Programme-specific Section of the Curriculum for the MSc Programme in Geology-Geoscience at the Faculty of Science, University of Copenhagen 2009 (Rev. 2020)

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

1.1 Title
The MSc Programme in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate leads to a Master of Science (MSc) in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate with the Danish title: _Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience med en specialisering i sedimentære systemer og palæoklima._

The MSc Programme in Geology-Geoscience with a specialisation in Water Resources leads to a Master of Science (MSc) in Geology-Geoscience with a specialisation in Water Resources with the Danish title: _Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience med en specialisering i vandressourcer._

The MSc Programme in Geology-Geoscience with a specialisation in Solid Earth Geophysics leads to a Master of Science (MSc) in Geology-Geoscience with a specialisation in Solid Earth Geophysics with the Danish title: _Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience med en specialisering i den faste jords geofysik._

The MSc Programme in Geology-Geoscience with a specialisation in Solid Earth Geochemistry and Petrology leads to a Master of Science (MSc) in Geology-Geoscience with a specialisation in Solid Earth Geochemistry and Petrology with the Danish title: _Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience med en specialisering i den faste jords geokemi og petrologi._

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 structured around 4 specialist qualification profiles, each of which comprises a compulsory qualification profile course. 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 and of life on Earth within a temporal framework.

2.3 General structure of the programme
The MSc Programme is set at 120 ECTS.

The MSc Programme in Geology-Geoscience consists of the following elements:

- Specialisation, 120 ECTS incl. thesis.

The student must choose one of the following specialisations:

- Sedimentary Systems and Paleoclimate Water Resources
- Solid Earth Geophysics
- Solid Earth Geochemistry and Petrology

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

- A PhD programme
- 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.

3 Description of competence profiles
Students following the MSc Programme acquire the knowledge, skills and competences listed below. Students will also acquire other qualifications through elective subject elements and other study activities.

3.1 Sedimentary Systems and Paleoclimate
On completion of the programme, an MSc in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate has acquired the following:

Knowledge about:

- Types of sedimentary basins within a plate-tectonic framework.
-Explorational aspects for resources, such as geothermal energy, CO₂ storage possibilities, hydrocarbons and groundwater, in sedimentary basins.
-Seismic profiles, well logs and outcrop data from selected sedimentary systems.
-Climate archives, geochemical and sedimentary proxies.
-The principles for formulating geological questions, planning and managing geological studies and reporting on findings at an academically appropriate level.
-The integration of field-based data with relevant analysis methods to solve complex geological problems at a high academic level.
-The essential elements in analyses of sedimentary source areas, including geology, provenance studies, sediment flux and drainage patterns.
-The nature and significance of flora and fauna in various sediments.

Skills in/to:

- Describe the types of sedimentary basins in a plate-tectonic framework, and to proceed from there in a series of steps to progressively smaller scale and higher degrees of detail.
- Describe the explorational aspects for geothermal energy, CO₂ storage possibilities, hydrocarbons and groundwater in sedimentary systems.
- Apply seismic profiles, well logs and outcrop data from selected basins.
- Perform an independent analysis and synthesis of a sedimentary systems through time based on all available seismic, borehole and outcrop data and by applying a wide spectrum of tectonic, stratigraphic and sedimentological methods within a plate tectonic framework.
- Make a professional-style oral presentation and write a short, concise report on a selected subject which can be directly used by a wide range of professionals.
- Analyse multiple palaeoclimate-related data sets, interpret processes and link these back to the observed data.
- Participate in and undertake the planning of a geological study.
- Analyse a geological problem, devise a working model, collect and analyse geological data and prepare an academically sound and detailed scientific report.
- Combine geological field and laboratory-based experience within the specified area of geology-geoscience.
- Classify sedimentary basins in a plate-tectonic framework, and describe and interpret basin-filling in a tectonic-stratigraphic framework.
- Identify, characterise and interpret major sedimentary systems, with the aid of correlations of outcrop profiles, borehole logs and seismic profiles, based on seismic and sequence stratigraphy and seismic geomorphology.
- Identify, describe and interpret the most significant palaeoclimatic aspects of correlation between outcrop profiles and geochemical/sedimentary proxies, using stratigraphic principles, including chemostratigraphy.

**Competences in/to:**
- Classifying sedimentary basins within a plate tectonic framework.
- Describing and interpreting basin fill in a stratigraphic-tectonic framework.
- Explaining the main elements in the analysis of sedimentary source areas, including geology, provenance, sediment flux and drainage patterns.
- Identifying, describing and interpreting major depositional systems by correlation of outcrops, well logs and seismic profiles using seismic and sequence stratigraphy and seismic geomorphology.
- Identifying and explaining potential occurrences of economically important resources in the investigated sedimentary systems.
- Undertaking a synthesis of the formation, stratigraphical development and resources of a sedimentary system based on all available data.
- Analysing geological climate archives based on field observations or geochemical and sedimentary proxies.
- Giving an oral presentation of this synthesis and present it in a short, concise report.
- Explaining core academic areas, disciplines, theories and working methods within the field of geology-geoscience.
- Understanding geological work functions and development tasks requiring new solution models.
- Independently implementing and carrying out monodisciplinary and interdisciplinary collaboration and assume professional responsibility.
- Independently assuming responsibility for their own professional development and specialisation and critically seek, read and assess specialist literature.
- Identifying and explaining models for potentially important sedimentary resources in sedimentary systems.
- Presenting a synthesis of the formation, stratigraphic development and resources in a sedimentary basin on the basis of existing data.
• Analysing geological climate archives based on field observations or geochemical and sedimentary proxies.
• Evaluating the validity of palaeoclimatic archives and model results by means of comparative studies.

3.2 Water Resources
On completion of the programme, an MSc in Geology-Geoscience with a specialisation in Water Resources has acquired the following:

Knowledge about:
• Fundamentals of groundwater flow and solute transport.
• Climate change and water resources.
• Advanced integrated hydrological modelling
• Groundwater and water resources management and protection
• Geochemistry and groundwater pollution.
• Integration of field-based data with relevant analysis methods to solve complex hydrological problems at a high academic level.

Skills in/to:
• Perform hydrological modelling and water balance assessment and management at catchment scale.
• Calibrate hydrological models using inverse parameterization methods.
• Statistically analyse hydrological time series.
• Stochastically analyse effects of uncertain geology on water resources
• Program and develop numerical solutions to geoscience solutions.
• Integrate several disciplines including hydrology, Quaternary geology, hydrogeophysics, contaminant hydrology, hydrochemistry/isotopes and hydrogeology.
• Use advanced software and modelling to construct 3D geological-hydrogeological and hydrological-groundwater models.
• Interpret and carry out quantitative modelling of near-surface processes such as the spatial and chronological distribution of precipitation, evapotranspiration and infiltration of water and dissolved materials from the surface.
• Interpret and carry out quantitative modelling of sub-surface processes such as flow and transport in heterogeneous aquifers, and interactions between groundwater and surface water near lakes, rivers and oceans.
• Interpret and carry out quantitative modelling of geochemical reactions in porous media and coupling to the flow of the groundwater.

Competences in/to:
• Reading and comprehending international literature on water resources and related supporting disciplines.
• Collecting and critically evaluating existing and new interdisciplinary data on hydrology, geology, geophysics, hydrogeology and geochemistry.
• Calibrating and applying hydrological models for various hydrological fluxes (e.g. unsaturated flow, groundwater flow, flow interaction between groundwater and surface water) to solve flow and transport problems.
• Analysing the impact of the geological settings on subsurface flow and transport.
• Analysing and assessing hydrology, water balance and water resources at catchment scale.
• Writing a report on water resource problems and present findings.
• Explaining core academic areas, disciplines, theories and working methods within the field of geology-geoscience.
• Understanding geological work functions and development tasks requiring new solution models.
• Independently implementing and carrying out monodisciplinary and interdisciplinary collaboration and assume professional responsibility.
• Independently assuming responsibility for their own professional development and specialisation and critically seek, read and assess specialist literature.
• Using national and international studies as examples to highlight the procedures for the collation, processing and interpretation of major hydrological, hydrogeological and hydrogeophysical data sets.

3.3 Solid Earth Geophysics
On completion of the programme, an MSc in Geology-Geoscience with a specialisation in Solid Earth Geophysics has acquired the following:

Knowledge about:
• Theoretical and practical aspects of seismology.
• Determination of the material properties of the whole Earth.
• Theory and application of the Earth’s gravity and its significance for Earth’s structure and dynamics.
• The thermal structure of the Earth’s interior, including applications to geological problems.
• Electromagnetic theory and the geomagnetic field, including application to geological studies.
• The principles for formulating geophysical questions, planning and managing geological studies and reporting on findings at an academically appropriate level.
• Integration of field-based data with relevant analysis methods to solve complex geophysical problems at a high academic level.
• Geodynamic modelling of plate tectonic processes and mantle dynamics
• The relations between geodynamic processes, lithosphere structure and mineral deposits.
• The relationship between Earth's structure, physical properties and dynamics.

Skills in/to:
• Understand the state-of-the-art physical methods for studying the Earth.
• General knowledge of the structure of the Earth.
• Understand the general information on which our present understanding of the Earth is based, including its limitation.
• Understand the current literature on the subject, including skills to present this understanding.
• Appreciate the relationship between structure, physical properties, and dynamics of the Earth.
• Use basic physical formulas for solving general geophysical problems.
• Participate in and undertake the planning of a geophysical study.
• Analyse a geophysical problem, devise a working model, collect and analyse geological data and prepare an academically sound and detailed scientific report.
• Combine geophysical field and laboratory-based experience within the specified area of geology-geoscience.
• Carry out different types of geophysical observations.
• Perform geodynamic modelling of processes related to mantle convection and plate tectonics.

Competences in/to:
• Accounting for the current state-of-the-art physical methods for studying the Earth.
• Accounting for the structure of the Earth.
• Accounting for the information on which our present understanding of the Earth is based, including limitations.
• Understanding the current literature on the subject, including skills to present this understanding.
• Accounting for the relation between structure, physical properties, and dynamics of the Earth.
• Accounting for the relation between geodynamic processes, lithosphere structure, mineral deposits and natural hazards.
• Using basic physical formulas for solving general geophysical problems.
• Explaining core academic areas, disciplines, theories and working methods within the field of geology-geoscience.
• Understanding geophysical work functions and development tasks requiring new solution models.
• Independently implementing and carrying out monodisciplinary and interdisciplinary collaboration and assume professional responsibility.
• Independently assuming responsibility for their own professional development and specialisation and critically seek, read and assess specialist literature.
• Synthesising results from different geophysical methods in order to describe the Earth's properties in terms of density, elasticity and rheology.

3.4 Solid Earth Geochemistry and Petrology
On completion of the programme, an MSc in Geology-Geoscience with a specialisation in Solid Earth Geochemistry and Petrology has acquired the following:

Knowledge about:
• Geochemical evolution of the Earth from 4.6 Ga to today.
• Geochemistry and mineralogy of Earth components (core, mantle, crust) and in particular the crust-mantle system.
• The geochemical cycling of relevant elements in the continental crustal and marine systems.
• Isotopic tracers and their applicability in identifying and understanding the evolution of Earth’s geochemical components, geochemical and petrological processes, and the dating of geological events.
• The principles for formulating geological questions, planning and managing geological studies and reporting on findings at an academically appropriate level.
• Integration of field-based data with relevant analysis methods to solve complex geological problems at a high academic level.
• Petrologic high-temperature processes and up-to-date models for the formation of metamorphic and magmatic rock complexes and ore deposits.
• The Earth's interior and volcanological processes as integrated parts of the planet's evolution.
• The relationship between the structure of Earth materials, the conditions for their creation and the physical and chemical environments in which they are formed.

Skills in/to:
• Demonstrate an understanding of the processes that led to the Earth’s formation and its prime differentiation.
• Describe the general characteristics of the different geochemical reservoirs within the Earth, the interplays between them, in particular the crust-mantle system.
• Describe the chemical and mineralogical variations within the different Earth’s geochemical reservoirs in terms of geochemical processes linked to modern plate tectonic theory, lithospheric recycling and geodynamics, and to thermodynamic and crystallographic principles.
• Apply isotopic tracers to high-temperature petrological problems.
• Participate in and undertake the planning of a geological study.
• Analyse a geological problem, devise a working model, collect and analyse geological data and prepare an academically sound and detailed scientific report.
• Combine geological field and laboratory-based experience within the specified area of geology-geoscience.
• Perform quantitative modelling of selected geochemical and physical processes in petrology and process geochemical data.

Competences in/to:
• Demonstrating familiarity with the on-going and past processes that have led to the structure of the Earth’s crust-mantle system.
• Describing the general characteristics of the different geochemical reservoirs within the Earth, the interplays between the crust and mantle, and explain these within the framework of the evolution of the planet.
• Explaining chemical and mineralogical variations within the different Earth’s geochemical reservoirs in terms of geochemical processes linked to modern plate tectonic theory, lithospheric recycling and geodynamics, and to thermodynamic and crystallographic principles.
• The ability to recite the milestones in Earth’s early evolution and the processes that led to the formation of the Earth, its prime differentiation and the chronology of these events.
• Explaining core academic areas, disciplines, theories and working methods within the field of geology-geoscience.
• Understanding geological work functions and development tasks requiring new solution models.
• Independently implementing and carrying out monodisciplinary and interdisciplinary collaboration and assume professional responsibility.
• Independently assuming responsibility for their own professional development and specialisation and critically seek, read and assess specialist literature.
• Interpreting petrological processes using a combination of field observations and petrographic and geochemical data sets.

4 Admission requirements
With a Bachelor’s degree in Geology-Geoscience from the 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.
4.1 Applicants with a Bachelor’s degree in Geology-Geoscience
Applicants with a Bachelor’s degree in Geology-Geoscience from the University of Copenhagen are directly academically qualified for admission to the MSc Programme.

4.2 Applicants with a related Bachelor’s degree
Applicants with a Bachelor’s degree in the following:
- Geography and Geoinformatics from the University of Copenhagen.
- Geoscience from Aarhus University.
- Geology from international universities.
- Within the field of science from the University of Copenhagen, other Danish or Nordic universities.
may also be admitted if their programme 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 deemed to possess educational qualifications equivalent to those required in Subclauses 4.1-2.

4.4 Language requirements
Applicants must as a minimum document English language qualifications comparable to a Danish upper secondary school English B level or English proficiency corresponding to the tests and scores required. Accepted tests and required minimum scores are published online at www.science.ku.dk.

4.5 Supplementary subject elements
The qualifications of an applicant to the MSc program are assessed exclusively on the basis of the qualifying bachelor’s degree. Supplementary subject elements passed between the completion of the bachelor’s program and the admission to the MSc program 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 BSc programme which are to form part of the MSc programme to which the student has a legal right of admission (§9-courses) cannot be included in the overall assessment.
5 Prioritisation of applicants
If the number of qualified applicants to the programme exceeds the number of places available, applicants will be prioritised as follows:

1) Applicants with a Bachelor’s degree in Geology-Geoscience from the University of Copenhagen with reserved access to the programme.
2) Applicants with a Bachelor’s degree in Geology-Geoscience from the University of Copenhagen.
3) Other applicants.

If the number of qualified applicants within a category exceeds the number of places available, applicants will be prioritised according to the following criteria (listed below in prioritised order):

- On the basis of ECTS obtained in study elements 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 21 of the Ministerial Order on Bachelor and Master’s Programmes (Candidatus) at Universities).

6.1 Sedimentary Systems and Paleoclimate
The specialisation is set at 120 ECTS and consists of the following:
- Compulsory subject elements, 22.5 ECTS.
- Restricted elective subject elements, 22.5 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 (22.5 ECTS):
- NGEA09047U Interpretation of Reflection Seismic and Wireline Log Data
  Block 1 7.5 ECTS
- NIGK14021U Sedimentary Basins - Evolution, Environments and Resources (part 1)
  Block 2 7.5 ECTS
- NIGK17019U Sedimentary Deposits: Modern and Ancient
  Block 2 7.5 ECTS

6.1.2 Restricted elective subject elements
22.5 ECTS are to be covered as subject elements from the following two lists:

1) 7.5 ECTS are to be covered as subject elements from the following list:
- NIGK14025U Water Resources (part 1)
  Block 1 7.5 ECTS
- NIGK15024U Solid Earth Geophysics (part 1)
  Block 1 7.5 ECTS
- NIGK14019U Core to Crust: Earth’s Evolution and Processes (part 1)
  Block 1 7.5 ECTS

2) 15 ECTS are to be covered as subject elements from the following list:
- NGEK10029U Groundwater Exploitation and Protection
  Block 3 7.5 ECTS
- NIGK17002U Past Climate and Sea Level: Processes and Proxies
  Block 3 7.5 ECTS
- NIGK19002U Geodynamics
  Block 3 7.5 ECTS
- NGEA09056U Numerical Modelling in Fluvial, Coastal, Estuarine and Marine Environment
  Block 3 7.5 ECTS
- NIGK15007U Field and Methods Course in Geology-Geoscience
  Block 3+4 15 ECTS
- NIGK13019U Water Resources Management
  Block 3 7.5 ECTS
- NIGK14022U Sedimentary Basins - Evolution, Environments and Resources (part 2)
  Block 4 7.5 ECTS
- NIGK19001U Introduction to Geomicrobiology
  Block 4 7.5 ECTS
- NIGK17004U Applied Mineralogy
  Block 4 7.5 ECTS
- NNMK17000U Stardust to Planets: Building a Habitable Solar System
  Block 4 7.5 ECTS
- NFYK15004U Advanced Seismology
  Block 4 7.5 ECTS
- NIGK17003U Hydrogeology: Data Collection and Processing
  Block 4 7.5 ECTS
- NIGK19004U Marine Geoscience
  Block 5 7.5 ECTS
- NIGK15023U Project Course in Geology-Geoscience
  Block 1-5 7.5 ECTS
- NFKK14006U Project in Practice
  Block 1-5 15 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.
Projects outside the course scope may be included in the elective section of the programme with up to 7.5 ECTS. The regulations are described in Appendix 5 to the shared section of the curriculum.

Projects in practice may not exceed 15 ECTS in total of the restricted elective and elective section of the programme. Project in practice 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 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.

6.1.4 Thesis
The MSc Programme in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate 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.

6.1.5 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 with a specialisation in Sedimentary Systems and Paleoclimate 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.

6.2 Water Resources
The specialisation is set at 120 ECTS and consists of the following:
- Compulsory subject elements, 22.5 ECTS.
- Restricted elective subject elements, 22.5 ECTS.
- Elective subject elements, 15 ECTS.
- Thesis, 60 ECTS.

6.2.1 Compulsory subject elements
All of the following subject elements are to be covered (15 ECTS):

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Element</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK14025U</td>
<td>Water Resources (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14026U</td>
<td>Water Resources (part 2)</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEK12002U</td>
<td>Groundwater Geochemistry</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

6.2.2 Restricted elective subject elements
22.5 ECTS are to be covered as subject elements from the following two lists:

1) 7.5 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject Element</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK15024U</td>
<td>Solid Earth Geophysics (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14019U</td>
<td>Core to Crust: Earth’s Evolution and Processes (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEA09047U</td>
<td>Interpretation of Reflection Seismic and Wireline Log Data</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>
2) 15 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Code</th>
<th>Subject</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGEK10029U</td>
<td>Groundwater Exploitation and Protection</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17002U</td>
<td>Past Climate and Sea Level: Processes and Proxies</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK19002U</td>
<td>Geodynamics</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NGEA09056U</td>
<td>Numerical Modelling in Fluvial, Coastal, Estuarine and Marine Environment</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK15007U</td>
<td>Field and Methods Course in Geology-Geoscience</td>
<td>Block 3+4</td>
<td>15</td>
</tr>
<tr>
<td>NIGK13019U</td>
<td>Water Resources Management</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK14022U</td>
<td>Sedimentary Basins - Evolution, Environments and Resources (part 2)</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK19001U</td>
<td>Introduction to Geomicrobiology</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17004U</td>
<td>Applied Mineralogy</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NNMK17000U</td>
<td>Stardust to Planets: Building a Habitable Solar System</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NFYK15004U</td>
<td>Advanced Seismology</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17003U</td>
<td>Hydrogeology: Data Collection and Processing</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK15007U</td>
<td>Field and Methods Course in Geology-Geoscience</td>
<td>Block 5+1</td>
<td>15</td>
</tr>
<tr>
<td>NIGK19004U</td>
<td>Marine Geoscience</td>
<td>Block 5</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK15023U</td>
<td>Project Course in Geology-Geoscience</td>
<td>Block 1-5</td>
<td>7.5</td>
</tr>
<tr>
<td>NFKK14006U</td>
<td>Project in Practice</td>
<td>Block 1-5</td>
<td>15</td>
</tr>
</tbody>
</table>

**6.2.3 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.

Projects outside the course scope may be included in the elective section of the programme with up to 7.5 ECTS. The regulations are described in Appendix 5 to the shared section of the curriculum.

Projects in practice may not exceed 15 ECTS in total of the restricted elective and elective section of the programme. Project in practice 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 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.

**6.2.4 Thesis**

The MSc Programme in Geology-Geoscience with a specialisation in Water Resources 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.

**6.2.5 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 with a specialisation in Water Resources 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.

6.3 Solid Earth Geophysics
The specialisation is set at 120 ECTS and consists of the following:
- Compulsory subject elements, 22.5 ECTS.
- Restricted elective subject elements, 22.5 ECTS.
- Elective subject elements, 15 ECTS.
- Thesis, 60 ECTS.

6.3.1 Compulsory subject elements
All of the following subject elements are to be covered (22.5 ECTS):

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK15024U</td>
<td>Solid Earth Geophysics (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK15025U</td>
<td>Solid Earth Geophysics (part 2)</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEA09046U</td>
<td>Acquisition and Processing of Seismic Data</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

6.3.2 Restricted elective subject elements
22.5 ECTS are to be covered as subject elements from the following two lists:

1) 7.5 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK14019U</td>
<td>Core to Crust: Earth’s Evolution and Processes (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14025U</td>
<td>Water Resources (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEA09047U</td>
<td>Interpretation of Reflection Seismic and Wireline Log Data</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

2) 15 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGEK10029U</td>
<td>Groundwater Exploitation and Protection</td>
<td>Block 3</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK17002U</td>
<td>Past Climate and Sea Level: Processes and Proxies</td>
<td>Block 3</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK19002U</td>
<td>Geodynamics</td>
<td>Block 3</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEA09056U</td>
<td>Numerical Modelling in Fluvial, Coastal, Estuarine and Marine Environment</td>
<td>Block 3</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK15007U</td>
<td>Field and Methods Course in Geology-Geoscience</td>
<td>Block 3+4</td>
<td>15 ECTS</td>
</tr>
<tr>
<td>NIGK13019U</td>
<td>Water Resources Management</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14022U</td>
<td>Sedimentary Basins - Evolution, Environments and Resources (part 2)</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK19001U</td>
<td>Introduction to Geomicrobiology</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK17004U</td>
<td>Applied Mineralogy</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NNMK17000U</td>
<td>Stardust to Planets: Building a Habitable Solar System</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NFYK15004U</td>
<td>Advanced Seismology</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK17003U</td>
<td>Hydrogeology: Data Collection and Processing</td>
<td>Block 4</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK19004U</td>
<td>Marine Geoscience</td>
<td>Block 5</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK15023U</td>
<td>Project Course in Geology-Geoscience</td>
<td>Block 1-5</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NFKK14006U</td>
<td>Project in Practice</td>
<td>Block 1-5</td>
<td>15 ECTS</td>
</tr>
</tbody>
</table>

6.3.3 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.
Projects outside the course scope may be included in the elective section of the programme with up to 7.5 ECTS. The regulations are described in Appendix 5 to the shared section of the curriculum.

Projects in practice may not exceed 15 ECTS in total of the restricted elective and elective section of the programme. Project in practice 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 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.

6.3.4 Thesis
The MSc Programme in Geology-Geoscience with a specialisation in Solid Earth Geophysics 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.

6.3.5 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 with a specialisation in Solid Earth Geophysics 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.

6.4 Solid Earth Geochemistry and Petrology
The specialisation is set at 120 ECTS and consists of the following:
- Compulsory subject elements, 22.5 ECTS.
- Restricted elective subject elements, 22.5 ECTS.
- Elective subject elements, 15 ECTS.
- Thesis, 60 ECTS.

6.4.1 Compulsory subject elements
All of the following subject elements are to be covered (22.5 ECTS):

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK14019U</td>
<td>Core to Crust: Earth’s Evolution and Processes (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14020U</td>
<td>Core to Crust: Earth’s Evolution and Processes (part 2)</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK17001U</td>
<td>Current Advances in Igneous Petrology and Geochemistry</td>
<td>Block 2</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

6.4.2 Restricted elective subject elements
22.5 ECTS are to be covered as subject elements from the following two lists:

1) 7.5 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK15024U</td>
<td>Solid Earth Geophysics (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NGEA09047U</td>
<td>Interpretation of Reflection Seismic and Wireline Log Data</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>NIGK14025U</td>
<td>Water Resources (part 1)</td>
<td>Block 1</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>
2) 15 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NGEK10029U</td>
<td>Groundwater Exploitation and Protection</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17002U</td>
<td>Past Climate and Sea Level: Processes and Proxies</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK19002U</td>
<td>Geodynamics</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td>NGEA09056U</td>
<td>Numerical Modelling in Fluvial, Coastal, Estuarine and</td>
<td>Block 3</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>Marine Environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIGK15007U</td>
<td>Field and Methods Course in geology-geoscience</td>
<td>Block 3+4</td>
<td>15</td>
</tr>
<tr>
<td>NFKY15004U</td>
<td>Advanced Seismology</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NNMK17000U</td>
<td>Stardust to Planets: Building a Habitable Solar System</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17004U</td>
<td>Applied Mineralogy</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK14022U</td>
<td>Sedimentary Basins - Evolution, Environments and</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td></td>
<td>Resources (part 2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIGK19001U</td>
<td>Introduction to Geomicrobiology</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK13019U</td>
<td>Water Resources Management</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK17003U</td>
<td>Hydrogeology: Data Collection and Processing</td>
<td>Block 4</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK19004U</td>
<td>Marine Geoscience</td>
<td>Block 5</td>
<td>7.5</td>
</tr>
<tr>
<td>NIGK15023U</td>
<td>Project Course in Geology-Geoscience</td>
<td>Block 1-5</td>
<td>7.5</td>
</tr>
<tr>
<td>NFKK14006U</td>
<td>Project in Practice</td>
<td>Block 1-5</td>
<td>15</td>
</tr>
</tbody>
</table>

6.4.3 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.

Projects outside the course scope may be included in the elective section of the programme with up to 7.5 ECTS. The regulations are described in Appendix 5 to the shared section of the curriculum.

Projects in practice may not exceed 15 ECTS in total on the restricted elective and elective section of the programme. Project in practice 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 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.

6.4.4 Thesis
The MSc Programme in Geology-Geoscience with a specialisation in Solid Earth Geochemistry and Petrology 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.

6.4.5 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 with a specialisation in Solid Earth Geochemistry and Petrology 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 Tables

#### Table – Sedimentary Systems and Paleoclimate

<table>
<thead>
<tr>
<th></th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>Interpretation of Reflection Seismic and Wireline Log Data</td>
<td>Sedimentary Basins - Evolution, Environments and Resources (part 1)</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
</tr>
<tr>
<td></td>
<td>Restricted elective</td>
<td>Sedimentary Deposits: Modern and Ancient</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
<td></td>
<td>Thesis</td>
<td></td>
</tr>
</tbody>
</table>

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

#### Table – Water Resources

<table>
<thead>
<tr>
<th></th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>Water Resources (part 1)</td>
<td>Water Resources (part 2)</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
</tr>
<tr>
<td></td>
<td>Restricted elective</td>
<td>Groundwater Geochemistry</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
<td></td>
<td>Thesis</td>
<td></td>
</tr>
</tbody>
</table>

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

#### Table – Solid Earth Geophysics

<table>
<thead>
<tr>
<th></th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st year</td>
<td>Solid Earth Geophysics (part 1)</td>
<td>Solid Earth Geophysics (part 2)</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
</tr>
<tr>
<td></td>
<td>Restricted elective</td>
<td>Acquisition and Processing of Seismic Data</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>2nd year</td>
<td></td>
<td></td>
<td>Thesis</td>
<td></td>
</tr>
</tbody>
</table>

The table illustrates the recommended academic progression. The student is allowed to plan an alternative progression within the applicable rules.
Table – Solid Earth Geochemistry and Petrology

<table>
<thead>
<tr>
<th>1st year</th>
<th>2nd year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 1</td>
<td>Block 2</td>
</tr>
<tr>
<td>Core to Crust: Earth’s Evolution and Processes (part 1)</td>
<td>Core to Crust: Earth’s Evolution and Processes (part 2)</td>
</tr>
<tr>
<td>Restricted elective</td>
<td>Current Advances in Igneous Petrology and Geochemistry</td>
</tr>
<tr>
<td>Thesis</td>
<td>Thesis</td>
</tr>
</tbody>
</table>

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

Appendix 2 Interim arrangements

The Shared Section of the BSc and MSc Curricula for Study Programmes 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 2018/19 and 2019/20

Students admitted to the MSc Programme in the academic year 2018/19 must finish the programme as listed in the curriculum above with the following exceptions.

1.1 Sedimentary Basins, Palaeoclimate and Hydrocarbon Resources

Title

The MSc Programme in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate leads to a Master of Science (MSc) in Geology-Geoscience with a specialisation in Sedimentary Systems and Paleoclimate with the Danish title: Cand.scient. (candidatus/candidata scientiarum) i geologi-geoscience med en specialisering i sedimentære bassiner, palæoklima og kulbrinte ressourcer.

Restricted elective subject elements

22.5 ECTS credits are to be covered as subject elements from the following two lists:

1) 7.5 ECTS credits are to be covered as subject elements from the following list:

- Restricted elective subject elements offered as part of the specialisation in Sedimentary Systems and Paleoclimate, list 1, in this curriculum (see above)

2) 15 ECTS credits are to be covered as subject elements from the following list:

- Restricted elective subject elements offered as part of the specialisation in Sedimentary Systems and Paleoclimate, list 2, in this curriculum (see above)

<table>
<thead>
<tr>
<th>Subject</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NFYK15009U Earth Structure and Processes</td>
<td>Discontinued*</td>
</tr>
<tr>
<td>NNMK17007U Quaternary and Glacial Geology</td>
<td>Discontinued*</td>
</tr>
<tr>
<td>NIGK15016U Lithosphere Structure from Geophysical Data</td>
<td>Discontinued*</td>
</tr>
</tbody>
</table>
1.1.2 Water Resources
Restricted elective subject elements
22.5 ECTS credits are to be covered as subject elements from the following two lists:

1) 7.5 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Water Resources, list 1, in this curriculum (see above)

2) 15 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Water Resources, list 2, in this curriculum (see above)

<table>
<thead>
<tr>
<th>Subject Element</th>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Structure and Processes</td>
<td>NYK15009U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Quaternary and Glacial Geology</td>
<td>NNMK17007U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Lithosphere Structure from Geophysical Data</td>
<td>NIGK15016U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

*See course specific changes below.

1.1.3 Solid Earth Geophysics
Restricted elective subject elements
22.5 ECTS credits are to be covered as subject elements from the following two lists:

1) 7.5 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Solid Earth Geophysics, list 1, in this curriculum (see above)

2) 15 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Solid Earth Geophysics, list 2, in this curriculum (see above)

<table>
<thead>
<tr>
<th>Subject Element</th>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Structure and Processes</td>
<td>NYK15009U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Quaternary and Glacial Geology</td>
<td>NNMK17007U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Lithosphere Structure from Geophysical Data</td>
<td>NIGK15016U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

*See course specific changes below.

1.1.4 Solid Earth Geochemistry and Petrology
Restricted elective subject elements
22.5 ECTS credits are to be covered as subject elements from the following two lists:

1) 7.5 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Solid Earth Geochemistry and Petrology, list 1, in this curriculum (see above)

2) 15 ECTS credits are to be covered as subject elements from the following list:
   - Restricted elective subject elements offered as part of the specialisation in Solid Earth Geochemistry and Petrology, list 2, in this curriculum (see above)

<table>
<thead>
<tr>
<th>Subject Element</th>
<th>Course Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Structure and Processes</td>
<td>NYK15009U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Quaternary and Glacial Geology</td>
<td>NNMK17007U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
<tr>
<td>Lithosphere Structure from Geophysical Data</td>
<td>NIGK15016U</td>
<td>Discontinued*</td>
<td>7.5 ECTS</td>
</tr>
</tbody>
</table>

*See course specific changes below.
### 3 Course specific changes

<table>
<thead>
<tr>
<th>Discontinued course</th>
<th>Interim arrangement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Structure and Processes (NFYK15009U), 7.5 ECTS</td>
<td>The course was restricted elective in the academic year 2018/19.</td>
</tr>
<tr>
<td></td>
<td>Offered for the last time: 2018/19</td>
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<td></td>
<td>Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2019/20</td>
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<tr>
<td>Lithosphere Structure from Geophysical Data (NIGK15016U), 7.5 ECTS</td>
<td>The course was restricted elective in the academic year 2019/20 or earlier.</td>
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<td>Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2020/21</td>
</tr>
<tr>
<td>Quarternary and Glacial Geology (NNMK17007U), 7.5 ECTS</td>
<td>The course was restricted elective in the academic year 2018/19.</td>
</tr>
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<td></td>
<td>Offered for the last time: 2018/19</td>
</tr>
<tr>
<td></td>
<td>Last exam if applicable (cf. SCIENCE's Teaching and exam rules): 2019/20.</td>
</tr>
</tbody>
</table>
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.