



Master in Environmental Science and Management Focus Environmental Science

MA-ENVI | M-ENVIE | 2024-2025

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 inFocus 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 socioenvironmental 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-CryosphereBiosphere-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/studiesinfo-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 François FRIPIAT



Master in Environmental Science and Management

Focus Environmental Science

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) and Louise Knops ② 5 credits [lecture: 40h] 🗂 second term 🔎 French
ENVI-F409	Economie écologique Thomas BAULER (Coordinator) ⊙ 5 credits [lecture: 24h, practical work: 12h]
ENVI-F437	Systèmes biologiques Sonia VANDERHOEVEN (Coordinator) ③ 5 credits [lecture: 36h]
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 ② 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 ② 5 credits [lecture: 36h, practical work: 24h] 🛗 second term 📿 French
GEOG-F400	The Earth system and its interactions François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE ② 5 credits [lecture: 36h, tutorial classes: 24h]
GEOG-F425	Télédétection Eléonore WOLFF (Coordinator) ③ 5 credits [lecture: 30h, practical work: 30h]

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 Télédétection des variables climatiques et environnementales | Pierre-François COHEUR (Coordinator), Sophie Bauduin (optional) and Lieven CLARISSE

🕑 5 credits [lecture: 36h, practical work: 12h, project: 28h] 🛛 📋 second term 🛛 💭 English/French

Faculty of Sciences

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GEOG-F410 Paléoclimatologie | François FRIPIAT (Coordinator)

🕑 5 credits [lecture: 36h, practical work: 12h] 🛛 📋 second term 🛛 🔎 French

 OG-F502
 Questions approfondies de glaciologie-atmosphère-climat | François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE

 ional)
 ③ 5 credits [lecture: 8h, tutorial classes: 24h]
 🗂 academic year
 \bigcirc French

 Ce cours est à choisir en bloc 2
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Module Géosphère-hydrosphère-biosphère

A total of 15 credits chosen from the following

BIOL-F4005	Social-ecological systems Farid DAHDOUH-GUEBAS (Coordinator)
(optional)	① 5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h]
GEOL-F2001	Introduction à la minéralogie et à la pédologie Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
(optional)	① 5 credits [lecture: 28h, practical work: 12h, field trips: 12h] first term \$\mathcal{O}\$ French
GEOL-F4002 (optional)	Volcanology Karen FONTIJN (Coordinator) and Corentin CAUDRON ① 5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h]
GEOL-F414	Eléments d'hydrogéologie Philippe Orban (Coordinator) and Pascal Goderniaux
(optional)	② 5 credits [lecture: 24h, practical work: 24h, field trips: 12h]
GEOL-F428	Earth System Modeling Pierre REGNIER (Coordinator) and Sandra ARNDT

🕑 5 credits [lecture: 26h, practical work: 24h] first term 👂 French



Master in Environmental Science and Management Focus Environmental Science

Bloc 2 M-ENVIE MA-ENVI

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

ENVI-F403	Socio-environmental Dynamics Maria MANCILLA GARCIA (Coordinator) ③ 5 credits [lecture: 24h, practical work: 12h]
ENVI-F510	Droit de l'environnement Chiara ARMENI (Coordinator) ⊙ 5 credits [lecture: 24h]
MEMO-F529	Mémoire de fin d'études François FRIPIAT (Coordinator)

Cours spécifiques: Observation et modélisation du système terre

 GEOG-F500
 Apprentissage du mémoire | François FRIPIAT (Coordinator) and Frank PATTYN

 ② 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] ⁽¹⁾ second term
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) ② 5 credits [lecture: 36h, practical work: 12h] [™] second term
GEOG-F502 (optional)	Questions approfondies de glaciologie-atmosphère-climat François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE ② 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

Faculty of Sciences

BIOL-F4005	Social-ecological systems Farid DAHDOUH-GUEBAS (Coordinator)
(optional)	② 5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] 🛗 first term 👂 English
GEOL-F2001	Introduction à la minéralogie et à la pédologie Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
(optional)	© 5 credits [lecture: 28h, practical work: 12h, field trips: 12h] 🛱 first term 🔎 French
GEOL-F4002	Volcanology Karen FONTIJN (Coordinator) and Corentin CAUDRON
(optional)	O 5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h] 🛗 second term 🔎 English
GEOL-F414	Eléments d'hydrogéologie Philippe Orban (Coordinator) and Pascal Goderniaux
(optional)	② 5 credits [lecture: 24h, practical work: 24h, field trips: 12h] 🛗 first term 🔎 French
GEOL-F428	Earth System Modeling Pierre REGNIER (Coordinator) and Sandra ARNDT
(optional)	© 5 credits [lecture: 26h, practical work: 24h] first term French

Cours optionnels

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ULB

A total of 20 credits chosen from the following	
BING-F301	Microbiologie générale et environnementale Isabelle GEORGE (Coordinator), Sigrid FLAHAUT and Cécile Thonar
(optional)	② 5 credits [lecture: 36h, practical work: 24h] 🛗 second term 🔎 French
BING-F525	Modélisation des écosystèmes aquatiques Nathalie GYPENS (Coordinator)
(optional)	② 5 credits [lecture: 24h, tutorial classes: 36h] 📋 first term 📿 French
BING-Y001 (optional)	Tracer Isotope Biochemistry Marc ELSKENS (Coordinator) and Steven Goderis ③ 6 credits [lecture: 24h] ^m first term ^c English
BIOL-F4005	Social-ecological systems Farid DAHDOUH-GUEBAS (Coordinator)
(optional)	② 5 credits [lecture: 30h, tutorial classes: 6h, field trips: 12h] 🛗 first term 🔎 English
BIOL-F417	Marine ecology Anton Van De Putte (Coordinator) and Marc KOCHZIUS
(optional)	② 5 credits [lecture: 18h, practical work: 9h, field trips: 9h]
BIOL-F441 (optional)	O 5 credits [lecture: 18h] Image: Second term Prench
BIOL-F443 (optional)	Plant responses to environmental stress Nathalie VERBRUGGEN (Coordinator) ③ 5 credits [lecture: 24h, project: 24h]
BIOL-F444 (optional)	Plant-soil interactions Pierre Jacques MEERTS (Coordinator) Image: Standard
CHIM-F474	Chimie de l'environnement et risques chimiques Pierre-François COHEUR (Coordinator) and Laurence RONGY
(optional)	③ 5 credits [lecture: 36h, tutorial classes: 12h, practical work: 12h] 🛗 first term 🔗 French
ENVI-F451	Télédétection des variables climatiques et environnementales Pierre-François COHEUR (Coordinator), Sophie Bauduin and Lieven CLARISSE
(optional)	② 5 credits [lecture: 36h, practical work: 12h, project: 28h] 🛗 second term 📿 English/French
ENVI-F455	Géoressources du sous-sol et anthropocène Corentin CAUDRON, Adel EL Gammal and Nadine MATTIELLI
(optional)	② 5 credits [lecture: 34h, seminars: 10h, field trips: 16h] 🛗 second term 🕟 French
ENVI-F529	Ressources: Genèse et environnement Nadine MATTIELLI (Coordinator), Corentin CAUDRON and Michel HUART
(optional)	② 5 credits [lecture: 22h, practical work: 6h, field trips: 12h] 🛗 second term 🕟 French
ENVI-Y006 (optional)	O 3 credits [lecture: 12h] ⁽¹⁾ second term ⁽²⁾ English

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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	Introduction to the physics of the climate system and its modeling Hugues GOOSSE (Coordinator) and Francesco RAGONE
(optional)	③ 5 credits [lecture: 22,5h, tutorial classes: 22,5h]
GEOG-F211	Systèmes d'information géographique et projections Eléonore WOLFF (Coordinator) and Michele D'ADDERIO
(optional)	③ 5 credits [lecture: 24h, practical work: 36h] 📋 second term 🔎 French
GEOG-F408	Modélisation en géosciences : glaciologie et climatologie Frank PATTYN (Coordinator)
(optional)	② 5 credits [lecture: 24h, tutorial classes: 24h] — first term 💭 French
GEOG-F410 (optional)	Paléoclimatologie François FRIPIAT (Coordinator) ③ 5 credits [lecture: 36h, practical work: 12h] ⁽¹⁾ second term
GEOG-F502 (optional)	Questions approfondies de glaciologie-atmosphère-climat François FRIPIAT (Coordinator) and Brice VAN LIEFFERINGE ③ 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 ② 3 credits [lecture: 15h] [™] first term
GEOG-Y004 (optional)	Oynamics and modelling of glacial systems Philippe HUYBRECHTS (Coordinator) ③ 6 credits [lecture: 26h, tutorial classes: 39h]
GEOG-Y005	Introduction à l'océanographie physique et météorologie marine
(optional)	② 3 credits [lecture: 20h, tutorial classes: 10h]
GEOL-F2001	Introduction à la minéralogie et à la pédologie Steeve BONNEVILLE (Coordinator) and Thomas DROUET DE LA THIBAUDERIE
(optional)	② 5 credits [lecture: 28h, practical work: 12h, field trips: 12h]
GEOL-F4002	Volcanology Karen FONTIJN (Coordinator) and Corentin CAUDRON
(optional)	② 5 credits [lecture: 24h, tutorial classes: 8h, practical work: 8h, project: 30h] 👚 second term ᆽ English
GEOL-F414	Eléments d'hydrogéologie Philippe Orban (Coordinator) and Pascal Goderniaux
(optional)	② 5 credits [lecture: 24h, practical work: 24h, field trips: 12h]
GEOL-F428 (optional)	Earth System Modeling Pierre REGNIER (Coordinator) and Sandra ARNDT ③ 5 credits [lecture: 26h, practical work: 24h] ⁽¹⁾ first term ⁽²⁾ French
GEOL-F436 (optional)	The Global Coastal Ocean on a Changing Planet Sandra ARNDT (Coordinator) and Pierre REGNIER ③ 5 credits [lecture: 12h, practical work: 24h, field trips: 24h]
GEOL-F438 (optional)	Géochimie isotopique de l'environnement : Concepts, applications, et méthodes Nadine MATTIELLI (Coordinator), François FRIPIAT and Steven Goderis ② 5 credits [lecture: 24h, practical work: 16h] 📋 second term 📿 French
STAG-F026	Stage François FRIPIAT (Coordinator)
(optional)	① 10 credits [work placement: 300h]
TRAN-F201	Introduction aux enjeux de la durabilité Wouter ACHTEN (Coordinator) and Chiara ARMENI
(optional)	I second term Prench