



Universität
Zürich ^{UZH}

Departement of Geography

Study guide to the Master of Science programme in

Earth System Science



Starting in
fall semester 2023



**Universität
Zürich** ^{UZH}

Imprint

Student Advisory Service Geography and Earth System Science

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www.geo.uzh.ch/en/studying<http://www.geo.uzh.ch/de/studium>



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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 guide ("Wegleitung"), the study programme is explained for students starting their studies in the fall semester 2023. For students who have started their studies before fall semester 2023, the study guide of the corresponding year (begin of studies) and transitional regulations are relevant. This study guide describes the structure as well as administrative issues of the MSc programme in Earth System Science (ESS). For further questions, the Student Advisory Service of the Department of Geography (GIUZ) is your first contact point:

Office	Y25 K 10, Campus Irchel, Universität Zürich, Winterthurerstr. 190, 8057 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 check 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 programme 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 ETHZ
www.vvz.ethz.ch

To allow students to efficiently plan their studies, an information event about the Master's programme 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 programme in Earth System Science can be found on the website of the Department of Geography:

www.geo.uzh.ch/en/studying/consecutive_master.html

Student advisory service of the Department of Geography,
Leah Heuri & Michael Förster



2 Earth System Science at UZH

The study program in Earth System Science (ESS) offers a unique combination of research perspectives. It enables students to understand, observe and describe, analyze and predict interactions and processes in and between different spheres through sound scientific knowledge and a broad expertise. The Master's study programme in ESS allows specialisation in individual research fields. Profound knowledge of current research projects is imparted and critical discussions of socially relevant topics is encouraged. Furthermore, the students' intellectual and communicational skills are promoted.

Aims of the study programme

- Students acquire basic knowledge of the different spheres of the earth (anthroposphere, biosphere, lithosphere, hydrosphere, atmosphere).
- Students are able to apply approaches from natural and computer sciences to the analysis of current issues in an appropriate manner.
- The students are able to collect data in experiments, describe, analyse, and explain physical observations and to compare them with models.
- Students are able to obtain specific specialist information and basic scientific material in a targeted manner, to structure and interpret it adequately and to present it in a way that is appropriate and understandable at university level.
- Students are capable of efficient teamwork and can organize and motivate themselves independently in groups.

2.1 Educational foci

The study program Earth System Sciences provides a sound basic knowledge in the following areas:

- **Anthroposphere:** Human-environment relations, sustainable development, globalization
- **Atmosphere:** climate systems, atmospheric chemistry and physics
- **Biosphere:** Evolution, biodiversity, ecology
- **Remote sensing:** instruments and methods for recording the earth's surface, land use classifications
- **Hydrosphere:** water cycle, hydrological processes, climate impacts on water resources, cryosphere
- **Lithosphere:** Structure of the earth, plate tectonics, earth and climate history

In addition, basic mathematical and scientific education in mathematics, chemistry and physics is part of the study programme.

3 Occupational fields for earth system scientists

Earth System Scientists can benefit from a wide occupational field, ranging from education or academia to (non-) governmental institutes and 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 of 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.

Earth system scientists usually find jobs quickly after their graduation, both in Switzerland and abroad. Thanks to the social importance of topics such as 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 common ESS applications, the strong analytical background that the ESS curriculum offers is very attractive for potential employers.



4 MSc studies at the UZH Faculty of Science

The courses at the science faculty (“Mathematisch-naturwissenschaftliche Fakultät”, MNF) are structured into Bachelor’s and Master’s degrees. The Master’s degree is based on previous knowledge acquired during the Bachelor’s programme. Further information about our Bachelor’s programme is provided in the Bachelor’s degree study guide.

The Master’s programme conveys advanced scientific knowledge and enables students to carry out independent scientific work. The structure of the Master’s programme at GIUZ is described below.

After obtaining a Master’s degree in ESS, excellent students can strive to acquire a PhD degree. This depends on available funds and the acceptance in a promotion programme and/or an advisor is found willing to lead a dissertation project.

Moreover, a Master’s degree is the fundamental requirement for acquiring the teaching diploma for high schools. The didactical education is provided by the Institute of Education (IfE) of UZH (see below).

Within the study programme “Master of Science in Earth System Science”, students can specialise in a specific field of ESS is possible. For a successfully completed Master’s programme in ESS, the diploma „Master of Science in Earth System Science” (MSc UZH in Earth System Science) is awarded.

4.1 Enrolment

Matriculation is necessary to follow a study programme at UZH. All students have to be enrolled as long as they require services of the University. These services include the participation in courses, the claim for counselling and support, the use of libraries and IT services, taking exams, as well as the validation of degrees. Semester fees have to be paid up to and including the semester, in which the Master’s exam is taken and the validation of the graduation took place, even if no other modules are taken that semester.

Registration

Before the first matriculation students need to register at the Student Administration Office of UZH. This is also the case after a deregistration due to the interruption of studies. The requirements for an admission to the University of Zurich are explained under:

<https://www.uzh.ch/studies/application.html>

Application deadlines

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

The matriculation is renewed every semester through the online semester enrolment tool at:

<https://www.students.uzh.ch/en/studyadmin/registration.html>

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

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

4.2 Begin of studies and study duration



Generally, the begin of Master's studies is in the fall semester. If students begin their Master's study programme in spring semester they may 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 programmes is three or four semesters. After studying 12 semesters, the semester fee will be doubled. The Faculty Board might permit exceptions upon handing in a justified request. In any case, before a student completes 12 semesters, they should contact the student advisory service to discuss the further course of studies.

Further information can be found on p. 4 of the **Rahmenverordnung** (German).

4.3 The credit-point system

Every degree programme at UZH uses the principle of the European Credit Transfer System (ECTS)). A Master's degree consists of 90 or 120 ECTS credits (if a minor is added). For all coursework, students get ECTS credits based on an official assessment. The following principles apply:

- ECTS credits are awarded only after an official assessment.
- One ECTS credit corresponds to a workload of 25-30 hours, which includes lectures and time for individual work (self-study, solving exercises, preparation for exams, etc.).
- 30 ECTS credits can be gained per semester in full-time study.
- 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 a module has ended.

<https://www.students.uzh.ch/en/record/transcript.html>

4.4 Structure

The degree programmes at the MNF are structured into Bachelor's and Master's degrees (Bachelor of Science: BSc; and Master of Science: MSc). For the enrolment in a Master's curriculum, a Bachelor's degree in geography or a similar subject is required. The Master's programme provides in-depth scientific education and prepares candidates for autonomous scientific work. The structure of the Master's programme is explained below.

The courses of the Master's study programme are structured into compulsory modules, core elective modules and elective modules. Students can decide themselves which and how many modules they like to book and complete each semester. Most modules are taught during one semester (fall or spring), yet, some modules cover two subsequent semesters. In addition, some modules require the (successful) completion of other modules. This and further information on individual modules are provided in the online course catalogue.

<https://studentservices.uzh.ch/uzh/anonym/vvz/index.html>

The MSc degree also forms the basis for pursuing a teaching education for high school ("Lehrdiplom"). The didactical education is provided by the Institute of Education (IfE) of UZH. This track requires excellent knowledge of the German language and a tailoring of the MSc curriculum to 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>

4.5 Structure of major and minor



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

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

www.degrees.uzh.ch

4.6 Compulsory, core elective and elective modules

The study programme 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 mandatory for all students of a certain study programme. Students who fail the assessment of a module can repeat it once. If the repetition results in a fail, the student is excluded from all study programmes, which contain this module as a compulsory module.
- **Core elective modules** are modules, which can be chosen from a given list. If a student fails the assessment of a core elective module twice, the module can be replaced by another core elective module (that needs to be passed).
- **Elective modules** are modules, which can be selected freely. Elective modules can be substituted without restrictions.

4.7 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 can compose individual schedules by themselves.

<https://courses.uzh.ch/>

www.vorlesungen.ethz.ch

After having paid the semester fees it is possible to book modules online. The faculty's deadlines have to be considered. It is recommended to book modules at 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, however, some modules need to be booked earlier. A deregistration of modules at the MNF is usually possible until around the middle of the semester.

<https://www.students.uzh.ch/en/booking/fristen.html>

Modules at ETHZ must be booked separately. This requires prior registration as a "special student" at ETHZ, which must be confirmed each semester. Afterwards, ETHZ 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

4.8 Assessments

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 6 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 hand in a medical certificate.

Applications are made through the online student portal. Afterwards, missed exams (no-shows) will be graded as failed. In the final diploma, only passed assessments will be listed.

<http://launchpad.uzh.ch>

For modules at the ETHZ 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.

<https://www.students.uzh.ch/en/record.html>

Grading of Exams

The module coordinator is responsible for assessments. The form of the assessment – written exam, assignments, or other tasks – is communicated in the course catalogue. They can be graded (1-6) 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 graded 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 ETHZ, 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.

Regulations for repeat examination

The regulations follow those of the institute that offers the module, i.e. the UZH department of Geography or the ETHZ department of Earth Science. Usually, exams can be repeated once for every module. After two failed attempts, the concerning module cannot be booked 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 student fails a core elective module 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. After a failed module the students need to register for the repeat exam. 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.

4.9 Mobility



It is possible to spend one semester at another university. This needs to be discussed with and approved by the scientific coordinator of the Department of Geography. UZH must recognize the host university and the modules must fit within the scope of the ESS curriculum. The obtained foreign credit points can count towards the free-choice part of the master and, under certain conditions, towards core elective modules (see section on the MSc structure). In the end, 60% of the 90 ECTS credits need to be covered by UZH modules. Note that ETHZ 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 GIUZ. The student advisory service supports students in planning mobility stays at other universities.

Please note: Applications have to be submitted until 15th of January for the following academic year (autumn to 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>

4.10 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 does not 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 requirements are met, 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>

4.11 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 ETHZ. 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 towards degree” but are not included in the calculation of the final average grade.

4.12 Official regulations for Master’s degrees at MNF



The following regulations are (legally) binding:

- The **framework of academic regulations** (“Rahmenverordnung”) contains the general regulations for all BSc and MSc studies at the Faculty of Science at the University of Zurich.
- The **study regulations** (“Studienordnung”) contain information about the individual study degrees at the MNF. This concerns for example modules, exams and credit points.
- This **guide** (“Wegleitung”) provides practical information about the study programs in Geography and Earth System Science at the Department of Geography.

Both the framework of academic regulations and the study regulations are published on the MNF website:

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

5 The MSc programme in Earth System Science

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

In the Master’s programme, 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 as earth system scientists. The MSc committee (the scientific coordinator ESS and the supervisor(s) of the Master’s thesis) help and support you in designing and successfully completing your personal MSc programme.

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

5.1 Structure

The figures on the text page show the general structure of the Earth System Science Master’s programme. 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’s study, as it influences the general structure of the study programme.

The Master curriculum in ESS allows for some flexibility for the students. In this Master’s programme, no specialisation is possible and can, therefore, not be mentioned on the diploma. Independent of the system you choose, the diploma will have “Master in Earth System Science” as title. The module list will of course demonstrate the focus you chose. The systems that can be focused on 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 programme 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, however, be taken but extends this study load by 30 ECTS credits.

Structure of the master study programme in ESS

with 30 ECTS credits Master's thesis

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				25
26				26
27				27
28				28
29				29
30				30
31			ESS 512 Master's Exam	31
32				32

with 60 ECTS credits Master's thesis

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

Mandatory	
	Earth System Science
	Core elective modules
	Skills

Elective section	
	Elective modules from UZH or ETH

CP	ECTS credits
HS	fall semester
FS	spring semester
ir	irregular course
b	block course
2	Course over two semesters
UZH	Lecture codes starting with: ESS, GEO, BIO, STA, UWW
ETH	Lecture codes starting with: 102, 651, 701, 751, 851

Contact:
<https://www.geo.uzh.ch/de/studium.html>
 student-advice@geo.uzh.ch
 +41 44 635 51 18

5.2 Personal study plan

The ESS Master's programme 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, or rather in the relation between humans and the environment, or the hydrosphere and the atmosphere? You can tailor your Master's programme to match your interests. When you have been admitted to the curriculum, among the first tasks is to prepare a *personal study plan*, and to discuss it with the scientific coordinator of the curriculum. If you choose 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 short 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.

5.3 Applying for 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.

With any ESS-related Bachelor's degree from a recognized academic institution, you can apply for the ESS master. Admission to the programme 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 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 background and provided during the application procedure (indication of restriction see Table below). Please note that most BSc courses at UZH and at ETHZ 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's curriculum and is provided during the application procedure.

The following modules (or equivalents) are required for students applying 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.

Modules or equivalents required for ESS Master at GIUZ

Code	ECTS	Semester	Title
PHY118 (HS)	5	HS	Physik I für Naturwissenschaften
CHE170 (HS)	4	HS	Grundlagen der Chemie für die Biologie
BIO141 (FS)	4	FS	Oekologie und Biodiversität
MAT141 (HS)	5	HS	Lineare Algebra für die Naturwissenschaften
ESS110	11	HS, FS	Grundlagen der Geologie
GEO113 (HS)	5	HS	Fernerkundung und GIS I
GEO121 (FS)	5	FS	Physische Geographie II: Atmosphäre, Klima, Hydrologie

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

If you apply for the ESS Master from outside UZH you have to submit 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.



5.4 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 the following links and the chapter below:

<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.

6 Structure and content of the Master’s programme

6.1 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 programme.

30 ECTS credits thesis (ESS 511)

The general structure can be divided into compulsory ESS modules including the Master’s 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 below.

60 ECTS credits thesis (ESS 510)

The general structure can be divided into compulsory ESS modules including the Master’s thesis and exam (74 ECTS credits), and core elective systems (16 ECTS credits).

6.2 Compulsory ESS modules

Compulsory ESS modules

Code	ECTS	Semester	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’s programme requires to synthesize the knowledge and skills students have learned and apply them to current scientific issues. This is achieved by three compulsory courses and the Master’s thesis (ESS 510 or ESS 511) and Master’s exam (ESS 512).

6.3 Core elective systems



The three core elective systems, Geo-Biosphere, Human-Environment, and Hydro-Atmosphere determine the focus of your Master's 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 different 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 ETHZ and the scientific coordinator must approve your suggestion. The latter also holds for "mobility modules" in case you study a semester abroad.

Geo-Biosphere System

Code	ECTS	Semester	Title
ESS 842	6	FS	Analyzing the Plant Soil System: Practise
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



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

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



6.4 Skills

Skill modules 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.

6.5 Elective modules

30 ECTS credits thesis (ESS 511)

Within the 4 ECTS credits in elective modules, you can book any module from the core elective systems or any other module that is a reasonable addition to your study programme. Non-scientific modules also qualify, e.g. courses of the language centre of UZH and ETHZ. A maximum of 4 ECTS credits for language courses can be credited (Bachelor and Master together). Sports courses do not qualify.

60 ECTS credits thesis (ESS 510)

There are no elective modules.

6.6 Master's thesis and exam

Master's thesis

The Master's thesis is the proof of your ability to work scientifically. You design the thesis yourself with the support of a supervisor of your choice. During the Master's programme, you can approach any lecturer 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 Master's thesis committee at the beginning of the Master's 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's thesis and the Master's exam on the webpage

https://www.geo.uzh.ch/en/studying/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.

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 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.

https://www.geo.uzh.ch/en/studying/master/master_thesis_exam.html

Writing the thesis at UZH or at ETHZ

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 ETHZ 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 person with promotion rights at UZH GIUZ and the thesis must be defended at UZH. 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).

6.7 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's and Master's 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. Acquired own knowledge and skills are applied and passed on. Future



teachers can collect first experiences in teaching. 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.

6.8 Internships

A research or vocational internship can be a useful addition to an academic education. For a four-week internship 2 ECTS can be credited as an elective module. During the entire study (Bachelor and Master) a maximum of 5 ECTS credits, which correspond to a ten-week internship, can be credited. A faculty member must approve of the internship prior to its completion.

<http://www.geo.uzh.ch/de/studium/downloads>

An internship report of approximately 5-10 pages is handed in to this faculty member. In addition, a short form of the report is intended to show other students different options for gaining work experience and to help them organise their own internship. For this purpose, the internship is briefly described on approximately one A4 page whereby the important key points are mentioned.

The report is to be submitted as a Word document in English or German and should contain the points listed on the second page of the template.

Links leading to relevant websites can be included in the text and must be listed additionally at the end of the report. One or two images are requested for illustration purposes and have to be handed in separately. They need a minimum resolution of 920x556 pixels in landscape format.

<https://www.geo.uzh.ch/en/studying/internship-reports.html>

By submitting their report, students agree to its upload to the GIUZ's online internship catalogue and thereby its public accessibility.

Internship positions have to be organised independently. Open positions are published on our website.

www.geo.uzh.ch/en/services/open-positions/

www.careerservices.uzh.ch/static/jobs/index.php?lang=en

www.iaeste.ch



7 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, but please be aware that most courses on the BSc level are taught in German.



8 Teaching Diploma/Lehrdiplom für Maturitätsschulen in Geographie

As the Teaching Diploma for Upper Secondary Education can only be completed in German, the following information is provided in German only.

Um Geographie an einer Mittelschule unterrichten zu können, wird das Lehrdiplom für Maturitätsschulen im Fach Geographie verlangt. Geographie kann als 1. oder 2. Unterrichtsfach gewählt werden. Es kann bereits während des Masterstudiums mit der didaktischen Ausbildung begonnen werden, ein abgeschlossenes Geographie- oder Erdsystemwissenschaftsstudium ist jedoch Voraussetzung für den Erwerb des Lehrdiploms für Maturitätsschulen. Die didaktische Ausbildung wird vom Institut für Erziehungswissenschaften (IfE) angeboten. Dafür ist eine Doppelimmatrikulation nötig.

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

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

Bewerbungsfristen Doppelimmatrikulation

- Beginn im Herbstsemester: 30. April
- Beginn im Frühjahrssemester: 30. November

Kontakt

Institut für Erziehungswissenschaften (IfE) UZH
Abteilung Lehrerinnen und Lehrerbildung Maturitätsschulen (LLBM)
Kantonsschulstrasse 3, 8001 Zürich
Tel. 044/634 66 55
✉ sekretariat.llbm@ife.uzh.ch

Dr. Itta Bauer
Geography Teacher Training
Y25 L 08
Winterthurerstr. 190, Universität Irchel, Zürich
Tel. 044/635 51 47
✉ itta.bauer@geo.uzh.ch

8.1 Geographie als 1. Unterrichtsfach

Als Basis für das Lehrdiplom für Maturitätsschulen mit Geographie als Monofach (es wird später ausschliesslich Geographie unterrichtet) oder 1. Unterrichtsfach (es wird neben Geographie ein zweites Fach unterrichtet) dient der Bachelor- und Masterabschluss in Geographie (Bsc in Geographie, resp. MSc in Geography).

Das Lehrdiplom für Maturitätsschulen kann – muss aber nicht – neben dem Fach Geographie auch in einem 2. Unterrichtsfach (z.B. Geschichte, Biologie, Chemie, Physik, Mathematik) erworben werden. Das 2. Unterrichtsfach kann ein Fach aus der Mathematisch-naturwissenschaftlichen oder der Philosophischen Fakultät sein, **nicht** aber eines aus der wirtschaftswissenschaftlichen Fakultät oder der ETHZ (insbesondere Sport). Informationen über die Anforderungen können beim Institut für Erziehungswissenschaften bezogen werden. Studierende, welche das Lehrdiplom für Maturitätsschulen in einem 2. Unterrichtsfach erwerben möchten, sollten bereits während dem Bachelorstudium Module im entsprechenden Fach belegen. Weiter muss die Fachdidaktik für das entsprechende 2. Unterrichtsfach besucht werden.



8.2 Geographie als 2. Unterrichtsfach

Studierende mit Minor Geographie können Geographie als 2. Unterrichtsfach auswählen, sofern sie auch in ihrem Major das Lehrdiplom für Maturitätsschulen erwerben. Diese Möglichkeit richtet sich ausschliesslich an Studierende mit einem Major, welches an Kantonsschulen unterrichtet wird (z.B. Geschichte, Biologie, Physik).

Die fachwissenschaftlichen Voraussetzungen für das 2. Unterrichtsfach Geographie umfassen 90 ECTS Credits. Da die Module vorgegeben sind, empfiehlt sich eine frühe Planung des Minor-Studienaufbaus. Die Liste der fachwissenschaftlichen Voraussetzungen ist auf der Website des GIUZ publiziert.

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

9 Varia

9.1 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 lecturers as well as with other student societies.

The Geoteam 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

9.2 Geographie Alumni UZH

The "Geographie Alumni UZH", offers different field trips and lectures on geographical issues. As they are mainly held in German, this section is written in German.

Die Geographie Alumni UZH, sieht sich als Bindeglied zwischen Hochschule und Öffentlichkeit. Ihr Hauptanliegen ist es, durch Fachvorträge zu verschiedenen aktuellen Leitthemen und durch Exkursionen im In- und Ausland, wissenschaftliche Forschungsergebnisse in verständlicher Form zugänglich zu machen. Die Geographie Alumni UZH umfasst junge Geographiestudierende sowie aktive und ehemalige Geographie-Lehrpersonen, Hochschul-Absolventeninnen und -Absolventen und Dozierende verschiedener Fachrichtungen.

Die Geographie Alumni UZH pflegt und ermöglicht ein dichtes fachliches und persönliches Netzwerk. Sie ist als Regionalgesellschaft Mitglied der ASG (Association Suisse de Géographie, Verband Geographie Schweiz). Mit der ASG zusammen bildet die Geographie Alumni UZH die Trägerschaft der „Geographica Helvetica“ (Schweizerische Zeitschrift für Geographie). Diese Zeitschrift ist open access zugänglich und wird durch ein Herausgeberteam mit Schriftleitung an der Universität Zürich geleitet.

<https://www.geographie-alumni.uzh.ch/de.html>

www.geographica-helvetica.net

Mitgliedschaft

Der Mitgliederbeitrag beträgt für Studierende 20 Fr. pro Jahr, für alle anderen Mitglieder 60 Fr.

Die Vorträge finden während dem Herbstsemester alle zwei Wochen jeweils am Mittwochabend um 18.15 Uhr im Auditorium D1.2 des Hauptgebäudes der ETHZ statt.



9.3 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

9.4 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/cmssl/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

Consultations (appointments by arrangement) are free of charge and strictly confidential.

<http://www.pbs.uzh.ch/en.html>

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.

<http://www.studienfinanzierung.uzh.ch/en.html>



Global Student Experience (Exchange Programs)

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

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

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

<https://www.int.uzh.ch/de/out/program.html>

Academic Sports Association Zurich (ASVZ)

Secretary and information desk: Polyterrasse ETH,

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

www.asvz.ch/en/634-welcome-asvz

Accommodation Agency

Accommodation (rooms and flats) service for students, lecturers and employees of the UZH and ETHZ

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/en

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

www.students.ch/jobs

<https://marktplatz.uzhalumni.ch/> (also for rooms and flats)

Career Services

Tel. 044/634 21 54 or 62

www.careerservices.uzh.ch