

Geology - Master



Name:

Norwegian (Bokmål): Geologi - Master
Norwegian (Nynorsk): Geologi - Master
English: Geology - Master

Qualification awarded:

Master of Science in Geology.

Workload:

120 ECTS credits, of which 60 ECTS are for the Master Thesis.

Learning outcomes:

In addition to a solid competence in a specialized field of geology, students will have acquired the following after completing the Master of Science in Geology:

Knowledge

The candidate has

- advanced knowledge within general geology and specialized insight in one of the following fields; marine geology and geophysics, petrology/structural geology, sedimentology and Quaternary geology, or petroleum geoscience.
- thorough knowledge of scientific theory and geological methods within the selected specialization, i.e. marine geology and geophysics, petrology/structural geology, sedimentology and Quaternary geology, or petroleum geoscience. This includes understanding geology based on scientific observations from the field and the laboratory.
- the ability to apply geological knowledge in new technological or scientific areas within the selected specialization.
- the ability to solve geological problems on the basis of the scientific history, tradition, and distinctive character of geosciences. This includes deep understanding of geological data from the field and/or the laboratory as well as understanding of geological time, processes, and products.

Skills

The candidate can

- critically analyze geological problems using data, methods, and results from peer-reviewed, international geoscientific research literature. The candidate can also structure and formulate scholarly arguments building on such information.
- analyze existing geological theories, use methods and interpretations, and work independently with applied and theoretical solving of geological problems. This regards both the solution of academic research questions and applied aspects of the selected geological specialization.
- use relevant geological methods for research and professional development within the selected specialization in an independent manner. This can include geological field observations, data collection, laboratory analyses, and literature review.
- carry out an independent, well-defined research project under academic supervision. The project is based on geological field observations, laboratory data, literature or a combination thereof.
- conduct his/her work in accordance with current ethical standards within the selected geological specialization.

General competence

The candidate can

- analyze and carry out the most important elements of academic and professional geological research projects: penetrate literature, carry out field and laboratory research, analyze geological data and communicate results to fellow students and scientists.
- apply his/her knowledge and skills in new areas for completing advanced tasks and projects within the selected geological specialization.
- communicate comprehensive independent work and master the geological terminology as well as the use of key literature and academic referencing. This includes communication in the form of written academic theses, research reports, and oral presentations to peer students and geologists.
- discuss, argue, and critically assess geological problems, analyses and conclusions, both with specialists and with the general public.
- contribute to academic, technological and industrial innovation within the field of geology.

Admission requirements:

Admission to the Master's program in geology requires a Bachelor's degree in geology, or another degree following a program of study of not less than three years duration, or similar education approved in accordance with the Norwegian Universities Act section 3-4.

In addition, specialization in geology worth the equivalent of at least 80 ECTS credits is required. Normally, an average mark of C or better is required in the Bachelor's degree or similar basis of admission.

Target group:

The Master's program in geology is aimed at providing students with a solid in-depth education, with a specialization in one of four study directions:

- Marine Geology and Geophysics
- Structural Geology, Petrology and Ore Geology
- Sedimentology and Quaternary Geology
- Petroleum Geoscience

Teaching:

The four study directions have different study plans consisting of obligatory and optional courses. However, common for all four plans is a Master's Thesis of 60 ECTS (GEO-3900), normally to be started in the second semester. The courses consist of lectures, exercises, laboratory work and excursions. Several of the courses are given as block courses.

Optional courses should be determined in collaboration with your supervisor and be relevant to the choice of research topic in the Master's Thesis. Other optional courses, either from UiT or from other institutions, may be approved on application or if recommended by your supervisor. An individual special curriculum or project paper may also be part of the degree. The study plan can be adjusted to a shorter study period if existing courses are implemented in the plan.

If the Master's Thesis involves work in a laboratory, in the field or on a research cruise, it is mandatory to conduct a course in safety education (HMS-0500) prior to commencing the thesis. The safety course are given early fall and early January.

The master student should as soon as possible in the first semester, at latest during the second semester, find a supervisor for his/her master project. The Department of Geosciences will announce available master projects in the department's website, but students might also suggest master projects themselves.

The main supervisor must be affiliated with the Department of Geosciences; some master projects might involve one or more co-supervisors from other institutions or the industry.

Study plan tables:

1) Marine Geology and Geophysics:

Semester	10 ECTS	10 ECTS	10 ECTS
1. sem (fall)	GEO-3111* Reconstructing Quaternary Marine Climate and Environments or* GEO-3123* Marine Geophysics	Optional	Optional

2. sem (spring)	GEO-3900 Master's Thesis in Geology	GEO-3112 Sedimentary Processes and Products	Optional
3. sem (fall)	GEO-3900 Master's Thesis in Geology		Optional
4. sem (spring)	GEO-3900 Master's Thesis in Geology		

***) One of these courses depending on the master project chosen.**

Optional courses (depending on project chosen; number of ECTS in brackets):

Fall:

- GEO-3104 Advanced Structural Geology (5)
- GEO-3115 Petroleum Geology (10)
- GEO-3118 Environmental Geology (5)
- GEO-3122 Micropaleontology (5)
- GEO-3126 Practical Seismic Processing (5)
- GEO-3128 Marine Geohazards (5)
- GEO-3151 Geo-Seminar in Energy and Environment (10)
- GEO-3135 Rock-Slope Failures: Geology, Hazard and Monitoring (10)

Spring:

- GEO-3106 Tectonics (10)
- GEO-3119 Petroleum Prospecting (10)
- GEO-3127 Three-Dimensional Seismic Interpretation (5)
- GEO-3129 Drilling and Production of Oil and Gas (5)
- GEO-3136 Practical Geochronological Methods in Marine, Terrestrial Quaternary Geology and Geohazards (10)

Either spring or fall:

- GEO-3144 Arctic Marine Geology and Geophysics Cruise (5)
- GEO-3145 Arctic Marine Geology and Geophysics Workshop (5)

Both spring and fall:

- Geology Project GEO-3221 (5) or GEO-3222 (10)
- Special Curriculum
- Science courses subject to approval
- National courses in earth sciences subject to approval

2) Structural Geology, Petrology and Ore Geology:

Semester	10 ECTS	10 ECTS	10 ECTS
1. sem (fall)	GEO-3104 Advanced Structural Geology	Optional	Optional
2. sem (spring)	GEO-3106 Tectonics	GEO-3900 Master's Thesis in Geology	Optional
3. sem (fall)	GEO-3900 Master's Thesis in Geology		Optional
4. sem (spring)	GEO-3900 Master's Thesis in Geology		

Optional courses (depending on project chosen; number of ECTS in brackets):

Fall:

- GEO-3107 Field Trip in Hard Rock Geology (5)
- GEO-3115 Petroleum Geology (10)
- GEO-3117 Optical Mineralogy (10)
- GEO-3123 Marine Geophysics (10)
- GEO-3126 Practical Seismic Processing (5)
- GEO-3135 Rock-Slope Failures: Geology, Hazard and Monitoring (10)

Spring:

- GEO-2008 Geochemistry (10)
- GEO-3105 Petrology 2 (10)
- GEO-3112 Sedimentary Processes and Products (10)
- GEO-3113 Field Course in Exogene Geology (5)
- GEO-3127 Three-Dimensional Seismic Interpretation (5)
- GEO-3130 Ore Geology (10)
- GEO-3131 Deformation Processes (5)
- GEO-3136 Practical Geochronological Methods in Marine, Terrestrial Quaternary Geology and Geohazards (10)

Both spring and fall:

- Geology Project GEO-3221 (5) or GEO-3222 (10)
- Special Curriculum
- Science courses subject to approval
- National courses in earth sciences subject to approval

3) Sedimentology and Quaternary Geology:

Semester	10 ECTS	10 ECTS	10 ECTS
1. sem (fall)	GEO-3111 Reconstructing Quaternary Marine Climate and Environments	Optional	Optional
2. sem (spring)	GEO-3112 Sedimentary Processes and Products	GEO-3113 Field Course in Exogene Geology/Optional	GEO-3900 Master's Thesis in Geology or optional
3. sem (fall)	GEO-3900 Master's Thesis in Geology or optional		
4. sem (spring)	GEO-3900 Master's Thesis in Geology or optional		

Optional courses (depending on project chosen; number of ECTS in brackets):

Fall:

- GEO-3104 Advanced Structural Geology (5)

- GEO-3115 Petroleum Geology (10)
- GEO-3118 Environmental Geology (5)
- GEO-3122 Micropalaeontology (5)
- GEO-3123 Marine Geophysics (10)
- GEO-3128 Marine Geohazards (5)
- GEO-3135 Rock-Slope Failures: Geology, Hazard and Monitoring (10)

Spring:

- GEO-3127 Three-Dimensional Seismic Interpretation (5)
- GEO-3136 Practical Geochronological Methods in Marine, Terrestrial Quaternary Geology and Geohazards (10)

Both spring and fall:

- Geology Project GEO-3221 (5) or GEO-3222 (10)
- Special Curriculum
- Science courses subject to approval
- National courses in earth sciences subject to approval

4) *Petroleum Geoscience:*

Semester	10 ECTS	10 ECTS	10 ECTS
1. sem (fall)	Geo 3115 Petroleum Geology	Optional	Optional
2. sem (spring)	Geo-3119 Petroleum Prospecting	GEO-3900 Master's Thesis in Geology	Optional
3. sem (fall)	GEO-3900 Master's Thesis in Geology		GEO-3120 Management of the Petroleum Resources
4. sem (spring)	GEO-3900 Master's Thesis in Geology		

Optional courses (depending on project chosen; number of ECTS in brackets):

Fall:

- GEO-3104 Advanced Structural Geology (5)
- GEO-3118 Environmental Geology (5)
- GEO-3122 Micropaleontology (5)
- GEO-3123 Marine Geophysics (10)
- GEO-3126 Practical Seismic Processing (5)
- GEO-3128 Marine Geohazards (5)
- GEO-3135 Rock-Slope Failures: Geology, Hazard and Monitoring (10)
- GEO-3151 Geo-Seminar in Energy and Environment (10)

Spring:

- GEO-3106 Tectonics (10)
- GEO-3112 Sedimentary Processes and Products (10)
- GEO-3113 Field Course in Exogene Geology (5)
- GEO-3127 Three-Dimensional Seismic Interpretation (5)
- GEO-3129 Drilling and Production of Oil and Gas (5)

Either spring or fall:

- GEO-3144 Arctic Marine Geology and Geophysics Cruise (5)
- GEO-3145 Arctic Marine Geology and Geophysics Workshop (5)

Both spring and fall:

- Geology Project GEO-3221 (5) or GEO-3222 (10)
- Special Curriculum
- Science courses subject to approval
- National courses in earth sciences subject to approval

University Centre in Svalbard (UNIS) recommended courses (number of ECTS in brackets):

- AG-334 Arctic Basins and Petroleum Provinces (10)
- AG-335 Polar Seismic Exploration (10)
- AG-322 Fold and Thrust Belts and Foreland Basin Systems (10)
- Facies and Sequence Stratigraphy (15)

Assessment:

The form of assessment varies; written or oral exam, home assignment or report, sometimes in combination with a final oral or written exam. These are identified in the course descriptions.

Language of instruction

Language of instruction is English and all of the syllabus material is in English. Examination questions will be given in English, but may be answered either in English or in a Scandinavian language.

The Master's Thesis can be written either in English or in a Scandinavian language.

Internationalization and exchange possibilities

Exchange studies abroad or at the University Centre in Svalbard (UNIS) can be recognized in the Master's Degree if recommended by your supervisor, and only if the external courses are validated prior to participation.

The Department of Geosciences has exchange agreements through UiT, either as bilateral agreements or as part of exchange programs. The department has a close cooperation with UNIS,

which offers a broad range of geology courses.

Syllabus

Syllabus and reading list will be prepared for each individual course and presented at the start of the courses.

Other regulations

The Faculty of Science and Technology has developed supplementary regulations for the Master's programs. The study program is evaluated every year according to the university's quality assurance system. The courses in the study program are evaluated at least every third time they are given. Evaluations consist of reports from both students and teachers.