Programme-specific Section of the Curriculum for the MSc Programme in

Geology-Geoscience

at the Faculty of Science, University of Copenhagen

2022 (Rev. 2025)

Contents

1 Title, affiliation and language

A shared section that applies to all BSc, part-time MSc and MSc Programmes at the Faculty of Science is linked to this programme-specific curriculum.

1.1 Title

The MSc Programme in Geology-Geoscience leads to a Master of Science (MSc) in Geology-Geoscience with the Danish title: *Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience.*

1.2 Affiliation

The programme is affiliated with the Study Board of Geosciences and Management, and the students can both elect, and be elected, to this study board.

1.3 Corps of external examiners

The following corps of external examiners is used for the central parts of the MSc Programme:

- Corps of External Examiners for Geology (*geologi*).

1.4 Language

The language of this MSc Programme is English.

2 Academic profile

2.1 Purpose

Geology-Geoscience is a term for the sciences concerned with the Earth, geological materials, processes and structures, as well as the study of the history of the Earth and of life on Earth within a temporal framework. The MSc Programme in Geology-Geoscience programme is a research-based study programme, the objective of which is to provide students with knowledge, skills and competences within the central subjects of the programme.

2.2 General programme profile

The study programme is initiated by two common compulsory courses. The elective subjects include a number of specialist courses, a project course, a practical course and a field and method course. The thesis, which concludes the MSc programme, is an independent experimental, field-based or theoretical study within a clearly defined area of the geological fields of study.

The key subject areas of the programme are: Formation and evolution of the Earth, geological materials, processes and structures, and the study of the history of the Earth, of the climate of the Earth, and of life on Earth within a temporal framework.

2.3 General structure of the programme

The MSc Programme is set at 120 ECTS.

There are no defined specialisations in this programme.

2.4 Career opportunities

The MSc Programme in Geology-Geosciences qualifies students to become professionals within business functions and/or areas such as:

- Provide the student with the qualifications required to independently take on job functions based on the methods and scientific foundation of the geological subjects covered.
- Provide the student with the qualifications required to take part in scientific work within the areas of the chosen specialisation.
- A PhD programme.

3 Description of competence profile

Students following the MSc Programme acquire the knowledge, skills and competences listed below depending on the courses taken. Students will also acquire other qualifications through elective subject elements and other study activities.

3.1 Generic competence profile

Graduates holding an MSc in Geology-Geoscience have acquired the following regardless of the chosen specialisation:

Knowledge about:

- The principles for formulating geoscientific questions, planning and managing geoscience studies and reporting on findings at an academically appropriate level.
- The integration of field-based data with relevant analysis methods to solve complex geoscientific problems at a high academic level.
- Geological and geochemical processes.
- Geological resources incl. geothermal energy and CO2 storage.
- Imaging of Earth structure from the near-surface to the deep interior with geological methods.
- Interpretation of geological and geodynamic processes and understanding of the state of the Earth based on geophysical methods/data.

Skills in/to:

- Combine geoscience field and laboratory-based experience within the specified area of geology-geoscience.
- Collecting and critically evaluating existing and new interdisciplinary data on hydrology, geology, geophysics, hydrogeology and geochemistry.
- Investigate the occurrence of resources, incl. geothermal energy and CO2 storage.
- Analyse Earth's climate history using e.g. geochemical, sedimentological and palaeobiological proxies.
- Analyse a geoscience problem, devise a working model, collect and analyse geoscience data and prepare an academically sound and detailed scientific report.
- Communicate and discuss current topics within the field of geology-geoscience.

Competences in/to:

- Design and carry out the planning of a geoscience study.
- Critically evaluate and select suitable methods for solving geoscientific problems.
- Provide an integrated synthesis of the formation, evolution and occurrence of various rock-types based on a wide range of data.
- Provide an integrated interpretation of Earth's climate record based on a wide range of data.
- Independently implement and carry out monodisciplinary and interdisciplinary collaboration and assume professional responsibility.

- Independently assume responsibility for their own professional development and specialisation and critically seek, read and assess specialist literature.

4 Admission requirements

4.1 Bachelor's degrees that automatically fulfil the academic requirements

Applicants with one of the following Bachelor's degrees automatically fulfil the academic requirements for admission to the MSc Programme in Geology-Geoscience:

- Geology-Geoscience (*geologi-geoscience*) from University of Copenhagen (reserved access)

4.2 Other Bachelor's degrees

Applicants with a Bachelor's degree, Professional Bachelor's degree or equivalent from Danish or international universities other than those listed in 4.1 is qualified for admission if the degree includes the following:

- Subject elements on bachelor's level within the academic field of geology-geoscience, 60 ECTS.

4.3 Other applicants

The Faculty may also admit applicants who, after an individual academic assessment, are assessed to possess educational qualifications equivalent to those required in Subclauses 4.1- 2.

4.4 Language requirements

Applicants must be able to document English proficiency corresponding to one of the following:

- Upper secondary school degree, Bachelor's degree or Master's degree in English from Australia, Canada, Ireland, New Zealand, United Kingdom or USA.
- Nordic entrance examination with an English level comparable to the Danish level B or higher
- International Baccalaureate (IB) from an international school
- European Baccalaureate (EB) from one of the approved schools
- English B or A as Single Subject Course in Denmark
- Abiturzeugnis from Germany
- IELTS test score of minimum 6.5
- TOEFL test score of minimum 83
- Cambridge Advanced English (CAE) or Cambridge English: Proficiency (CPE) passed at level C1 or C2

4.5 Supplementary subject elements

The qualifications of an applicant to the MSc programme are assessed exclusively on the basis of the qualifying Bachelor's degree. Supplementary subject elements passed between the completion of the Bachelor's programme and the admission to the MSc programme cannot be included in the overall assessment.

However, subject elements passed before the completion of the Bachelor's programme may be included in the overall assessment. This includes subject elements completed as continuing education as well as subject elements completed as part of a former higher education programme. A maximum of 30 ECTS supplementary subject elements can be included in the overall assessment.

Subject elements passed before completing the Bachelor's programme which are to form part of the MSc programme to which the student has a legal right of admission (§15-courses) cannot be included in the overall assessment.

5 Prioritisation of applicants

With a Bachelor's degree in Geology-Geoscience from University of Copenhagen the student is granted reserved access and guaranteed a place at the MSc Programme in Geology-Geoscience if the student applies in time to begin the MSc Programme within three years of the completion of the Bachelor's degree.

If the number of qualified applicants to the programme exceeds the number of places available, applicants will be prioritised according to the following criteria:

- Total number of ECTS in courses within geology-geoscience.

6 Structure of the programme

The compulsory subject elements, restricted elective subject elements and the thesis constitute the central parts of the programme (Section 30 of the Ministerial Order on Bachelor and Master's Programmes (Candidatus) at Universities).

6.1 Programme components

The programme is set at 120 ECTS and consists of the following:

- Compulsory subject elements, 15 ECTS.
- Restricted elective subject elements, 30 ECTS.
- Elective subject elements, 15 ECTS.
- Thesis, 60 ECTS.

6.1.1 Compulsory subject elements

All of the following subject elements are to be covered (15 ECTS):			
Course Code	**Course Title**	**Block**	**ECTS**
NIGK21006U	Aqueous Geochemistry	Block 1	7.5 ECTS
NIGK21035U	Past Climate	Block 1	7.5 ECTS

6.1.2 Restricted elective subject elements

30 ECTS are to be covered by subject elements from the following list:			
Course Code	**Course Title**	**Block**	**ECTS**
NIGK21003U	Early Earth - Formation and History	Block 2	7.5 ECTS
NIGK21004U	Palaeontology and History of Life	Block 2	7.5 ECTS
NIGK14056U	Climate Change and Water Resources	Block 2	7.5 ECTS
NIGK21002U	Processing of Seismic and Georadar Data	Block 2	7.5 ECTS
SGBK20009U	Stardust to Planets: Building a Habitable Solar System	Block 2	7.5 ECTS
NIGK25004U	Geological Evolution Based on Interpretation and Integration of Reflection Seismic and Wireline Log Data	Block 3	7.5 ECTS
NIGK21007U	Integrated Water Resources Modelling	Block 3	7.5 ECTS
NIGK21008U	Geodynamics - Shaping Earth's Surface	Block 3	7.5 ECTS
NIGK25003U	Integrated Sedimentary Systems Analysis	Block 4	7.5 ECTS
NIGK19001U	Introduction to Geomicrobiology	Block 4	7.5 ECTS
NIGK21012U	Contaminant Hydrogeology	Block 4	15 ECTS
NIGK19004U	Marine Geoscience	Block 5	7.5 ECTS
NIGK23006U	Field and Methods Course in Geology-Geoscience	Block 2-5	7.5 ECTS

6.1.3 Elective subject elements

15 ECTS are to be covered as elective subject elements.

- All subject elements at MSc level may be included as elective subject elements in the MSc Programme.
- BSc subject elements corresponding to 7.5 ECTS may be included in the MSc Programme.
- All courses at GLOBE Institute SUND, affiliated with a SCIENCE Study Board, are preapproved as elective courses.
- Projects. See 6.1.4 Projects.

6.1.4 Projects

- Projects outside the course scope (PUK) may be included in the elective section of the programme with up to 7.5 ECTS. The primary supervisor must be employed at either SCIENCE or GLOBE Institute SUND. The regulations are described in Appendix 5 to the shared section of the curriculum.
- Projects in practice (PIP) may not exceed 15 ECTS in total of the restricted elective and elective section of the programme. PIP may be written as a combination of the restricted elective and elective section of the programme. The regulations are described in Appendix 4 to the shared section of the curriculum.
- Thesis preparation projects (PREP) may not be included in the elective section of the programme. The regulations are described in Appendix 6 to the shared section of the curriculum.

6.1.5 Thesis

The MSc Programme in Geology-Geoscience includes a thesis corresponding to 60 ECTS, as described in Appendix 2 to the shared curriculum. The thesis must be written within the academic scope of the programme.

The primary supervisor must be employed at either SCIENCE or GLOBE Institute SUND.

6.1.6 Academic mobility

The curriculum makes it possible to follow subject elements outside the Faculty of Science.

The academic mobility for the MSc Programme in Geology-Geoscience is placed in block 3+4 of the 1st year.

Academic mobility requires that the student follows the rules and regulations regarding pre-approval and credit transfer.

In addition, the student has the possibility to arrange similar academic mobility in other parts of the programme.

7 Exemptions

In exceptional circumstances, the study board may grant exemptions from the rules in the curriculum specified solely by the Faculty of Science.

8 Commencement etc.

8.1 Validity

This subject specific section of the curriculum applies to all students enrolled in the programme – see however Appendix 2.

8.2 Transfer
Students enrolled on previous curricula may be transferred to the new one as per the applicable transfer regulations or according to an individual credit transfer by the study board.

8.3 Amendments
The curriculum may be amended once a year so that any changes come into effect at the start of the academic year. Amendments must be proposed by the study board and approved by the Dean. Notification about amendments that tighten the admission requirements for the programme will be published online at www.science.ku.dk one year before they come into effect.

If amendments are made to this curriculum, an interim arrangement may be added if necessary to allow students to complete their MSc Programme according to the amended curriculum.

Appendix 1 The recommended academic progression

The table illustrates the recommended academic progression. The student is allowed to plan an alternative progression within the applicable rules.

Table – MSc Programme in Geology-Geoscience

Period	Block 1	Block 2	Block 3	Block 4
1st year	Aqueous Geochemistry	Restricted elective	Restricted elective	Restricted elective
	Past Climate	Restricted elective	Elective	Elective
2nd year	Thesis			

Appendix 2 Interim arrangements

The Shared Section that applies to all BSc, part-time MSc and MSc Programmes at the Faculty of Science applies to all students.

The interim arrangements below only consist of parts where the current curriculum differs from the rules and regulations that were previously valid. Therefore, if information about relevant rules and regulations are missing, it can be found in the curriculum above.

1 General changes for students admitted in the academic year 2024/25 or 2023/24

Students admitted to the MSc Programme in the academic year 2024/25 or 2023/24 must finish the programme as listed in the curriculum above with the following exceptions.

Table – MSc Programme in Geology-Geoscience

Period	Block 1	Block 2	Block 3	Block 4
1st year	***Integrating Fundamental Concepts in Geosciences***	**Restricted elective**	**Restricted elective**	**Restricted elective**
		Restricted elective	**Elective**	**Elective**
2nd year	**Thesis**			

Subject elements in italics have been discontinued. See discontinued courses below.

Restricted elective subject elements

30 ECTS are to be covered as subject elements from the following list:			
Restricted elective subject elements offered as part of this curriculum (see above)			
NIGK21006U	Aqueous Geochemistry	Block 1	7.5 ECTS
NIGK21035U	Past Climate	Block 1	7.5 ECTS
NIGK21011U	Mineral Resources	Discontinued*	7.5 ECTS
NIGK21005U	Geological Evolution Based on Interpretation and Integration of Reflection Seismic and Wireless Log Data	Discontinued*	7.5 ECTS
NIGK21010U	Integrated Sedimentary Systems Analysis	Discontinued*	7.5 ECTS
NIGK21009U	Melting in the Earth's Mantle - Tracing Sources and Processes	Discontinued*	7.5 ECTS

2 General changes for students admitted in the academic year 2022/23

Students admitted to the MSc Programme in the academic year 2022/23 must finish the programme as listed in the curriculum above with the following exceptions.

Table – MSc Programme in Geology-Geoscience

Period	Block 1	Block 2	Block 3	Block 4
1st year	***Integrating Fundamental Concepts in Geosciences***	**Restricted elective**	**Restricted elective**	**Restricted elective**
		Restricted elective	**Elective**	**Elective**
2nd year	**Thesis**			

Subject elements in italics have been discontinued. See discontinued courses below.

Restricted elective subject elements

30 ECTS are to be covered as subject elements from the following list:			
Restricted elective subject elements offered as part of this curriculum (see above)			
NIGK21006U	Aqueous Geochemistry	Block 1	7.5 ECTS
NIGK21035U	Past Climate	Block 1	7.5 ECTS
NIGK21011U	Mineral Resources	Discontinued*	7.5 ECTS
NIGK15007U	Field and methods course in Geology-Geoscience	Discontinued*	15 ECTS
NIGK21005U	Geological Evolution Based on Interpretation and Integration of Reflection Seismic and Wireless Log Data	Discontinued*	7.5 ECTS
NIGK21010U	Integrated Sedimentary Systems Analysis	Discontinued*	7.5 ECTS
NIGK21009U	Melting in the Earth's Mantle - Tracing Sources and Processes	Discontinued*	7.5 ECTS

3 Discontinued courses

Course Code	Course Title	ECTS	Interim arrangement
NIGK15007U	Field and Methods Course in Geology-Geoscience	15	The course was restricted elective in the academic year 2022/23. Offered for the last time: 2022/23. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2023/24.
NIGK21005U	Geological Evolution Based on Interpretation and Integration of Reflection Seismic and Wireless Log Data	7.5	The course was restricted elective in the academic year 2024/25 and earlier. Offered for the last time: 2024/25. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2025/26.
NIGK21010U	Integrated Sedimentary Systems Analysis	7.5	The course was restricted elective in the academic year 2024/25, 2023/24 and 2022/23. Offered for the last time: 2024/25. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2025/26.
NIGK21001U	Integrating Fundamental Concepts in Geosciences	15	The course was compulsory in the academic year 2024/25 and earlier. Offered for the last time: 2024/25. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2025/26. The course is replaced by NIGK21006U Aqueous Geochemistry and NIGK21011U Mineral Resources.
NIGK21009U	Melting in the Earth's Mantle - Tracing Sources and Processes	7.5	The course was restricted elective in the academic year 2024/25 and earlier. Offered for the last time: 2024/25. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2025/26.
NIGK21011U	Mineral Resources		The course was restricted elective in the academic year 2022/23 and earlier. Offered for the last time: 2022/23. Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2024/25.

Appendix 3 Description of objectives for the thesis

After completing the thesis, the student should have:

Knowledge about:

- Identifying scientific problems within the subject areas for the chosen geological specialisation.
- Summarising a combination of methodologies/theories based on international research for use in the work with problem formulation.
- Discussion of theories/models on the basis of and with a high degree of independence.

Skills to:

- Apply and critically evaluate theories/methodologies in the field of geoscience, including their applicability and limitations.
- Assess the extent to which the production and interpretation of findings/material obtained in the study depend on the theory/methodology and the constraints chosen.
- Draw conclusions in a clear and academic manner in relation to the problem formulation and considering the topic and the subject area of the thesis.
- Discuss and communicate the significance of the thesis on the basis of previous data, earlier research and geological theory.
- Conduct experimental work/producing own geological data relevant to the topic as formulated in the problem formulation.
- Process geological data through a choice of academic analysis methods and present findings objectively and in a concise manner.
- Assess the credibility of own findings based on relevant data processing.

Competences in:

- Initiating and performing academic work within the research context of the chosen study programme and geological specialisation.
- Solving complex problems and carrying out development assignments in a general geological context.