Programme-specific Section of the Curriculum for the MSc Programme in Climate Change at the Faculty of Science, University of Copenhagen September 2013 (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 Climate Change leads to a Master of Science (MSc) in Climate Change with the Danish title: *Cand.scient. (candidatus/candidata scientiarum) i klimaforandringer*.

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 Geography (*geografi*).

1.4 Language
The language of this MSc Programme is English.

2 Academic profile
2.1 Purpose
The MSc Programme in Climate Change educates graduates who are capable of addressing the long-term, interdisciplinary challenges posed by climate change. Understanding global climate change, its causes, impact on human living conditions and the environment, the options available to us for limiting climate change and the strategies available to adapt to it, requires insights into a broad spectrum of scientific disciplines and their common interfaces and interaction. The programme addresses the global climate challenge by bringing together expert knowledge, excellent research environments and academically dedicated students with a view to developing a unique international study environment within the competences demanded by the labour market and society.

2.2 General programme profile
The MSc Programme in Climate Change combines natural and social science approaches to the study of climate change, its causes and effects, how we can deal with it and adapt to it. The programme provides graduates with knowledge and competences to take up job functions associated with local, national and international efforts to deal with climate change, one of the greatest current challenges to modern society.

The MSc Programme in Climate change is an inter-disciplinary platform, involving joint teaching and supervision of students by staff from many disciplines and departments, and through an integrated introduction, involving also project-/ problem-oriented work of a mandatory interdisciplinary character.

Climate change, impacts, mitigation, and adaptation are the key subject areas of the programme.

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 Climate Change qualifies students to become professionals within business functions and/or areas such as:

- A PhD programme
- Governmental agencies and municipalities which develop plans for climate change mitigation and adaptation.
- Consultancy companies carrying out Environmental Impact Assessment, develop, implement or monitor climate change mitigation and adaptation projects.
- Climate change research, teaching and information dissemination.
- Industry, developing environmental and energy technologies.
- NGOs and international organisations (incl. the UN) involved in climate change impacts assessment, mitigation and adaptation.

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 Competence profile
On completion of the programme, an MSc in Climate Change has acquired the following:

Knowledge about:
- The functioning of the climate system and the causes of climate change.
- The key physical processes of the climate system.
- Design and function of climate models.
- The most important social science approaches to analysing climate change, including economic and political scientific approaches.
- The consequences of climate change for human living conditions and access to land, water, energy, and food resources.
- The interplay between the natural science and social aspects of climate change.
- The interplay between the biosphere and the geosphere, nature’s key cycles and their impact on climate change.

Skills in/to:
- Identify and analyse climate change related problems using methods from a wide range of disciplines
- Apply scientific terminology from different disciplines correctly
- Analyse complex multi- and interdisciplinary issues, including the ability to identify the most important components of a complex issue.
- Contribute, in a qualified manner, to designing and conducting scientific projects applying natural science and selected social science methodologies.
- Employ selected social science methodologies to analyse and regulate problems related to climate change.
- Express oneself in a scientifically correct language, argue in a scientific manner and contribute to scientific discussions at the border between natural, environmental and social sciences.
- Communicate complex academic subjects in writing and orally at different levels.
Competences in/to:
- Understand complex, multi and interdisciplinary climate change issues and to propose solutions.
- Contribute to interdisciplinary issues on a scientific foundation employing natural science and selected environmental and social science methodologies.
- Independently plan own learning strategy and outcome.
- Contribute constructively to collaborative contexts, e.g. in connection with project-based, interdisciplinary group work.
- Identify technical/natural science solutions and/or expedient management solutions to climate-related problems.

4 Admission requirements
There is no BSc Programme with reserved access for this programme.

4.1 Applicants with a Bachelor’s degree from the University of Copenhagen
Applicants with the following Bachelor’s Degrees from the University of Copenhagen are directly academically qualified for admission to the MSc programme in Climate Change:
- Natural Resources (naturressourcer).
- Food Science (fødevarevidenskab/fødevarer og ernæring).
- Landscape Architecture (landskabsarkitektur).
- Biology-Biotechnology (biologi-bioteknologi).
- Physics (de fysiske fag).
- Chemistry (de kemiske fag).
- Biology (biologi).
- Geography and Geoinformatics (geografi og geoinformatik).
- Geology-Geoscience (geologi-geoscience).

4.2 Applicants with a related Bachelor’s degree from other universities
Applicants with a Bachelor’s degree in Natural Sciences or Environmental Sciences from Danish or international universities are directly academically qualified for admission to the MSc programme in Climate Change.

4.3 Applicants with a Bachelor’s degree
Applicants with a Bachelor’s degree in other study fields may also be admitted if their programme includes the following:
- Curriculum is strongly directed towards topics of climate change (minimum 60 ECTS credits climate change related study elements).

4.4 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.

4.5 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.
4.6 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 program 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 program. 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:

- All applicants.

If the number of qualified applicants exceeds the number of places available, applicants are prioritised according to the following criteria (all criteria apply):

- The amount of ECTS credits obtained within climate change related study elements.
- An individual assessment of the curriculum relevance for the MSc Climate Change program
- An individual assessment of the grade-point average achieved in the bachelor degree.
  If different grading systems make comparison impossible, applicants will be prioritised on the basis of an individual evaluation by the Admission Committee.
- Applicants with a Bachelor’s degree age of more than 5 years have low priority.

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

- Compulsory subject elements, 30 ECTS.
- Restricted elective subject elements, 37.5 ECTS
- Elective subjects, 22.5 ECTS
- Thesis, 30 ECTS

6.1.1 Compulsory subject elements
All of the following subject elements are to be covered (30 ECTS):

<table>
<thead>
<tr>
<th>Subject Code</th>
<th>Subject Name</th>
<th>Block</th>
<th>ECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>NIGK13004U</td>
<td>Climate Change - an Interdisciplinary Challenge</td>
<td>1+2</td>
<td>15</td>
</tr>
<tr>
<td>LNAK10069U</td>
<td>Climate Change, Impacts, Adaptation and Mitigation</td>
<td>1+2</td>
<td>15</td>
</tr>
</tbody>
</table>
6.1.2 Restricted elective subject elements

37.5 ECTS are to be covered as subject elements from the following list:

- NFYK14007U Paleo-Climatology  Block 1  7.5 ECTS
- NIGK14056U Climate Change and Water Resources  Block 1  7.5 ECTS
- NIFK16002U Ethics, Environment and Society  Block 1  7.5 ECTS
- NIFK14026U Entrepreneurship and Innovation  Block 1  7.5 ECTS
- NIGK14055U Interdisciplinary Project Course  Block 1  7.5 ECTS
- NBIIK14001U Climate Change and Biogeochemical Cycles  Block 1  7.5 ECTS
- LPLK10381U Climate Solutions  Block 2  15 ECTS
- NIGK15011U Geopolitics of Climate Change  Block 2  7.5 ECTS
- NPLK14030U Climate Change and Land Use  Block 2  7.5 ECTS
- NFYK13000U Climate Change Mechanisms and Tipping Points  Block 3  7.5 ECTS
- NIFK13006U The Economics of Climate Change  Block 3  7.5 ECTS
- LNAK10072U Global Environmental Governance  Block 3  7.5 ECTS
- NIFK14029U Motivation and Pro-Environmental Behaviour - Managing Change  Block 3  7.5 ECTS
- SBGK20005U Geoengineering  Block 4  7.5 ECTS
- NIGK13012U Human Adaptation to Climate Change and Variability  Block 4  7.5 ECTS
- NFYK17002U Climate Models and Observations  Block 4  7.5 ECTS
- NIGK13005U Energy Systems and Climate Mitigation  Block 4  7.5 ECTS
- NNMK15003U Climate Change and Biodiversity  Block 4  7.5 ECTS
- NIFK14026U Entrepreneurship and Innovation  Block 4  7.5 ECTS

6.1.3 Elective subject elements

22.5 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 15 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 15 ECTS. The regulations are described in Appendix 5 to the shared section of the curriculum.

Projects in practice may be included in the elective section of the programme with up to 15 ECTS. The regulations are described in Appendix 4 to the shared section of the curriculum.

Thesis preparation projects may be included in the elective section of the programme with up to 15 ECTS. The regulations are described in Appendix 6 to the shared section of the curriculum.

Projects outside the course scope, projects in practice and thesis preparation projects may not exceed 45 ECTS of the programme.
6.1.4 Thesis
The MSc Programme in Climate Change includes a thesis corresponding to 30 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 Climate Change 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 university may grant exemptions from the rules in the curriculum specified solely by the university.

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 Amendment
The curriculum may be amended once a year so that any changes come into effect at the beginning 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

All of the compulsory subject elements (including the thesis) defined below must be followed at the exact time planned according to the table.

Table – MSc Programme in Climate Change

<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>Climate Change - an Interdisciplinary</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
</tr>
<tr>
<td>Block 1</td>
<td>Challenge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2</td>
<td>Climate Change, Impacts, Adaptation and</td>
<td>Elective</td>
<td>Elective</td>
<td>Elective</td>
</tr>
<tr>
<td>Block 3</td>
<td>Mitigation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>Elective</td>
<td>Restricted elective</td>
<td></td>
<td>Thesis</td>
</tr>
<tr>
<td>Block 1</td>
<td>Restricted elective</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Block 2</td>
<td>Restricted elective</td>
<td></td>
<td></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.
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.

Different competence profiles may apply to students admitted to the programme in different academic years. Competence profiles applicable to previous admissions can be found in Revision History for Competence Profiles at SCIENCE.

1 General changes for students admitted in the academic year 2019/20

Students admitted to the MSc Programme in the academic year 2019/20 must finish the programme as listed in the curriculum above with the following exceptions.

Restricted elective subject elements

37.5 ECTS are to be covered as subject elements from the following list:

<table>
<thead>
<tr>
<th>Subject Element</th>
<th>Block</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geoengineering</td>
<td>Block 4</td>
</tr>
</tbody>
</table>

*See course specific changes below

2 General changes for students admitted in the academic year 2018/19

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.

Structure of the programme

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

- Compulsory subject elements, 37.5 ECTS.
- Restricted elective subject elements, 37.5 ECTS
- Elective subjects, 15 ECTS
- Thesis, 30 ECTS

Table – MSc Programme in Climate Change

<table>
<thead>
<tr>
<th>Year</th>
<th>Block 1</th>
<th>Block 2</th>
<th>Block 3</th>
<th>Block 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td><strong>Climate Change - an Interdisciplinary Challenge</strong></td>
<td>Restricted elective</td>
<td>Restricted elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Climate Change, Impacts, Adaptation and Mitigation</td>
<td>Elective</td>
<td>Elective</td>
<td></td>
</tr>
<tr>
<td>2nd</td>
<td>Interdisciplinary Project Course</td>
<td>Restricted elective</td>
<td></td>
<td>Thesis</td>
</tr>
<tr>
<td></td>
<td>Restricted elective</td>
<td>Restricted elective</td>
<td></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.

Restricted elective subject elements
37.5 ECTS are to be covered as subject elements from the following list:

- Restricted elective subject elements offered as part of this curriculum (see above)*

*Except for Interdisciplinary Project Course (NIGK14055U), which is a compulsory subject element for students admitted in the academic year 2018/19

3 General changes for students admitted in the academic year 2017/18

Students admitted to the MSc Programme in the academic year 2017/18 must finish the programme as listed in the curriculum above with the following exceptions.

3.1 Specialisations

Students admitted to the MSc Programme in the academic year 2017/18 are allowed to finish their programme with one of the specialisations that were outlined in the curriculum.

The MSc Programme in Climate Change consists of the following elements:

- Basic study programme, 30 ECTS
- Specialisation, 90 ECTS, including the thesis.

The student must choose one of the following specialisations:

- Natural Science Aspects
- Integrated Environmental and Social Science Aspects

3.1.1 Natural Science Aspects

This specialisation is discontinued. It was offered for the last time in the academic year 2017/18.

Title

The MSc Programme in Climate Change with a specialisation in Natural Science Aspects leads to a Master of Science (MSc) in Climate Change with a specialisation in Natural Science Aspects with the Danish title: Cand.scient. (candidatus/candidata scientiarum) i klimaforandringer med en specialisering i natur-/biovidenskabelige aspekter.

Structure of the programme

The specialisation is set at 90 ECTS and consists of the following:

- Compulsory subject elements, 7.5 ECTS
- Restricted elective subject elements, 37.5 ECTS
- Elective subjects, 15 ECTS
- Thesis, 30 ECTS

<table>
<thead>
<tr>
<th>Table – Natural Science Aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>1st year</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>2nd year</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>
Restricted elective subject elements
37.5 ECTS are to be covered as subject elements from the following list:

- Restricted elective subject elements offered as part of this curriculum (see above)*

*Except for Interdisciplinary Project Course (NIGK14055U), which is a compulsory subject element for students admitted in the academic year 2017/18

3.1.2 Integrated Environmental and Social Science Aspects
This specialisation is discontinued. It was offered for the last time in the academic year 2017/18.

Structure of the programme
The specialisation is set at 90 ECTS and consists of the following:

- Compulsory subject elements, 7.5 ECTS
- Restricted elective subject elements, 37.5 ECTS
- Elective subjects, 15 ECTS
- Thesis, 30 ECTS

Table – Integrated Environmental and Social Science Aspects

<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>Climate Change - an Interdisciplinary Challenge</td>
<td>Restricted elective</td>
<td>Restricted elective</td>
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<tr>
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<td>Climate Change, Impacts, Adaptation and Mitigation</td>
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<td>Elective</td>
<td></td>
</tr>
<tr>
<td>2nd year</td>
<td>Interdisciplinary Project Course</td>
<td>Restricted elective</td>
<td></td>
<td>Thesis</td>
</tr>
<tr>
<td></td>
<td>Restricted elective</td>
<td>Restricted elective</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Course specific changes
Discontinued course
Interim arrangement
Geoengineering (NMMK18001U), 7.5 ECTS

The course was restricted elective in the academic year 2019/20 and earlier.

Offered for the last time: 2019/20

The course is identical to SGBK20005U Geoengineering.

**Appendix 3 Description of objectives for the thesis**

After completing the thesis, the student should have:

**Knowledge about:**
- Scientific problems within the study programme’s subject areas.
- A suitable combination of methodologies/theories based on international research for use in his/her work with the problem formulation.
- Theories/models on the basis of an organised value system and with a high degree of independence.

**Skills in/to:**
- Apply and critically evaluate theories/methodologies, including their applicability and limitations.
- Assess the extent to which the production and interpretation of findings/material depend on the theory/methodology chosen and the delimitation chosen.
- Discuss academic issues arising from the thesis.
- Draw conclusions in a clear and academic manner in relation to the problem formulation and, more generally, considering the topic and the subject area.
- Discuss and communicate the academic and social significance, if any, of the thesis based on ethical principles.

**Competences in/to:**
- Initiate and perform academic work in a research context.
- Solve complex problems and carry out development assignments in a work context.