



**University of
Zurich^{UZH}**

Department of Geography

Study guide to the program of Earth System Science

Master of Science



**Starting in the
fall semester 2021**

Imprint

Student Advisory Service Geography and Earth System Science

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www.geo.uzh.ch/en/studying

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1. Preface

Welcome! We are pleased that you are interested in choosing the Master's study program in Earth System Science at the University of Zurich.

In this **study guide** ("**Wegleitung**"), the program is explained for students starting their studies in the fall semester 2021. For students who have started their studies before fall semester 2021, the study guide of the corresponding year (begin of studies) as well as the transitional regulations are relevant. This study guide describes the structure of the MSc program in Earth System Science (ESS) and provides answers to study-technical questions. For remaining questions, the Student Advisory Service of the Department of Geography (GIUZ) is your first contact point:

Office	Y25 K10, Winterthurerstr. 190, Universität Irchel, Zürich
Phone	044/635 51 18
Mail	✉ student-advice@geo.uzh.ch
Opening hours	Two afternoons per week from 13.00 to 16.30 o'clock (please consider the information on the website for current opening hours). Appointments for a meeting can be booked at → www.terminland.de/giuz-studienberatung

Further information about the study program and particularly about individual courses can be found on the following websites:

- Website for students of the University of Zurich
→ www.students.uzh.ch
- Commented course catalogue of the University of Zurich
→ <https://studentservices.uzh.ch/uzh/anonym/vvz/index.html>
- Commented course catalogue of the ETH
→ www.vvz.ethz.ch

In order to allow students to efficiently plan their studies, an information event concerning the Master's program is held at the end of the Bachelor's program. For new students at UZH, usually a short introduction event takes place on the last Tuesday before the start of the fall semester. For further information please contact the student advisory service.

More information on the Master's program in Earth System Science can be found on the website of the Department of Geography:

→ http://www.geo.uzh.ch/en/studying/consecutive_master.html

We wish you all the best during your Earth System Science studies and are looking forward to seeing you around!

Student advisory service of the Department of Geography,
Etienne Gruebler & Laura Wysling

Scientific coordinator Earth System Science,
Dr. Maarten Eppinga

2. Working as an Earth system scientist

Earth System Scientists have a wide range of professional options, ranging from education or academia to (non-) governmental institutes and for-profit companies. The educational background of ESS candidates is interdisciplinary and their skillset allows them to quickly familiarize and develop themselves in any of the studied fields. ESS candidates are particularly strong in linking processes and studying the large scope systems of which these processes are part of. This is essential for contemporary issues like environmental change or food and energy production. More general, Earth system scientists can work on a broad range of cases where humans interact with their environment and, as such, with our planet.

2.1. Employment Situation

Earth system scientists usually find jobs quickly after their graduation, both in Switzerland and abroad. Thanks to the social importance of topics like environmental protection, natural hazards and support of growing human population, the jobs for Earth system scientists are interesting and challenging. Even if your ambition is outside of the common ESS applications, the strong analytical background that the ESS curriculum offers is very attractive for companies.

3. MSc studies at the UZH Faculty of Science

Information in this section applies to MSc studies at the Faculty of Science (*“Mathematisch-Naturwissenschaftliche Fakultät”, MNF*) in general. For specific information about the Master in Earth System Science, we refer to Chapter 4 and onwards.

The degree courses at the Faculty of Science are structured into Bachelor's and Master's degrees. The MSc degree is qualifying for jobs outside the university, it opens the door to studying towards a PhD degree and it forms the basis for the teaching diploma for high schools.

3.1. Enrolment

A matriculation is necessary for following an MSc study program at the University of Zurich. You need to be matriculated as long as you require services of the University – including visiting courses, counselling and support, utilisation of libraries and the computer infrastructure, taking exams, as well as the validation of the diploma.

Registration

The process starts with registration at the Student Administration Office of the University. This is also the case after an interruption of your studies. The requirements for an admission to the University of Zurich are defined under

→ www.uzh.ch/studies/application_en.html

Application deadline:

- Fall semester: 30th of April
- Spring semester: 30th of November

Semester enrolment

The matriculation at UZH is renewed every semester using the online semester enrolment tool at

→ www.students.uzh.ch/registration_en.html

Booking modules at ETH once requires a separate enrolment as external student at the ETH via

→ <http://www.mystudies.ethz.ch>

3.2. Begin of studies and study duration

Generally, the begin of the Master's study is in the fall semester. If students begin their Master's study program in the spring semester they might need to consider certain preconditions for modules (e.g. module B is only bookable after completion of module A).

The standard study duration for MSc programs is three or four semesters (with a minor). The maximum period of study is double the standard period of study, thus six - or eight - semesters. If the maximum study duration has been exceeded, no degree can be obtained from the Faculty of Science (MNF) anymore. The Faculty Board might permit exceptions upon handing in a justified request.

3.3. Structure

The degree programs at the MNF are structured into Bachelor's and Master's degrees (Bachelor of Science: BSc; and Master of Science: MSc). To start a Master's curriculum, it is required that you have a Bachelor's degree and MSc curricula build on and assume the BSc knowledge. In the Bachelor's studies, a solid knowledge base and the capability for methodical-scientific thinking are being taught. The consecutive Master's degree provides a deepened scientific education and prepares candidates for autonomous

scientific work. The structure of the Master's program in Earth System Science is explained on later pages in this study guide.

As a third step, a PhD can be pursued after the Master's degree. The PhD program is based on availability of (funded) positions, an open application procedure and requires an MSc degree with excellent results.

The MSc degree also forms the basis for pursuing a teaching education for high school ("*Lehrdiplom*"). The didactical education is held at the Institute of Education (IfE) of the University of Zurich. This track requires knowledge of the German language and a tailoring of the MSc curriculum with modules that are compulsory for the teaching diploma.

→ <http://www.geo.uzh.ch/de/studium/lehrdiplom.html>

→ <http://www.ife.uzh.ch/de/llbm/lehrdiplomfuermaturitaetsschulen.html>

3.4. Structure of major and minor

The Bachelor's (180 ECTS credits) and Master's programs (90 or 120 ECTS credits) at the Faculty of Science (MNF) are divided into major and minor subjects. Within the Master's program (90 ECTS credits) in ESS, no minor is included. Nevertheless, an additional minor (30 ECTS) can be completed if the study program is extended to 120 ECTS credits.

→ https://www.geo.uzh.ch/de/studium/nebenfaecher_fuer_geographiestudierende.html

At the Faculty of Science (MNF) and the ETH Zurich, a new minor can be started at Master's level. At other faculties, a minor on Master's level may require a minor at Bachelor's level. A list of all major and minor subjects of the University of Zurich can be found at the following website.

→ www.degrees.uzh.ch

3.5. Compulsory, core elective and elective modules

The study program includes three different types of modules: compulsory, core elective and elective modules. Modules can contain one or more course types such as lectures, exercises, seminars or field trips. Every module is completed by an assessment. The type of assessment depends on the module and is published in the online course catalogue.

There are different kinds of modules:

- **Compulsory modules** are compulsory for all students of a certain study program. If the assessment of a compulsory module is failed, the assessment can be repeated once. If the repetition is also insufficient, the student is excluded from all study programs which contain this module as a compulsory module.
- **Core elective modules** are modules, which can be chosen from a given list. The assessment of a core elective module can be repeated once. If the repetition is also insufficient, the module can be replaced once by another core elective module.
- **Elective modules** are modules, which can be freely selected according to chapter 5.5. Elective modules can be substituted without restrictions.

3.6. Booking modules

Information about modules can be found in the online course catalogues ("*Vorlesungsverzeichnis*"), see links below. The general structure of a curriculum is defined in the study guide but the students compose individual schedules themselves, especially at MSc level.

→ www.vorlesungen.uzh.ch

→ www.vorlesungen.ethz.ch

After having paid the semester fees it is possible to book modules online. The deadlines of the particular faculty have to be considered. It is recommended to book modules at your earliest convenience. For the MNF, the online booking tool opens around six weeks before the lecture period. Booking modules is usually possible until the third week after the start of lectures, but there are modules which need to be booked earlier. A deregistration of modules at the MNF is usually possible until around the middle of the semester.

→ www.students.uzh.ch/booking/fristen_en.html

If the assessment of a module is failed, a notification and a registration form will be sent to the student. Notifications will be sent out at the beginning of March for the module exams of the fall semester and in the second half of July for the module exams of the spring semester. The registration for a repeat examination is binding and it is therefore not possible to de-register. Students can also choose to repeat the whole module.

Modules at the ETH Zurich must be booked separately. This requires prior registration as a “special student” at ETH, which must be confirmed each semester. Afterwards, ETH modules can be booked directly online via myStudies.

→ <https://ethz.ch/en/studies/non-degree-courses/special-students/special-students-university-of-zurich.html>

→ www.mystudies.ethz.ch

3.7. Exams

3.7.1. Registration for exams

With the booking of a module at UZH, students are automatically registered for the assessment of the respective module. In most cases, you can unsubscribe from the module, including the exam, without specifying any

reason within the first 10 weeks of the lecture period but check the course catalogue for specific modules. A deregistration after the cancellation deadline is only possible upon submission of a medical certificate or a written request. If students are ill on the day of the examination, they must submit an application for cancellation within 5 working days of the examination and attach a medical certificate. Applications are made through the online Student Portal. Afterwards, missed exams (no-show) will be graded as failed. In the final diploma, only passed assessments will be shown.

→ <http://launchpad.uzh.ch>

For modules at the ETH Zurich the exam registration has to be carried out separately. Depending on the type of examination, a deregistration is possible until shortly before the exam.

Students have online access to their Transcript of Records (overview of all passed and failed modules) at any time.

→ http://www.students.uzh.ch/record_en.html

3.7.2. Grading of exams

The module coordinator is responsible for the assessment. The form of the assessment is communicated in the course catalogue. It can include the handing-in of exercises or assignments. These can be graded or marked with a pass/fail.

At UZH, you can see the results in your personal account (www.students.uzh.ch/record.html) after about 4 weeks. Afterwards, the Faculty Board validates the results before they are final. You have the right to see the corrected exam and to consult the teacher(s) who graded the exam. The date and time will be communicated by the teacher or by the secretary.

At ETH, the results are first validated and then disseminated via MyStudies (www.mystudies.ethz.ch). At a later stage, the results are automatically communicated to UZH and listed for your degree.

3.7.3.Regulations for repeat examination in ESS

The ESS regulations follow those of the institute that offers the module, i.e. the UZH department of Geography or the ETH department of Earth Science. Usually, exams can be repeated once for every module. After two failed attempts, the concerning module cannot be taken anymore. In the unfortunate case of two failed attempts for a compulsory module, all curricula, which require that specific module, cannot be continued. If a core elective module failed at the repeat examination, it can be replaced once by another core elective module, also with the possibility to repeat the exam once. Elective modules can be replaced without constraints. An invitation to register for the repeat examination is sent with the exam result. The application for the repeat exam is binding and it is not possible to unsubscribe. You can also opt to repeat the entire module.

The described regulations are also applicable for the Master's exam. A one-time repetition of the MSc thesis, with a new topic, is possible.

3.8. Mobility

Usually, it is possible to take one semester at another university. This needs to be discussed with and approved by the scientific coordinator. The University of Zurich must recognize the host university and the modules must fit within the ESS scope. The obtained foreign credit points can count towards the free-choice part of the master and, under certain conditions, towards the core elective knowledge blocks (see section on the MSc structure). In the end, 60% of the 90 ECTS credits need to be covered by UZH modules. Note that ETH modules cannot count towards these 60%. For this

reason, the ESS curriculum only allows for one exchange semester. The Faculty Board can make exceptions, based on a written request.

Studying at another university in Switzerland or abroad is a very exciting and valuable experience. Furthermore, it offers the possibility of improving a foreign language. All necessary information about studying abroad can be found on the website of the GIUZ. The student advisory service supports students in planning mobility stays at other universities.

Please note: Applications have to be submitted up until 15th of January for the following academic year (autumn until autumn!). This means that the registration deadline is the same for students who wish to take up a mobility stay in the spring or autumn semester.

→ <http://www.geo.uzh.ch/de/studium/austauschprogramme.html>

3.9. The credit-point system

Every degree program at the University of Zurich is built according to the principle of the ECTS credit point system (ECTS = European Credit Transfer System). A Master's degree in Geography contains 90 or 120 ECTS credits (with a minor). For all coursework, students get ECTS credits based on an official assessment. The following principles apply:

- No ECTS credits are awarded without an official assessment.
- One ECTS credit corresponds to a workload of around 25-30 hours. In this time, lectures and time for individual work (self-study, solving exercises, preparation for exams, etc.) are included.
- In a full-time study program, around 30 ECTS credits are gained per semester.
- Only integer ECTS credits can be obtained.

Students have online access to their Transcript of Records (overview of all passed and failed modules) at any time. The Student Affairs Office of the Faculty needs to be informed about any discrepancies within four weeks after the module ended.

→ http://www.students.uzh.ch/record_en.html

3.10. Final degree

The diploma certificate is written in German and in English. It lists the weighted average of the grades, which is calculated following the study regulations. If applicable, separate grades are listed for the major and for the minor subject. A list with all completed modules with the ECTS credit points is attached, as well as a “Diploma Supplement” which summarizes general information about the educational background in Switzerland and particularly at the University of Zurich and about the specific MSc curriculum.

The Master’s degree doesn’t automatically get issued upon completion of all necessary ECTS credits. An online request has to be submitted by the student in order to obtain the Master’s degree. If all conditions are fulfilled, the corresponding title will be validated at the next meeting of the Committee for Student Affairs by the Faculty of Science, but only if the application was submitted at least four weeks before the meeting. Otherwise the diploma will be issued after the subsequent meeting.

→ http://www.geo.uzh.ch/en/studium/consecutive_master/degree.html

→ <http://www.mnf.uzh.ch/en/studium/wie-studieren/termine.html>

3.11. Transfer of additional credits

It is possible to credit up a maximum of 10 additional ECTS credits to each study unit (major and minor). This can include modules of the UZH and the ETHZ, as well as language courses of the Language Center of UZH and ETH Zurich. A maximum of 4 ECTS credits can be credited for language courses

(BSc and MSc together). Only full modules qualify (i.e. not individual courses or half modules) and compulsory modules cannot be excluded from the calculation.

The additional ECTS credits are listed in the final transcript of records as “Academic Achievement Not Counted toward Degree”, but are not included in the calculation of the final average grade.

3.12. Official regulations for Master’s degrees at MNF

The following regulations are (legally) binding:

1. The **Framework Academic Regulations** (“*Rahmenverordnung*”) contains the general regulations for all BSc and MSc studies at the Faculty of Science at the University of Zurich.
2. The **Study Regulations** (“*Studienordnung*”) contain information about the individual study degrees at the MNF. This concerns for example modules, exams and credit points.
3. This **guide** (“*Wegleitung*”) provides practical and more information about the study program in Earth System Science at the Department of Geography.

Both the Framework Academic Regulations and the Study Regulations are published on the MNF website:

→ www.mnf.uzh.ch/en/studium/reglemente.html#3

The study guide is updated every fall semester and can be downloaded from the ESS website

→ www.geo.uzh.ch/en/studying/downloads.html

4. The MSc program in Earth System Science

Earth system scientists make a contribution to comprehending interactions and occurrences in various Earth spheres. They can observe and describe, analyze and predict such interactions due to their ability to think in an interconnected way. For example, they recognize correlations between forest fires and climate extremes or between rising sea levels and glacier meltdowns. Their appreciation for past, current, and future processes plays a decisive role in this context.

In the Bachelor's program, students learn about the fundamentals on which all areas of Earth System Science are based: mathematics, chemistry, physics, biology, geology and physical geography. Various application fields within Earth System Science are explored and a focus system is selected for the final semesters and the Bachelor thesis. This curriculum consists largely of compulsory modules.

In the Master's program, students have a lot of flexibility to design their own study. This freedom requires responsibility, motivation and independence. These assets are valuable, even critical, in your future career and contribute to the unique profile of interdisciplinary and independent thinking and working of Earth System Scientists. The MSc committee (scientific coordinator ESS and supervisor of the Master's thesis) help and support you in designing and successfully completing your personal MSc program.

This section provides an overview of the ESS Master's program, including a general overview, admission issues, mobility and options to pursue a teaching degree.

4.1. General structure

The figures below show the general structure of the Earth System Science Master's program. Students can choose between a 30 ECTS credits and a 60 ECTS credits Master's thesis. This decision has to be made at the beginning of the master studies, as it influences the general structure of the study program. Each of the elements is discussed in more detail in chapter 4.

CP	7. Semester (HS)	8. Semester (FS)	9. Semester (HS)	CP
1	ESS 401 Current Themes in Earth System Science	ESS 416 Earth System Modelling	ESS 511 Master's Thesis	1
2				2
3				3
4	ESS 417 Earth System Observations and Analyses			4
5				5
6				6
7				7
8				8
9	Core elective modules At least two Systems with a minimum of 12 CP in each System			9
10				10
11				11
12				12
13				13
14				14
15				15
16				16
17				17
18				18
19				19
20				20
21				21
22				22
23				23
24				24
25	Skills			25
26				26
27				27
28	Elective modules			28
29				29
30				30
31			ESS 512 Master's Exam	31
32				32

CP	7. Semester (HS)	8. Semester (FS)	9. Semester (HS)	CP
1	ESS 401 Current Themes in Earth System Science	ESS 416 Earth System Modelling		1
2				2
3				3
4	ESS 417 Earth System Observations and Analyses			4
5		ESS 510 Master's Thesis		5
6				6
7				7
8				8
9	Core elective modules Two Systems with 8 CP in each System			9
10				10
11				11
12				12
13				13
14				14
15				15
16				16
17				17
18				18
19				19
20				20
21				21
22				22
23				23
24				24
25				25
26				26
27				27
28				28
29				29
30				30
31				31
32				32
33			ESS 512 Master's Exam	33
34				34

4.2. Systems of the MSc curriculum

The Master curriculum in ESS is designed in a way to be flexible for students. In this Master's program, no specialization is possible and can, therefore, not be mentioned on the diploma. Independent of the systems you chose, the diploma will have "Master in Earth System Science" as title. The module list will obviously demonstrate the focus you chose. The focus systems are:

Geo-Biosphere System

- Geology
- Geochronology
- Soil Science
- Paleontology

Human-Environment System

- Human Geography
- Natural Risk Analysis
- Environmental Politics
- Sustainability and Resources

Hydro-Atmosphere System

- Hydrology
- Glaciology
- Atmosphere and Climate Science

Modifications to the suggested courses in the systems (see chapter 5.3), e.g. substitution of modules, may be possible and can be discussed with the scientific coordinator. The ESS Master's program is very interdisciplinary. It requires and enables candidates to study more than one focus system. The curriculum does not support a minor within the nominal study load of 90 ECTS credits. An additional minor can be taken but extends this study load with 30 ECTS credits.

30 ECTS credits thesis (ESS 511)

Students have to choose at least two out of three focus systems. In each chosen system, a minimum of 12 ECTS credits has to be obtained.

However, a total of 36 ECTS credits has to be obtained in the different systems.

60 ECTS credits thesis (ESS 510)

Students have to choose two out of three focus systems. In each system, at least 8 ECTS credits have to be obtained.

4.3. Personal study plan

The ESS Master's program is very flexible, in a sense that you can, with few constraints, determine the study focus yourself: Are your interests in the interface between the geosphere and biosphere? Are you interested in the relation between humans and the environment, or the hydrosphere and the atmosphere? You can tailor your Master's program to match your interests. But freedom also comes with responsibility. When you have been admitted to the curriculum, among the first tasks is to prepare a **personal study plan** and to briefly discuss it with the scientific coordinator of the curriculum. If the student chooses the 60 ECTS credits Master's thesis, the personal study plan also has to be discussed with the supervisor of the thesis. Please start subscribing for the modules that you plan to take in your first semester as soon as possible, even before approval. You can always unsubscribe or change. Contact the scientific coordinator for a 15-min discussion of your study plan in your first semester and again if you plan substantial changes.

Please note that UZH modules must cover at least 60% of all credit points of the ESS master program (i.e., at least 54 ECTS credits) in order to obtain the ESS MSc degree.

4.4. Switching to the Earth System Science master

The UZH BSc in Earth System Science grants unrestricted access to the ESS MSc curriculum. Please register for the master in time. Other scenarios are outlined below.

4.4.1. Applying for the ESS MSc with a Bachelor in a related field

With any ESS-related Bachelor degree from a recognized academic institution, you can apply for the ESS master. Admission to the master depends on your academic record and may require taking BSc modules in natural science (physics, math, chemistry, biology) or any of the ESS skills and application domains (remote sensing, GIS, physical geography, geology). These credit points are additional to the 90 ECTS credits of the master. The list of BSc modules to be taken is tailored to your situation and provided during the application procedure (indication of restriction see Table 3.4.2). Please note that most BSc courses at the University of Zurich and at ETH are only offered in German. Non-German speakers may have to finish equivalent modules at their home institute or at another recognized university.

The information given here is an indication; please contact the Student Advisory Service with your specific case. An official assessment is only given at the time of admission. The final list of additional requirements depends on the choices during your bachelor and is provided during the application procedure.

The following modules (or equivalent) are required for students switching to the ESS master. Note that this list may be subject to change and that the final additional requirements are tailored to the applicant's background.

Table 3.4.2 Indication of requirements for start of the ESS master with a relevant BSc degree. Equivalent modules may be eligible. The final additional requirements are personal and based on the applicant's background. No rights can be derived from this guide.

Natural Sciences		ECTS
PHY118 (HS)	Physik I für Naturwissenschaften	5
CHE170 (HS)	Grundlagen der Chemie für die Biologie	4
BIO141 (FS)	Oekologie und Biodiversität	4
MAT141 (HS)	Lineare Algebra für die Naturwissenschaften	5
Application domains and skills		
ESS110 (HS/FS)	Grundlagen der Geologie	11
GEO113 (HS)	Fernerkundung und GIS I	5
GEO121 (FS)	Physische Geographie II: Atmo, Klima, Hydrologie	5

4.4.2. Applying for the ESS master from outside UZH

You can apply by submitting a motivation letter, your CV and the full overview of your BSc degree in the online admission procedure. For details, see <https://www.uzh.ch/en/studies/application/master.html>.

It is recommended to apply for a start in September (fall semester) but it is possible to start in spring. In the case of admission with additional requirements, you can start with those modules anytime.

The MSc program is almost exclusively taught in English. Few MSc modules can be offered in German but none of these are compulsory. In case of admission with restrictions, please note that most BSc modules are offered in German. You may submit a request to take alternative modules at a recognized institute that offers equivalent modules in English.

4.5. Studying towards a teaching diploma

The additional Teaching Diploma for Upper Secondary Education (*“Lehrdiplom für Maturitätsschulen”*) has to be acquired in order to become a secondary school teacher. For information, see

→ <https://www.ife.uzh.ch/en.html>

→ <https://www.geo.uzh.ch/de/studium/lehrdiplom.html>

The curriculum for secondary school teacher consists of 60 additional ECTS credits, for which courses can be taken already during the Master’s studies. Note that fluency in German is required for this track.

In case you wish to pursue the teaching diploma, it is recommended to contact the Student Advisory Service at an early stage. This way, you can start taking the required modules as soon as possible and you avoid a study delay.

5. Structure and content of the MSc program

5.1. General

The curriculum covers 90 ECTS credits and contains compulsory, core elective modules and additional elective modules. Students can choose between a 30 ECTS credits and a 60 ECTS credits Master's thesis. This decision has to be made at the beginning of the master studies, as it influences the general structure of the study program.

30 ECTS credits thesis (ESS 511)

The general structure can be divided into: compulsory ESS modules including MSc thesis and exam (44 ECTS credits), core elective systems (36 ECTS credits), skills (6 ECTS credits) and elective modules (4 ECTS credits). See also the schematic figures in chapter 4.1.

60 ECTS credits thesis (ESS 510)

The general structure can be divided into: compulsory ESS modules including MSc thesis and exam (74 ECTS credits) and core elective systems (16 ECTS credits). See also the schematic figures in chapter 4.1.

5.2. Compulsory ESS Modules

Compulsory ESS modules include three courses:

Code	ECTS		Title
ESS401	3	HS	Current Themes in Earth System Science
ESS416	4	FS	Earth System Modelling
ESS417	5	HS	Earth System Observations and Analyses

FS = Spring Semester, HS = Fall Semester

The main part of the master studies requires to synthesize the knowledge and skills students have learned and apply them to current scientific issues. This is achieved by the three compulsory courses and the Master's thesis (ESS 510 or ESS 511) and Master's exam (ESS 512). The Master's thesis is discussed in chapter 5.6.1, the master's exam in chapter 5.6.2.

5.3. Core Elective Systems

The three core elective systems, Geo-Biosphere, Human-Environment, and Hydro-Atmosphere determine the focus of your MSc curriculum. Depending on the scope of the Master's thesis (30 or 60 ECTS credits) a different number of courses have to be completed within the core elective systems.

30 ECTS credits thesis (ESS 511)

Students have to choose at least two out of three systems. In each chosen system, a minimum of 12 ECTS credits has to be obtained. However, a total of 36 ECTS credits have to be obtained in the different systems.

60 ECTS credits thesis (ESS 510)

Students have to choose two out of three systems. In each system, at least 8 ECTS credits have to be obtained.

Each system consists of core elective modules listed in the following sections. This means that you can shape this part of the curriculum not only by selecting your preferred systems but also by selecting the preferred modules within the system. As such, you have a lot of freedom to tailor the curriculum to your interests. Due to the great number of modules across Departments, the list may contain inaccuracies. **For the modules you choose, please check the listed information in the course catalogue!**

In case of a 30 ECTS credits thesis any surplus of credit points from core elective system modules may count towards the elective modules. All modules must be offered by UZH or ETH and the scientific coordinator must approve your suggestion. The latter also holds for “mobility modules” in case you study one semester abroad.

5.3.1.Geo-Biosphere System

Code	ECTS		Title
GEO412	6	FS,b	Soil Science III: practical project
GEO417	6	HS,2	Environmental archives and age determination
GEO463	6	HS	Soil science I: current challenges in soil science
GEO818	6	HS,2	Dendro-Ecology
GEO820	2	FS	Stable isotopes in ecology and soil science
BIO148	3	FS	Introduction to Paleontology
BIO308	2	HS	Introduction to Limnology (Inland water ecosystems)
UWW220	3	HS,b	Species Interactions and Biodiversity
UWW230	2	HS,b	Analysis and Management of Biological Populations
UWW250	2	HS,b	Spatial Ecology and Remote Sensing
UWW273	3	HS	Introduction to Theoretical Ecology
651-4004	3	FS	The global carbon cycle – reduced
651-4041	3	HS	Sedimentology I: physical processes and sedimentary systems
651-4054	3	FS	Micropalaeontology and Molecular Palaeontology
656-4070	5	FS,ir	Landslide analysis
751-5118	2	FS	Global Change Biology

FS = Spring Semester, HS = Fall Semester, b = Block course, ir = irregular

5.3.2.Human-Environment System

Code	ECTS		Title
GEO423	6	HS	Political Geography
GEO424	6	FS	Environment in History
GEO433	6	FS	Global Economic Geographies of Agriculture and Food System
GEO805	3	HS,b	Natural hazards and risk assessment in mountain regions
GEO835	3	FS	Geography of Sustainability Transitions
GEO837	3	HS	Regional Environment Governance
GEO857	3	FS	Snow and avalanches: processes and risk management
GEO886	3	FS,b	Natural Resources Management of Mountain Areas
BIO312	2	FS	Integrated Species Conservation and Management
UWW230	2	HS,b	Analysis and Management of Biological Populations
UWW291	3	HS	Ecology and Evolution at the Hearth of the ‘Wicked Problems’
701-1317	3	FS	Global Biogeochemical Cycles and Climate
701-1551	3	HS	Sustainability Assessment
701-1651	6	HS	Environmental Governance
851-0594	3	HS	International environmental politics

FS = Spring Semester, HS = Fall Semester, b = Block course

5.3.3. Hydro-Atmosphere System

Code	ECTS		Title
ESS367	3	FS	Remote Sensing of the Atmosphere
GEO411	6	FS,ir	Field studies on high mountain processes
GEO471	6	FS	Hydrological field measurements and calculations
GEO475	6	FS	Hydrological Modeling and Programming
GEO815	3	HS	Quantification and modelling of the cryosphere
GEO851	3	HS	Glacier Mass Balance Measurements and Analysis
GEO856	3	FS	The high-mountain cryosphere: processes and risks
102-0468	3	FS	Watershed Modelling
651-4023	4	HS	Groundwater
651-4057	3	HS	Climate history and paleoclimatology
701-0412	3	FS	Klimasysteme (German)
701-1228	4	FS	Cloud Dynamics
701-1237	3	FS	Radiation and climate change
701-1251	3	HS	Land-Climate Dynamics
701-1252	3	FS	Climate Change Uncertainty and Risk

FS = Spring Semester, HS = Fall Semester, ir = irregular

5.4. Skills

Skills with 30 ECTS credits thesis

In the skills block students have to take courses for at least 6 ECTS credits from the following list:

Code	ECTS		Title
GEO803	2	HS,b	Solving Geospatial Problems using Matlab
GEO812	1	HS,b	Getting started with R for spatial analysis
GEO877	3	FS	Spatial Algorithms
STA120	5	FS	Introduction to Statistics
STA433	2	FS	R programming
UWW271	4	HS	Contemporary analysis for ecology (R)

FS = Spring Semester, HS = Fall Semester, b = Block course

More than 6 ECTS credits can be selected, in which case the surplus can count towards the elective modules.

Skills with 60 ECTS credits thesis

With a 60 ECTS credits thesis the acquiring of needed skills lies in the responsibility of the students and are decided in consultation with the supervisor of the Master's thesis. Courses absolved in this block will not be credited for the diploma.

5.5. Elective Modules

30 ECTS credits thesis (ESS 511)

Within the 4 ECTS credits in elective modules, you can visit any module from the core elective systems or any other module that is a reasonable addition to your study program. Non-scientific modules also qualify, e.g. courses of the Language Centre of the university and the ETH. A maximum of 4 ECTS credits for language courses can be credited (BSc and MSc together). Sports courses do not qualify.

60 ECTS credits thesis (ESS 510)

There are no elective modules.

5.6. The Master's thesis and exam

5.6.1. Master's thesis

The Master's thesis is your personal proof of your ability to work scientifically. You design the thesis yourself with a supervisor of your choice. During the MSc program, you can approach any teacher (chapter 5.6.3) and ask for thesis opportunities. You have to write your thesis within one of your chosen core elective systems and you have to consider interactions between at least two earth spheres.

The acquiring of needed skills for the successful completion of the thesis lies in the responsibility of the student and are not credited separately. The needed skills have to be discussed with your MSc committee at the beginning of the master studies and have to be acquired either before or during the master's thesis.

More information can be found on the information leaflet about the master thesis and the master exam on the webpage

→http://www.geo.uzh.ch/en/studying/consecutive_master/master_thesis_exam.html

30 ECTS credits thesis (ESS 511)

The thesis covers 30 ECTS credits (six months full time) and has to be completed within 12 months. The Master's exam (next section) takes place shortly after handing in. The thesis and exam are graded separately and passed if the grade is 4 or higher.

60 ECTS credits thesis (ESS 510)

The thesis covers 60 ECTS credits (twelve months full time) and has to be completed within 18 months. The Master's exam (next section) takes place shortly after handing in. The thesis and exam are graded separately and passed if the grade is 4 or higher.

A 60 ECTS credits thesis is meant to be more research oriented than a 30 ECTS credits thesis and is recommended for students willing to publish a scientific paper based on their thesis. Further, it is a good option for students who consider doing a PhD after their master studies.

5.6.2. The Master's exam

The Master's exam (ESS 512) is a compulsory part of the MSc thesis (ESS 510 or ESS 511). The exam usually consists of an oral presentation of your thesis work and an oral examination by a committee existing of supervisors and an external expert. It tests the familiarity with your thesis subject and the capability to synthesize and apply the knowledge. For the Master's exam the regulations listed in the information sheet ("*Merkblatt Masterarbeit*") are to be followed. Unsubscribing is possible until two weeks before the exam date but only in consultation with your thesis supervisor.

The Master's exam is passed when the Master's presentation and the disputation together are graded with at least a 4. A failed Master's exam can be repeated once. If the repetition is insufficient as well, no Master's degree can be obtained at the Faculty of Science anymore.

→http://www.geo.uzh.ch/en/studying/consecutive_master/master_thesis_exam.html

5.6.3. Writing the thesis at UZH or at ETH

ESS is a program at GIUZ (UZH) and the thesis can be written at any of the groups within the Department of Geography that is involved in the ESS

curriculum. Depending on your focus, topics at the ETH or at other UZH faculties may be of special interest to you. It is possible to take up such a topic and their lecturer can act as supervisor for your thesis. However, the supervision team needs to be chaired by a professor from UZH GIUZ (a "*Fakultätsmitglied*", i.e. full professor, associate professor or SNF professor) and the thesis must be defended at the UZH. Other MNF teachers with promotional rights ("*Promotionsrecht*") may act as chair after approval by the dean's office ("*Dekanat*"). Once you defined a topic and found a supervisor, you need to write a short proposal and hand in all the other necessary documents on lean-gate (<https://lean-gate.geo.uzh.ch>). After that ensure to register for the master thesis module (ESS 510 or ESS 511) and the Master's exam (ESS 512).

5.7. Tutorials

Students who work as tutors in a module offered by the Department of Geography obtain 2 ECTS credits per module in the elective section. During the entire period of study (Bachelor and Master studies), a maximum of 5 ECTS credits can be credited.

Tutorials are a useful and recommended addition to the studies and a valuable experience. Tutors support the instructors in exercises and seminars of lower semesters. The correction of assignments is also part of the activity as a tutor. The own knowledge is applied and passed on. Future teachers can collect first experiences in teaching. Furthermore, semester assistant positions are only given to students who have worked as tutors in the respective TSA. Apart from the 2 ECTS credits per tutorial, tutors receive a financial compensation as well.

Open positions for tutorials for the following semester are published on the website in the middle of the semester. Students are also informed about open tutor positions and application deadlines by e-mail.

6. Earth System Science as a minor

It is possible to take a minor in Earth System Science. The 30-ECTS credits option (can be taken during BSc or during MSc) includes basics in ESS, physical geography, remote sensing and GIS, while the 60-ECTS credits option (only during BSc) covers more aspects of all Earth spheres. The table below lists the compulsory modules (CM) for both the 30 and the 60-ECTS credits options.

Code and title	ECTS		30CP	60CP
ESS111 Dynamische Erde I (part of ESS110)	6	HS	CM	CM
ESS101 Einführung in die Erdsystemwissenschaften	2	HS	CM	CM
GEO113 Fernerkundung und GIS I	5	HS	CM	CM
MAT183 Stochastik für die Naturwissenschaften*	6	FS		CM**
ESS123 Exkursionen zu Dynamische Erde	1	FS	CM	CM
GEO121 Physische Geographie II	5	FS		CM
ESS244 Earth System Science Field Course	2	FS	CM	CM

** Compulsory for students of other faculties that do not offer a similar module

Please consult the BSc study guide (*“Wegleitung”*) for more information.

7. Varia

7.1. Student Society Geography (Fachverein)

The Student Society Geography's primary aim is the protection of the interests of geography students towards the Department. It is close to the University of Zurich Student Association (VSUZH). The Student Society offers the possibility to establish contacts between the students, but it also aims to cooperate with the lecturer as well as with other student societies.

The Geoteam organises regularly organises events such as the very popular "DoBar" ("Do" for Thursday in German) at the Irchelbar and the "Geofest". For the continued existence and representation of students' interests, students are always needed and welcome to join!

→ www.geoteam.uzh.ch

✉ geoteam@geo.uzh.ch

Geoscope – the magazine of the Student Society Geography – discusses current issues related to the Geography study program. The editors ensure that an issue is published twice a year.

→ www.geo.uzh.ch/microsite/geoscope

✉ geoscope@geo.uzh.ch

7.2. Libraries

A number of different libraries are available to students, including:

- Main Library of the University of Zurich, Winterthurerstrasse 190
→ www.hbz.uzh.ch
The Library of the Department of Geography is integrated into the Main Library of the University of Zurich.
→ <https://www.geo.uzh.ch/de/hauptbibliothek-uzh.html>
- Zentralbibliothek Zürich, Predigerplatz
→ www.zb.uzh.ch
- ETH-Library, ETH-City Campus
→ www.library.ethz.ch
- Library of Earth Sciences, Sonneggstrasse 5
→ www.library.ethz.ch/Bibliothek-Erdwissenschaften
- Schweizerisches Sozialarchiv, Stadelhoferstrasse 12
→ www.sozialarchiv.ch

7.3. Important University Information Offices

Student Administration Office (Kanzlei)

University Main Building, Rämistrasse 71, 8006 Zürich, room E 8

Tel. 044/634 22 17, Mail: kanzlei@uzh.ch

Opening hours: Monday - Friday: 9.30-12.30 o'clock

→ <https://www.uzh.ch/cmsssl/en/studies/dates/adresses.html>

Student Affairs Office, Faculty of Science (MNF)

University Irchel, room 10-G-23

Tel. 044/635 40 07, Mail: bama@mnf.uzh.ch

Opening hours: Tue / Thu: 10.00-12.30 / 13.45-16.15,

Wed: 10.00-12.30 (mornings only during non-lecture period)

→ www.mnf.uzh.ch

Psychological Counselling Service

Plattenstrasse 28, 8032 Zürich

Tel. 044/634 22 80, Mail: pbs@ad.uzh.ch

Appointments by arrangement, also during semester break. Consultations are free of charge and strictly confidential.

→ www.pbs.uzh.ch

Advisory Centre for Grants and Loans

University Main Building, Rämistrasse 71, 8006 Zürich, room KOL Ea 4c

Tel. 044/634 22 04, Mail: studienfinanzierung@ad.uzh.ch

Opening hours: Tue - Fr: 10.00-12.30. Appointments by arrangement.

→ www.studienfinanzierung.uzh.ch/index.html

International Relations Office (Exchange Programs)

University Main Building, Rämistr. 71, 8006 Zürich, room KOL E 17

Tel. 044/634 41 57, Mail: international@int.uzh.ch

Opening hours: Mo - Fr: 9.30 - 12.30 or by arrangement

→ www.int.uzh.ch/contact.html

Academic Sports Association Zurich (ASVZ)

Secretary and information desk: Polyterrasse ETH,

Tel. 044/632 42 10, Mail: info@asvz.ethz.ch

September-Mai: Monday - Friday 10.00 - 16.00 / Thursday 10.00 - 19.00

June-August: Monday - Friday 10.00 - 14.00 o'clock

→ www.asvz.ch

Accommodation Agency

Accommodation (rooms and flats) service for students, lecturers and employees of the University of Zurich and ETH Zurich

Sonneggstrasse 27, 8006 Zürich

Tel. 044/632 20 37, Mail: zimmervermittlung@ethz.ch

Opening hours: Monday, Wednesday - Fr 11.00 - 13.00 o'clock

→ www.wohnen.ethz.ch

Studentische Wohngenossenschaft (Woko)

Sonneggstrasse 63, 8006 Zürich

Tel. 044/632 42 90, Mail: woko@woko.ch

Opening hours: Monday - Thursday 11.00 - 15.00 o'clock

Phone hours: Monday - Thursday 9.00 - 13.00 o'clock

→ www.woko.ch

Employment Agency

→ www.uzh.ch/cmsssl/en/studies/studentlife/vacancies.html

Other useful links

→ www.students.ch/jobs

→ www.marktplatz.uzh.ch (also for rooms and flats)

Career Services

Hirschengraben 60, 8001 Zürich

Tel. 044/634 21 54 or 62

→ www.careerservices.uzh.ch

