

Curriculum for the award of the Degree of

Master of Science in Environmental Sciences and Humanities

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1 Introduction

The **Master of Science in Environmental Sciences and Humanities** educates generalists in environmental sciences with a special competence in environmental humanities and ethics. All modules consist of course units providing a general overview or introduction to the fields of studies and allow for specialization in specific fields of environmental sciences and humanities. The program is based on an interfaculty and a humanistic approach. Within this highly interdisciplinary setting, students achieve key competences in all fields of environmental sciences ranging from biology, geosciences to environmental economics and law while achieving a key focus on the environmental humanities with a special emphasis on ethical decision-making in environmental practice.

All course units of this program make true interdisciplinarity possible as they are followed in their faculties and departments of origin together with students from the respective fields. The program is divided into six modules and the master thesis:

1. The environmental humanities module consists of courses in the fields of the environmental humanities and in ethics. Examples are courses in environmental ethics, methods of ethical decision-making and courses in environmental history and political ecology.
2. The geosciences module deepens knowledge in methods and theory of earth sciences, as well as human and physical geography.
3. The environmental biology module extends knowledge in ecology and biological evolution.
4. The sustainable economy module provides the necessary background in economic thinking in the context of sustainability.
5. The environmental law module focuses on public law at national, European and international levels.
6. The humanities and theology module extends humanist background to environmental challenges.

Finally, the master thesis is interdisciplinary, focusing on ethical or humanist aspects of environmental governance and practice.

In conjunction with the courses from the humanities and theology module the environmental humanities module aims at building in-depth competences in humanist approaches to environmental challenges while a special focus lies on ethics and ethical decision-making. The other four modules provide the necessary generalist background to understand the basic scientific, economic and legal aspects of environmental issues to be governed today. Depending on their prerequisites, students follow more advanced or more basic courses. The master thesis allows a specialization on the humanist or ethical aspects of the chosen field of research.

This curriculum introduces the course structure of the MSc study programme in Environmental Sciences and Humanities. It is based on the regulations of the Faculty of Science and Medicine as defined in the *Règlement pour l'obtention des Bachelor of Science et des Master of Science de la Faculté des sciences et de médecine*, which entered into force on 6 April 2020 (hereafter called Regulation).

The Regulation of 6. April 2020 for the award of the Bachelor of Science and Master of Science degrees establishes a limit on the duration of Bachelor's and Master's studies, as well as of the minor study programmes (see articles 10, 11a, 12a, 13 and 31) (<https://www.unifr.ch/scimed/fr/rules/regulations>).

2 General Remarks

2.1 Academic Titles and Programme of Study

The Faculty of Science and Medicine of the University of Fribourg awards the official academic title of **Master of Science in Environmental Sciences and Humanities**, subsequently called **MSc**, to students who have successfully completed their respective study programme and obtained the title of Bachelor of Science (BSc) or a recognized equivalent.

The MSc in Environmental Sciences and Humanities provides access to various professional activities in research, environmental consulting and protection, spatial planning, documentation, and administration. Besides, the MSc is the entry requirement for scientific work and deepened scientific education leading to a doctorate.

Candidates in possession of a BSc in Biology, Geography, or Earth Sciences of the University of Fribourg or any other Swiss university including a BSc in Environmental Sciences or related fields from any Swiss university are admitted to the MSc course of studies (Art. 7 of the Regulation). The same holds for candidates in possession of a Bachelor in Anthropology, Economics, Law, Political Sciences, International Affairs, Theology or Philosophy accompanied by a minor in Environmental Sciences, Biology, Geography or Geology of the University of Fribourg or any other Swiss university. Candidates in possession of a Bachelor degree from abroad, in a different subject or without one of the necessary accompanying minors or of equivalent degrees (e.g. after graduating from an engineering school) can also be admitted to the MSc study programme by a decision of the Faculty of Science and Medicine to be made in each individual case. Provisional admission can be granted and depends on the fulfilment of additional requirements set by the Faculty (cf. Section 2.3).

2.2 Course Structure

The MSc study programme in Environmental Sciences and Humanities spans over two years (four terms), corresponding to a minimum of 120 ECTS credits.

It integrates courses in natural and human sciences, in law, economics, the humanities and theology. The course programme consists of the following teaching modules:

- An *Environmental Humanities module* totalling 18 ECTS credits.
- A *Geosciences module* comprising courses from physical Geography and Earth Sciences totalling 18 ECTS credits.
- An *Environmental Biology module* comprising courses from Biology totalling 18 ECTS credits.
- A *Sustainable Economics module* comprising courses from the economics option sustainable development and social responsibility totalling 10,5 ECTS credits.
- An *Environmental Law module* totalling 10 ECTS credits.
- A *Humanities and Theology module* totalling 6 ECTS credits.
- A *Supporting courses module*, comprising elective modules from the modules above to achieve the necessary competences not acquired during Bachelor studies. The selection of the courses must be approved by the director of the programme. It comprises the necessary ECTS credits to reach the minimum total of 120 ECTS credits.
- A *Master thesis module*, comprising the Master thesis and two environmental humanities colloquia comprising 30 ECTS credits.

The course language will be mainly English, with French and German depending on faculty and occasions. For exams and written work (project reports, MSc thesis, etc.) students can choose between German, French, and English. Most common language for exams will be English.

2.3 Acquired Skills

The aim of the studies leading to the award of a MSc in Environmental Sciences and Humanities is to deepen knowledge and to perfect competence in the chosen field. At the end of the programme, a student will have shown that they can apply their knowledge to accomplish a research project and will have learned how to work independently or how to integrate into an interdisciplinary research team. The award of the degree requires creative and self-critical talents as well as the ability to communicate ideas and work both in English and one's native language.

2.4 Assessment of Courses and Acquisition of ECTS Credits

Acquisition of ECTS credits occurs in three steps: assessment of the courses, grouping of courses into validation packages, and awarding the respective credits.

Exercises are assessed following the criteria given at the beginning of each course. Admission to an exam corresponding to a lecture course can be subject to meeting the requirements of the corresponding exercise class. **Assessment** of lectures is done by an oral and/or written exam, whose type and duration are regulated in the appendix to this curriculum. Exams take place during the official exam periods (sessions) in winter, summer, and autumn. Students register via the students' web portal MyUniFR (<https://my.unifr.ch>), within the stipulated delays for each exam according to the online procedure. Marks range from 6 (highest mark) to 1 (lowest mark). An exam marked below 4 can be repeated once at the next exam session at the earliest.

Validation packages comprise multiple, separately assessed courses. Art. 22 and 24 of the Regulation determines the number of these package whereas this curriculum determines their content. There are three validation packages:

- The *first package* (48 ECTS credits) consists of the compulsory courses of the Environmental Humanities Module, and all the courses of the Geosciences Module and the Environmental Biology Module;
- The *second package* (42 ECTS credits) consists of the elective courses of the Environmental Humanities Module, and all the courses of the Environmental Economy Module, the Environmental Law Module, the Humanities and Theology Module and the Supporting Courses Module;
- The *third package* (30 ECTS credits) consists of the Master Thesis Module.

ECTS points are credited according to art. 23 of the Regulation if:

- The weighted average of the exam marks of a validation package is at least 4. The weighting is given by the number of ECTS points assigned to a course.
- The assessment criteria of courses not examined (practical work, exercises, etc.) are met.
- No mark equals 1.0.

Under these prerequisites, validation packages are validated and the corresponding ECTS points are converted into ECTS credits. Upon request, the Dean's office issues transcripts of records in which exam results and credits awarded are acknowledged (Art. 26 and 27 of the Regulation), provided the exam fee has been paid.

2.5 Ethics and Science

Ethical principles are an integral part of a scientific education. Accepted international conventions must be respected during research and upon the writing of any scientific work whether it is a project, a lecture, a thesis or a report. In particular, every external source of information (articles, lectures, web pages, etc.) must be correctly cited.

2.6 Regulations and Additional Information

Detailed information about studying Environmental Sciences and Humanities can be found in the documents referenced on the web page <http://www.unifr.ch/scimed/en/plans> which can also be obtained from the Office of the University of Fribourg Environmental Sciences and Humanities Institute, Chemin du Musée 4, CH-1700 Fribourg.

3. Master of Science (MSc)

[Version 2021, validation packages : PV-SSE.0000025, PV-SSE.0000026, PV-SSE.0000027]

3.1 Course Units

Most course units are units not tailored for students from the MSc in Environmental Sciences and Humanities but for students of the specific fields of study. Be prepared to invest some time to acquire additional basic knowledge if needed. The supporting courses module is meant to add course units necessary but it is also possible to plan other modules in a way to achieve necessary basic knowledge first. If foreign to a field of study, it is recommended to follow more basic course units (most probably units at bachelor level) before attending more advanced course units (most probably units at master level).

Environmental Humanities Module

Code	Course	Semester	tot. h.	ECTS
<i>Compulsory courses</i>				
SSE.00432	Principles of environmental ethics (advanced), including reading seminar	AS	56	6
SSE.00445	Issues of sustainable development (advanced), including case studies	SS	56	6
<i>Elective courses</i>				
SSE.00433	Principles of environmental ethics (advanced)	AS	28	3
SSE.00444	Issues of sustainable development (advanced)	SS	28	3
SGG.00485	Environmental history	SS	28	3
SGG.00487	Issues in environmental ethics	AS / SS	28	3
SGG.00477	Political ecology	SS	28	3
Total				18

Geosciences Module

Code	Course	Semester	tot. h.	ECTS
<i>Compulsory courses</i>				
SGG.00424	Hazards, risks and vulnerability	AS	28	3
SGG.00426	Climate change: state of the art and debates	AS	28	3
SGG.00512	Geocolloquium ¹	AS/SS	28	3
<i>Elective courses</i>				
<i>Bachelor level²</i>				
SGS.00101	Introduction aux géosciences, partie 1 (cours) / Einführung in die Geowissenschaften, Teil 1 (Vorlesung)	AS	28	3
SGS.00102	Introduction aux géosciences, partie 2 (cours) / Einführung in die Geowissenschaften, Teil 2 (Vorlesung)	SS	28	3
SGS.00106	Erdgeschichte (Vorlesung)	SS	28	3
SST.00113	Géologie générale (cours) / Allgemeine Geologie (Vorlesung)	SS	28	3
SST.00203	Paléontologie (cours) / Paläontologie (Vorlesung)	AS	28	3
SGG.00262	Géomorphologie - Quaternaire, partie 1 (cours)	AS/SS	28	3
SGG.00263	Géomorphologie – Quaternaire, partie 2 (cours)	AS/SS	28	3

SST.00305	Terrains instables (cours) / Hanginstabilitäten (Vorlesung)	AS	28	3
SGG.00205	Géographie urbaine / Stadtgeographie	SS	28	3
SGG.00266	Géographie de l'eau / Geographie des Wassers / Geography of water <i>Master level³</i>	AS	28	3
SGG.00486	Advanced social research methods	AS	28	3
SGG.00409	Models, modelling and representations	AS	28	3
SGG.00425	Data and methods for environmental analysis	AS	28	3
SST.00538	Palaeoclimatology and palaeoecology	AS	28	3
Total				18

¹ 25 Geocolloquium sessions can be attended over 4 semesters.

² Can only be followed if no studies in geosciences during Bachelor level, 6 ECTS maximum.

³ Please consider potential pre-requisites! Consult the information provided in the course catalog (<https://www.unifr.ch/timetable>) or in the study portal MyUniFR (<https://my.unifr.ch>).

Environmental Biology Module

Code	Course	Semester	tot. h.	ECTS
<i>Compulsory courses</i>				
SBL.20036	Global Change	AS	28	3
SBL.20037	Invasion Biology	AS	28	3
<i>Elective courses</i> <i>Bachelor level³</i>				
SBL.00001	Biologie Générale I (cours) / Allgemeine Biologie I (Vorlesung)*	AS	46	5
SBL.00003	Biologie Générale I (travaux pratiques) / Allgemeine Biologie I (Praktikum)*	AS	12	1
SBL.00002	Biologie Générale I (cours) / Allgemeine Biologie II (Vorlesung)*	SS	46	5
SBL.00004	Biologie Générale II (travaux pratiques) / Allgemeine Biologie II (Praktikum)*	SS	12	1
SBL.00040	Biologie des organismes I : Vertébrés*	AS	28	3
SBL.00041	Organismenbiologie II: Wirbellose Tiere*	SS	28	3
SBL.00042	Biologie des organismes III : Champignons et plantes / Organismenbiologie III: Pilze und Pflanzen*	SS	72	6
SBL.00013	Ecologie / Ökologie	AS	42	4
SBL.00014	Biologie moléculaire / Molekularbiologie	AS	28	3
SBL.00018	Biologie moléculaire des plantes / Molekularbiologie der Pflanzen	AS	28	3
SBL.00021	Biologie de l'évolution / Evolutionsbiologie	AS	28	3
SBL.00032	Interactions plantes-pathogènes / Pflanzen-Pathogen Interaktionen	AS	18	2
SBL.00045	Hormones et développement des plantes / Hormone und Entwicklung der Pflanzen	SS	28	3
SBL.00049	Génétique des populations / Populationsgenetik	AS	28	3
SBL.00061	Diversité fonctionnelle des microorganismes / Funktionale Diversität der Mikroorganismen	AS	14	1.5
SBL.00063	Bases de bactériologie / Grundlagen der Bakteriologie	AS	14	1.5

<i>Master level</i>				
SBL.00205	Ecological field course	Block SS	80	5
SBL.00307	Symbiosis: how plants and microbes communicate	SS	12	1.5
SBL.00323	Plant Biotechnology	SS	28	3
SBL.00421	Oceanography and marine ecosystems	AS	8	1
SBL.10007	Polar Biology	SS	8	1
SBL.20034	Evolutionary Genomics	SS	28	3
SBL.20035	Structure and functions of host-associated microbiota	SS	28	3
Total				18

* These courses can only be followed as complementary courses. Their credits do not count for the master degree.

³ Can only be followed if no studies in biology during Bachelor level, 7 ECTS maximum

Master courses presuppose basic knowledge in biology (as taught in SBL.00001-SBL.00004 / SBL.00040-SBL.00042) and have strict pre-requisites. These pre-requisites can be taken before or in parallel to the specific MSc-level course. Depending on the course you plan to attend pre-requisites are defined as follows:

SBL.00205	SBL.00013
SBL.00307	SBL.00032, SBL.00045
SBL.00323	SBL.00014, SBL.00018,
SBL.00421	SBL.00013
SBL.10007	SBL.00013
SBL.20034	SBL.00021, SBL.00049

Sustainable Economy Module

Code	Course	Semester	tot. h.	ECTS
<i>Compulsory courses</i>				
<i>One of the following two courses at Bachelor level:</i>				
EEP.00336	ECO02F: Économie publique	SS	56	6
EEP.00337	ECO02D: Wirtschafts- und Finanzpolitik	SS	56	6
<i>Elective courses</i>				
<i>Master level</i>				
EEP.00321	Aide, microcrédit et autres instruments de développement	SA	42	4,5
EEP.00147	Microéconomie du développement	SS	42	4,5
EEP.00153	Politiques de développement	AS	42	4,5
EEP.00357	ECO07F: Économie du développement	SS	42	4,5
EEP.00365	Femmes et familles dans le monde en développement	SS	42	4,5
EEP.00131	Demography, Immigration and Labor Markets	SS	24	4,5
EEP.00351	History of Economic Thought	AS		4,5
EEP.00344	From the Spinning Jenny to smart bots: etc.	AS		4,5
EEP.00331	The Ethics of Economics as a Profession	SS	42	4,5
EEP.00325	Ethics, Politics and Economics	SS		4,5
EGE.00245	Philosophical Foundations of Economic Thought	AS		4,5
Changes each time	Topics in Philosophy and Economics: sub. title changes each time	AS		4,5

EEP.00125	Sustainable Globalization	AS	42	4,5
EEP.00063	Evaluation des dommages et politiques environnementales	SS	42	4,5
EEP.00340	ECO05F: Économie publique - Approfondissements	AS	42	4,5
EGE.00017	Esprit et création d'entreprises & entrepreneuriat social	AS	42	4,5
EGE.00024	Ethique en affaires et en finance (EAF)	AS	42	4,5
EGE.00108	Marketing durable	SS	42	4,5
EGE.00073	Markt und Strategie von Nonprofit-Organisationen	SS	42	4,5
EGE.00076	Performance Measurement in Nonprofit Organisations	SS	42	4,5
EEP.00353	Unternehmens- und Wirtschaftsethik	SS		4,5
EEP.00334	Global Economic Justice	SS	42	4,5
EEP.00127	Business and Human Rights	AS	28	3
	Total			10,5

Environmental Law Module

Code	Course	Semester	tot. h.	ECTS
	<i>Elective courses</i>			
	<i>Master level</i>			
DDR.00456	Introduction to Swiss Law	AS		5
DDR.00798	Raumplanungs- und Umweltrecht	AS		5
DDR.01781	Droit pénal et atteintes à l'environnement et aux espèces vivantes	SS		5
DDR.00596	International and European Responsibility Law	SS		5
DDR.00766	Europäischer und internationaler Menschenrechtsschutz	AS		5
DDR.00579	Droit international et européen des droits de l'homme	AS		5
	Total			10

Humanities and Theology Module

Code	Course	Semester	tot. h.	ECTS
	<i>Elective courses</i>			
	Two master courses from a list of courses at the Faculty of Humanities and the Faculty of Theology decided by the director of the program. ⁵		56	6
	Total			6

⁵ The list of courses can be found on <https://www.unifr.ch/env/en/studies/master-environmental-sciences-and-humanities/> and is being updated at the beginning of each academic year.

Supporting Courses Module

Code	Course	Semester	tot. h.	ECTS
	Courses to be chosen in a way to achieve the necessary competences not acquired during bachelor studies with the consent of the director of the program. Courses already assessed in another programme cannot be chosen again.			
	Total			9,5

Master Thesis Module

Code	Course	Semester	tot. h.	ECTS
SSE.00460	Master thesis colloquia	AS/SS	28	6
SSE.00461	Master thesis (with final public presentation)		–	24
	Total			30

3.2 Examinations of the MSc and Validation

The teaching units of the *Environmental Humanities Module* and the *Master Thesis Module* are evaluated according to the modes described in the document “Modalités d’évaluation des UE des Environmental Sciences and Humanities”. The assessments of *all other modules* take place according to the information provided by the study plans of the concerned programs.

The **first two validation packages** comprise all the teaching of the Environmental Humanities Module, the Geosciences Module, the Environmental Biology Module, the Environmental Economics Module, the Environmental Law Module, the Humanities and Theology Module and the Supporting Courses Module. The teaching units of the Master thesis module (SSE.00460 and SSE.00461), including the master thesis, constitute the **third validation package**.

The title of **Master of Science in Environmental Sciences and Humanities, University of Fribourg (MSc)** is conferred upon the validation of all three packages. A failed master thesis must be repeated on a different subject.

3.3 Admission Procedure to the Master Programme

Acceptance to the Master programme in Environmental Sciences and Humanities may be granted provided the following two conditions have been met by the applicant:

- Satisfying the University admission requirements as defined in the *Règlement concernant l’admission à l’Université de Fribourg* (<https://www3.unifr.ch/apps/legal/fr/document/274904>),
- The student possesses a Bachelor of Science from the University of Fribourg in Biology, in Geography, or in Earth Sciences. The same holds for students in possession of a Bachelor from the University of Fribourg in Anthropology, Economics, Law, Theology, or Philosophy accompanied by a minor in Environmental Sciences and Humanities, Biology, Geography or Geology or an academic degree judged equivalent by the Faculty of Science and Medicine.

For candidates with degrees that are not judged equivalent by the Faculty of Science and Medicine, the Commission for Students’ Requests will decide on eligibility (*Commission des requêtes des étudiant-e-s*, Dean’s Office, Faculty of Science and Medicine, ch. du Musée 8, CH-1700 Fribourg, Switzerland).

Based on the candidate’s academic qualification, the Commission for Students’ Requests can accept the application on the condition that additional requirements are fulfilled, provided they are of a minor scope and can be completed simultaneously with the Master studies. Otherwise, access is denied or applicants can be admitted to a “pre-master programme” and can begin the Master programme only after having fulfilled the requirements initially set for the pre-master. Final acceptance to the Master programme for a qualifying student depends on the successful completion of the additional requirements.

Students not holding one of the relevant titles of Bachelor, a Bachelor accompanied by a relevant minor or a title judged equivalent by the Faculty must follow and successfully complete at least a complementary programme in all relevant fields to the Master in order to be awarded the title MSc in Environmental Sciences and Humanities. Relevant courses followed and successfully completed during former Bachelor studies can be admitted if they are judged equivalent. If complementary courses are of minor scope, they can be completed in parallel to the Master programme. Otherwise, applicants are admitted to a “pre-master programme” and can start with the master degree programme only after fulfilling the requirements initially laid down for the pre-master.