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
5 credits [lecture: 28h, practical work: 12h, field trips: 12h] first term French

GEOL-F4002 (optional) Volcanology | Karen FONTIJN (Coordinator) and Corentin CAUDRON
5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h] second term English

GEOL-F414 (optional) Eléments d'hydrogéologie | Philippe Orban (Coordinator) and Pascal Goderniaux
5 credits [lecture: 24h, practical work: 24h, field trips: 12h] first term French

GEOL-F428 (optional) Earth System Modeling | Pierre REGNIER (Coordinator) and Sandra ARNDT
5 credits [lecture: 24h, practical work: 24h] first term French

Master in Environmental Science and Management
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Bloc 2 | M-ENVIE | MA-ENVI

Tronc commun (avec la finalité Gestion de l'environnement)

ENVI-F403 Socio-environmental Dynamics | Maria MANCILLA GARCIA (Coordinator)
5 credits [lecture: 24h, practical work: 12h] first term English

ENVI-F510 Droit de l'environnement | Chiara ARMENI (Coordinator)
5 credits [lecture: 24h] first term French

MEMO-F529 Mémoire de fin d'études | François FRIPIAT (Coordinator)
20 credits [mfe/tfe: 240h] first and second terms

Cours spécifiques: Observation et modélisation du système terre

GEOG-F500 Apprentissage du mémoire | François FRIPIAT (Coordinator) and Frank PATTYN
5 credits [practical work: 48h] second term French

Options dirigées

Compléter le module choisi en bloc 1 en prenant 5 crédits en bloc 2 (20 crédits partagés entre les 2 blocs).
Au maximum 40 crédits à choisir parmi:

Up to 40 credits chosen from the following

Module Glaciologie-atmosphère-climat

A total of five credits chosen from the following

ENVI-F451 (optional) Télédétection des variables climatiques et environnementales | Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE
5 credits [lecture: 36h, practical work: 12h, project: 28h] second term English/French

GEOG-F408 (optional) Modélisation en géosciences : glaciologie et climatologie | Frank PATTYN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

GEOG-F410 (optional) Paléoclimatologie | François FRIPIAT (Coordinator)
5 credits [lecture: 36h, practical work: 12h] second term French

GEOG-F502 (optional) Questions approfondies de glaciologie-atmosphère-climat | François FRIPIAT (Coordinator)
5 credits [lecture: 8h, tutorial classes: 24h] academic year French
Ce cours est à choisir en bloc 2

Module Géosphère-hydrosphère-biosphère

A total of five credits chosen from the following

BIOL-F4005 (optional) — Social-ecological systems | Farid DAHDOUH-GUEBAS (Coordinator)
5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] first term English

GEOL-F2001 (optional) — Introduction à la minéralogie et à la pédologie | Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
5 credits [lecture: 28h, practical work: 12h, field trips: 12h] first term French

GEOL-F4002 (optional) — Volcanology | Karen FONTIJN (Coordinator) and Corentin CAUDRON
5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h] second term English

GEOL-F414 (optional) — Eléments d'hydrogéologie | Philippe Orban (Coordinator) and Pascal Goderniaux
5 credits [lecture: 24h, practical work: 24h, field trips: 12h] first term French

GEOL-F428 (optional) — Earth System Modeling | Pierre REGNIER (Coordinator) and Sandra ARNDT
5 credits [lecture: 24h, practical work: 24h] first term French

Cours optionnels

A total of 20 credits chosen from the following

BING-F301 (optional) — Microbiologie générale et environnementale | Isabelle GEORGE (Coordinator), Sigrid FLAHAUT and Cécile Thonar
5 credits [lecture: 36h, practical work: 24h] second term French

BING-F525 (optional) — Modélisation des écosystèmes aquatiques | Nathalie GYPENS (Coordinator)
5 credits [lecture: 24h, tutorial classes: 36h] first term French

BING-Y001 (optional) — Tracer Isotope Biochemistry | Marc ELSKENS (Coordinator) and Steven Goderis
6 credits [lecture: 24h] first term English

BIOL-F4005 (optional) — Social-ecological systems | Farid DAHDOUH-GUEBAS (Coordinator)
5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] first term English

BIOL-F417 (optional) — Marine ecology | Anton Van De Putte (Coordinator) and Marc KOCHZIUS
5 credits [lecture: 18h, practical work: 9h, field trips: 9h] first term English

BIOL-F441 (optional) — Ecotoxicologie | Philippe DUBOIS (Coordinator)
5 credits [lecture: 18h] second term French

BIOL-F443 (optional) — Plant responses to environmental stress | Nathalie VERBRUGGEN (Coordinator)
5 credits [lecture: 24h, project: 24h] first term English

BIOL-F444 (optional) — Plant-soil interactions | Pierre Jacques MEERTS (Coordinator)
5 credits [lecture: 24h, tutorial classes: 12h] first term English
Ce cours ne sera pas donné en 2023-2024.

CHIM-F474 (optional) — Chimie de l'environnement et risques chimiques | Pierre-François COHEUR (Coordinator) and Laurence RONGY
5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h] first term French

ENVI-F451 (optional) — Télédétection des variables climatiques et environnementales | Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE
5 credits [lecture: 36h, practical work: 12h, project: 28h] second term English/French

ENVI-F455 (optional) — Géoressources du sous-sol et anthropocène | Corentin CAUDRON, Adel EL Gammal and Nadine MATTIELLI
5 credits [lecture: 34h, seminars: 10h, field trips: 16h] second term French

ENVI-F529 (optional) — Ressources: Genèse et environnement | Nadine MATTIELLI (Coordinator), Corentin CAUDRON and Michel HUART
5 credits [lecture: 22h, practical work: 6h, field trips: 12h] second term French

ENVI-Y006 (optional) — Metal biogeochemical cycle
3 credits [lecture: 12h] second term English

ENVI-Y008 (optional)
Atmosphere and ocean : physics and dynamics | Thierry FICHEFET (Coordinator)
10 credits [lecture: 52,5h, tutorial classes: 7,5h] first term French

ENVI-Y009 (optional)
Introduction to the physics of the climate system and its modeling | Hugues GOOSSE (Coordinator) and Francesco RAGONE
5 credits [lecture: 22,5h, tutorial classes: 22,5h] first term French

GEOG-F211 (optional)
Systèmes d'information géographique et projections | Eléonore WOLFF (Coordinator) and Michele D'ADDERIO
5 credits [lecture: 24h, practical work: 36h] second term French

GEOG-F408 (optional)
Modélisation en géosciences : glaciologie et climatologie | Frank PATTYN (Coordinator)
5 credits [lecture: 24h, tutorial classes: 24h] first term French

GEOG-F410 (optional)
Paléoclimatologie | François FRIPIAT (Coordinator)
5 credits [lecture: 36h, practical work: 12h] second term French

GEOG-F502 (optional)
Questions approfondies de glaciologie-atmosphère-climat | François FRIPIAT (Coordinator)
5 credits [lecture: 8h, tutorial classes: 24h] academic year French
Ce cours est à choisir en bloc 2

GEOG-Y001 (optional)
Travaux dirigés et modélisation climatique
3 credits [lecture: 15h] first term French

GEOG-Y004 (optional)
Dynamics and modelling of glacial systems | Philippe HUYBRECHTS (Coordinator)
6 credits [lecture: 26h, tutorial classes: 39h] second term English

GEOG-Y005 (optional)
Introduction à l'océanographie physique et météorologie marine
3 credits [lecture: 20h, tutorial classes: 10h] first term French

GEOL-F2001 (optional)
Introduction à la minéralogie et à la pédologie | Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
5 credits [lecture: 28h, practical work: 12h, field trips: 12h] first term French

GEOL-F4002 (optional)
Volcanology | Karen FONTIJN (Coordinator) and Corentin CAUDRON
5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h] second term English

GEOL-F414 (optional)
Eléments d'hydrogéologie | Philippe Orban (Coordinator) and Pascal Goderniaux
5 credits [lecture: 24h, practical work: 24h, field trips: 12h] first term French

GEOL-F428 (optional)
Earth System Modeling | Pierre REGNIER (Coordinator) and Sandra ARNDT
5 credits [lecture: 24h, practical work: 24h] first term French

GEOL-F436 (optional)
The Global Coastal Ocean on a Changing Planet | Sandra ARNDT (Coordinator) and Pierre REGNIER
5 credits [lecture: 12h, practical work: 24h, field trips: 24h] second term French

GEOL-F438 (optional)
Géochimie isotopique de l'environnement : Concepts, applications, et méthodes | Nadine MATTIELLI (Coordinator), François FRIPIAT and Steven Goderis
5 credits [lecture: 24h, practical work: 16h] second term French

STAG-F026 (optional)
Stage | François FRIPIAT (Coordinator)
10 credits [work placement: 300h] academic year French

TRAN-F201 (optional)
Introduction aux enjeux de la durabilité | Wouter ACHTEN (Coordinator) and Chiara ARMENI
5 credits [lecture: 24h, project: 24h] second term French