UNIVERSITY OF AMSTERDAM

FACULTY OF SCIENCE

TEACHING AND EXAMINATION REGULATIONS
PART B

Academic year 2019-2020
MASTER'S PROGRAMME EARTH SCIENCES

Contents

Chapter 1. General Provisions

Article B-1.1 – Definitions

In addition to part A, the following definitions are used in part B

a.	Course	Education imparted in a series of lessons or meetings
b.	Literature Review	Individual component of 12 EC comprising literature resulting in a written report
c.	Internship	Individual component of 18-24 EC resulting in a written report.

Article B-1.2 – General information master's programme

1. The Master's programme Earth Sciences, CROHO 66986, is offered on a full-time basis and the language of instruction is English.
2. The programme has a workload of 120 EC.
3. Within the programme the following tracks are offered:
   - Geo-Ecological Dynamics;
   - Environmental Management;
   - Future Planet Ecosystem Science.

Article B-1.3 – Flexible learning

In February 2017, the request by the Executive Board to participate in the experiment *Flexstuderen* was granted by the Minister of Education, Science and Culture, in accordance with Section 17j of the Decree *Besluit experimenten flexible hoger onderwijs.* Along with the application, a document has been added explaining how the experiment will be formalized, including decisions made by each institution specifically regarding the organization of the experiment. On the basis of this document, the UvA has composed the regulation *Experiment flexstuderen UvA.* Article B-1.3 in this TER refers to that regulation.

Article B-1.4 – Intake dates

The tracks Geo-Ecological Dynamics and Environmental Management are offered starting in the first semester of the academic year (1 September) and at the beginning of the second semester (1 February). The track Future Planet Ecosystem Science is offered starting in the first semester. The intake dates mentioned in this paragraph ensure a programme that can be expected to be completed within the time set for the programme.

Chapter 2. Programme objectives and exit qualifications

Article B-2.1 – Programme objectives

The programme aims at:

- educating students to become independent scientific professionals, who are able to: a) comprehend contemporary scientific knowledge and relate this to their earth science expertise; b) appropriately integrate and apply newly developed scientific knowledge in practical situations; c) engage in and contribute to interdisciplinary projects;
- actively stimulating interdisciplinary collaboration to advance science, based on knowledge in the field of earth sciences;
- educating students to develop skills, knowledge and insight into the earth science discipline;
- providing student-oriented education that is of a high and internationally recognised quality;
- offering students the opportunity to gain part of their knowledge and insight in an international setting;
- providing a student population with diverse disciplinary backgrounds with an inspiring and challenging academic learning environment that is embedded in a feasible program.

Article B-2.2 – Exit qualifications skills

1. The graduate of the Master's programme Earth Sciences:
    - is able to comprehend, analyse and solve scientific problems, with a scientific attitude and is able to function in science and society at the required academic level;
    - has specialist knowledge of one or more sub-areas of Geo-Ecological Dynamics, Environmental Management and Future Planet Ecosystem Science ;
    - is able to observe, describe, understand and analyse environmental systems at various scale levels and degrees of complexity; in order to answer questions;
    - is able to become acquainted with contemporary scientific questions, knowledge and research methods in the domain of the specialisation within a short period of time and is able to apply these;
    - has obtained practical and theoretical skills in methodologies used in studying environmental processes;
    - has become acquainted with contemporary scientific questions, knowledge and research methods in the domain
    - the skills to present research plans and results, orally or written, in English, at various scales and levels of abstraction, and communicate these to specialist and non-specialist audiences;
    - is able to translate scientific and/or applied questions into a research proposal;
    - is able to independently implement and conduct a pre-designed research experiment or observational study
    - is able to manage research data according to the best practices;
    - is able to realise a planned research project within a given period of time;
    - is able to adequately interpret mathematical and/or computational models
    - is able to work independently as well as to function in team;
    - is able to contribute from one's own discipline to multi- or interdisciplinary questions;
    - is able to critically reflect on one's own result (or products) and behaviour, to use this reflection together with feedback from others to improve her/his behaviour and products, and to give valuable feedback to peers.
2. In addition to paragraph 1, the master from the track Geo-Ecological Dynamics has obtained the following track-specific qualifications:
    - is knowledgeable about the contemporary scientific developments in the field Geo-Ecological Dynamics;
    - understands qualitative and quantitative aspects of landscape patterns and/or biogeochemical processes at different temporal and spatial scales in geo-ecosystems;
    - is able to acquire, study, understand, summarize and reflect on a body of scientific literature on a topic from the scientific domain in a short period of time, to form his own opinion and to write a review;
    - is able to formulate research questions to gain new insights and add to the body of knowledge about the functioning and/or analysis of geo-ecological systems.
3. In addition to paragraph 1 the master from the track Environmental Management has the following track specific qualifications:
    - is able to apply scientific knowledge on management and conservation strategies to contribute to the understanding and management of environmental systems;
    - is capable of linking environmental knowledge to societal challenges and developments;
    - has developed an attitude which incites the critical use of measurements and models in science and society;
4. is able to formulate (applied) research questions which contribute towards in-depth understanding and/or solving of environmental management problems. In addition to paragraph 1, the master from the track Future Planet Ecosystem Science has obtained the following track-specific qualifications:

- is knowledgeable about contemporary scientific developments in the field Ecosystem Science and is able to formulate research questions to gain new insights and add to the body of knowledge about the functioning and/or analysis of Ecosystems Science;
- Is able to identify the most important knowledge gaps and potential contributions of scientific research to contribute to solving current environmental problems and to designing a sustainable future planet;
- is knowledgeable about a broad variety of data analysis and modelling techniques, is able to adequately apply some of these and is able to develop mathematical and/or computational models in the domain of Ecosystems Science;
- is able to acquire, study, understand, summarize and reflect on a body of scientific literature on a topic from the relevant scientific domain.

Chapter 3. Further admission requirements

Article B-3.1 – Admission requirements

1. A student, who has obtained a Bachelor's degree in Earth Sciences, Future Planet Studies with a major Earth Sciences or Beta-Gamma with a major Earth Sciences or equivalent from a Dutch university, may enter the programme.
2. In addition to paragraph 1, for the track Future Planet Ecosystem Science, a student with a Bachelor's degree in Biological Sciences, Environmental Sciences or Future Planet Studies with a major Biological Sciences may also enter the programme.
3. Without prejudice to the provisions of paragraph 1, the Admissions Board may grant admission to the study programme when concluding, that the previous education of the candidate is equivalent to the Bachelor's degrees referred to in paragraph 1 for all tracks, or paragraph 2 for the FPES track. The Admissions Board decides in such cases for every student whether the previous education of the candidate has deficiencies for admission. An interview and test may be part of the admission procedure.
4. When the programme commences, the candidate must have fully completed the Bachelor's programme allowing admission to this Master's programme.

Article B-3.2 – Pre-master's programme

Not applicable.

Article B-3.3 – Limited programme capacity

Not applicable.

Article B-3.4 – Final deadline for registration

A candidate must submit a request to be admitted to the programme through *Studielink* before 1 July in the case of Dutch students, before 1 April in the case of EU students and before 1 February in the case of non-EU students. Under exceptional circumstances, the Admissions Board may consider a request submitted after this closing date.

Article B-3.5 – English Language Requirement for English-language Master's programmes

1. The proficiency requirement in English as the language of instruction can be met by the successful completion of one of the following examinations:
    a. IELTS: 6,5, at least 6 on each sub-score (listening/reading/writing/speaking);
    b. TOEFL paper-based: 580;
    c. TOEFL Internet-based test: 92, at least 20 on each sub-score (listening/reading/writing/speaking);

    The foregoing examination must have been taken within two years before the student's enrolment.
    d. Cambridge Advanced English: 170 (C);
    e. CPE: minimal score of C

    Please note that the TOEFL-code for the Faculty of Science of the University of Amsterdam is 8628.
2. An exemption from the English examination referred to in the first paragraph shall be granted to students who:
    a. had previous education in secondary or tertiary education in one of the following English-speaking countries: Australia, Canada (English), New Zealand, Ireland, the United Kingdom or the United States of America;
    b. hold an English-language 'international baccalaureate' diploma;
    c. possessing a Bachelor's degree from a Dutch university satisfy the requirement of sufficient command of the English language;
    d. passed the final examination for the subject of English as part of one of the following diplomas: VWO, Belgian ASO (Flemish).

Article B-3.6 – Free curriculum

1. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
2. The concrete details of such a curriculum must be approved beforehand by the most appropriate Examinations Board.
3. The free curriculum is put together by the student from the units of study offered by the University of Amsterdam and must at least have the size, breadth and depth of a regular Master's programme and is in line with the learning outcomes of the degree programme.
4. The following conditions must at least have been met in order to be eligible for the Master's degree:
    a. At least 60 EC must be obtained from the regular curriculum;
    b. The level of the free curriculum must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

Chapter 4. Curriculum structure

Article B-4.1 – Organisation of the programme

The curriculum consists of the following components:

a. General compulsory components
b. Specialisation-specific compulsory components
c. Practical components
d. Elective components

Article B-4.2 – Compulsory components

1. In the UvA Course Catalogue the content, format and examination requirements of each compulsory component of the study programme are described, indicating the preconditions that are required in order to be able to follow the course successfully.
2. The student has to choose from a constrained list of courses. In the UvA Course Catalogue the content, format and examination requirements of these components of the study programme are described.
3. For each specialisation the compulsory components are given below:

Track Geo-Ecological Dynamics (start in September)

Compulsory components (66-78 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
Vulnerability Assessment of Geo-ecosystems[1]	5264VAG12Y	12 EC	1	L, PT, S, SS & T	E, OP & P
Environments Through Time	5224ENTT6Y	6 EC	2		
Biogeochemical Cycles	5264BICY6Y	6 EC	2	L, PT, SS & T	E, OP & WE
Research Proposal Earth Sciences	5264REPR6Y	6 EC	1-6	PT	E, OP
Master Thesis Research Earth Sciences 1	52641MTR0Y	30 - 42 EC	1-6	PT	E, OP & P
Research Workshop and Skills Lab	5264RWSL6Y	6 EC	1-6	S & PT	AP & WE

Constrained choice components (12 or 30 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
Literature Review	5264LIT12Y	12 EC	1 or 4	SS & PT	WE
Master Thesis Research Earth Sciences 2	52642MTR0Y	30 EC	1-6	PT	E, OP & P

Track Environmental Management (start in September)

Compulsory components (90-96 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
Vulnerability Assessment of Geo-ecosystems[1]	5264VAG12Y	12 EC	1	L, PT, S, SS & T	E, OP & P
Energy and Climate Change; Science, Policy and Economics	5264ECCS6Y	6 EC	2	L & SS	AP, E & OP
Integrated Coastal Dune Management	5264ICDM6Y	6 EC	2	L & T	A, AP, D & OP
System Innovation and Transition Management I	52641SIT6Y	6 EC	4	L & T	E & WE
Internship Earth Sciences	5264INT24Y	18-24 EC	1-6	PT	WE
Research Proposal Earth Sciences	5264REPR6Y	6 EC	1-6	PT	E, OP
Master Thesis Research Earth Sciences 1	52641MTR0Y	30 EC	1-6	PT	E, OP & P
Research Workshop and Skills Lab	5264RWSL6Y	6 EC	1-6	S & PT	AP & WE

Track Future Planet Ecosystem Science (starts only in September)

Compulsory components (72- 84 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
Vulnerability Assessment of Geo-ecosystems	5264VAG12Y	12 EC	1	L, PT, S, SS & T	E, OP & P
Grand Challenges of Human-Ecosystem Interactions	5264GCHE6Y	6 EC	2	L, S, OP, SS, CS	A, OP, WE
The Empirical Cycle	5264THEC6Y	6 EC	2	L, P, SS, D, S	A, WE
Analysis and Modelling Lab	5264ANML6Y	6 EC	3	L, PT, SS	A, WE/OE
Research Proposal Earth Sciences	5264REPR6Y	6 EC	1-6	PT	E, OP
Research Workshop and Skills Lab	5264RWSL6Y	6 EC	1-6	S & PT	AP & WE
Master Thesis Research Earth Sciences 1	52641MTR0Y	30- 42 EC	1-6	PT	E, OP & P

Constrained choice components (12 or 30 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
Literature Review	5264LIT12Y	12 EC	1 or 4	SS & PT	WE
Master Thesis Research Earth Sciences 2	52642MTR0Y	30 EC	1-6	PT	E, OP & P

Track Geo-Ecological Dynamics (start in February)

Compulsory components (72-84 EC)					
Component	Code	Study Load	Period	Teaching Method	Test
GIS/RS Science in Ecosystem Dynamics	5264GRSE6Y	6 EC	4	PT & T	A & OP
Environments Through Time	5224ENTT6Y	6 EC	2		
Biogeochemical Cycles	5264BICY6Y	6 EC	2	L, PT, SS & T	E, OP & WE
Literature Review	5264LIT12Y	12 EC	1&4	SS & PT	WE
Research Proposal Earth Sciences	5264REPR6Y	6 EC	1-6	PT	E, OP
Master Thesis Research Earth Sciences 1	52641MTR0Y	30 - 42 EC	1-6	PT	E, OP & P
Research Workshop and Skills Lab	5264RWSL6Y	6 EC	1-6	S & PT	AP & WE

Track Environmental Management (start in February)

Compulsory components (84-90EC)					
Component	Code	Study Load	Period	Teaching Method	Test
System Innovation and Transition Management I	52641SIT6Y	6 EC	4	L & T	E & WE
Energy and Climate Change; Science, Policy and Economics	5264ECCS6Y	6 EC	2	L & SS	AP, E & OP
Science-Based Geo-Ecological Management	5264SBGE6Y	6 EC	5	L, SS, OP, D	A, OP, WE
Integrated Coastal Dune Management	5264ICDM6Y	6 EC	2	L & T	A, AP, D & OP
Internship Earth Sciences	5264INT24Y	18-24 EC	1-6	PT	WE
Research Proposal Earth Sciences	5264REPR6Y	6 EC	1-6	PT	E, OP
Master Thesis Research Earth Sciences	52641MTR0Y	30 EC	1-6	PT	E, OP & P
Research Workshop and Skills Lab	5264RWSL6Y	6 EC	1-6	S & PT	AP & WE

Abbreviations: A=Assignments; AP= Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination

Article B-4.3 – Practical exercise

1. In addition to, or instead of, classes in the form of lectures, the elements of the master's examination programme often include a practical component as defined in article 1.2 of part A. The UvA Course Catalogue contains information on the types of classes in each part of the programme. Attendance during practical components is mandatory.
2. When performing practical components, students must adhere to the faculty's safety regulations.
3. The student has to submit a short proposal for each Research Project Earth Sciences and the Literature Review for prior approval by the examiner and co-assessor.
4. All individual courses have to be registered in a Datanose project page.
5. The individual course has to be completed and assessed within the period indicated in the project page.
6. Before the Master Thesis Research Earth Sciences can be started, the Research Proposal has to be finished with a pass grade.
7. Information on regulations and procedures can be found at the student website of the programme http://www.student.uva.nl/es, individual projects.

Article B-4.4 – Elective components

1. Elective courses may be part of the study programme. In the UvA Course Catalogue the content, format and examination requirements of elective courses are described. The student can choose up to 18 EC of the components below without asking prior approval of the Examinations Board.

Component	Code	Study Load	Period	Teaching Method	Test
Analysis and Modelling Lab	5264ANML6Y	6 EC	3	L, PT, SS	A, WE/OE
Biogeochemical Cycles	5264BICY6Y	6 EC	2	L, PT, SS & T	E, OP & WE
Climate Change	5264CLCH6Y	6 EC	5	L & T	AP, E & OP
Climate Change and Environmental Ethics	5264CCE12Y	12 EC	1-3	T	WE
Energy and Climate Change; Science, Policy and Economics	5264ECCS6Y	6 EC	2	L & SS	AP, E & OP
Environmental Chemistry	5254ENCH6Y	6 EC	1	L & PT	WE
Environmental Measuring Techniques	5264ENMT6Y	6 EC	4	PT & SS	E & OP
Field Course Geoecological Systems	5264FCG12Y	12 EC	5 & 6	L, PT & SS	E, OP & P
Fundamentals of Analytical Sciences	5254FUAS6Y	6 EC	4	L & T	WE
Geo-ecological Data Analysis*	5264GEDA6Y	6 EC	3	L & T	A
GIS/RS Science in Ecosystem Dynamics	5264GRSE6Y	6 EC	4	PT & T	A & OP
Grand Challenges of Human-Ecosystem Interactions (VU)	5264GCHE6Y	6 EC	2	L, S, OP, SS, CS	A, OP, WE
Integrated Coastal Dune Management	5264ICDM6Y	6 EC	2	L, PT & T	A, AP, D & OP
Metropole Ecology (VU)	5264MEEC6Y	6 EC	5	L, S, OP, SS, P	A, WE
Science-Based Geo-Ecological Management	5264SBGE6Y	6 EC	5	L, SS, OP, D	A, OP, WE
Science In Perspective	5524SCPE6Y	6 EC	4 & 5	L & T	AP, E & WE
Soil and Landscape Degradation	5264SOLD6Y	6 EC	3	L, S, SS & T	D, E & OP
System Innovation and Transition Management I	52641SIT6Y	6 EC	4	L & T	E & WE
The Empirical Cycle	5264THEC6Y	6 EC	2	L, P, SS, D, S	A, WE
Writing a Scientific Article	5264WAS12Y	12 EC	1-6	PT & SS	E

Abbreviations: A=Assignments; AP=Active Participation; CS=Case Study; D=Discussion; E=Essay (report, proposal, abstract etc.); L=Lectures; OE=Oral Examination; OP=Oral Presentation; P=Practical Work; PT=Practical Training; S=Seminar SS=Self Study; T=Tutorials; WE=Written Examination

**Courses are given in alternating academic years*

2. Students have the option to choose between one of three majors or one minor:
   - Major Science in Society;
   - Major Science Communication;
   - Major Teaching;
   - Minor Science for Sustainability

   a. The major Science in Society and the major Science Communication both consist of 60 EC and are offered in English. A major has to be combined with a research programme, comprising at least 60 EC (courses and master thesis 1, see table under e below), and with the general compulsory components in order to meet the general requirements of the programme. Further information on these majors can be found on student.uva.nl Earth Sciences, a-z list, section Major.
   b. The Major Teaching consists of 60 EC and is only offered in Dutch. The major hast to be combined with a research programme, comprising at least 60 EC (courses and master thesis 1, see table under e below), and with the general compulsory components in order to meet the general requirements of the programme. Students who have completed an "Educatieve Minor" of 30 EC during their Bachelor's programme may submit a non-standard study programme for approval to the Examinations Board of the 'Interfacultaire Lerarenopleidingen', after discussing this non-standard study programme with the coordinator of the Major Teaching and the coordinator of the Master's programme. Further information on this major can be found on the website of the 'Interfacultaire Lerarenopleidingen (ILO)' of the University of Amsterdam.
   c. Students have to go through a separate intake procedure for admission to the major in Science in Society, major in Science Communication and the major Teaching.
   d. Students first have to finish 48 EC of the obligatory research part of the programme before starting one of the majors or minor.
   e. The student can participate in the majors without prior approval of the Examinations Board when following the programme as described below:

Compulsory courses	Programme with major
Vulnerability Assessment of Geo-ecosystems Research Proposal Research Workshop and Skills Lab Biogeochemical Cycles OR Environments Through Time	30 EC
Master Thesis Research Earth Sciences 1	30 EC
Major	60 EC
Total study load	*120 EC*

   f. The master's programme Earth Sciences offers the minor Science for Sustainability of 30 EC. The minor consists of three compulsory courses with a total of 18 EC
      - Current Sustainable Energy Technologies;
      - Energy & Climate Change; Science, Policy & Economics;
      - System Innovation and Transition Management;

      Furthermore, the student can choose an elective course (6 EC) on energy, climate change, environment, water and food issues. The minor is ended with a final project of 6 EC. Further information on this minor can be found on the website of the Graduate School of Sciences. The exit qualification of this minor can be found in Appendix I.
3. If the student wishes to take a different subject than the units of study listed (see paragraph 4.4.1), advance permission must be obtained in writing from the Examinations Board. These units:
   a. have to be followed at an accredited university or institute
   b. have to be relevant to the master chosen

4. In terms of content, elective components, as referred to in paragraph 3, must be different than the components of the student's standard curriculum. The Examinations Board will decide on the acceptable degree of similarity.
5. An elective component, as referred to in paragraph 3, will only be seen as part of the programme when the Examinations Board has given its prior approval.

Article B-4.5– Free curriculum

5. Subject to certain conditions, the student has the option of compiling a curriculum of his/her own choice which deviates from the curricula prescribed by the programme.
6. The concrete details of such a curriculum must be approved beforehand by the most appropriate Examinations Board.
7. The free curriculum is put together by the student from the units of study offered by the University of Amsterdam and must at least have the size, breadth and depth of a regular Master's programme.
8. The following conditions must at least have been met in order to be eligible for the Master's degree:
    c. At least 60 EC must be obtained from the regular curriculum;
    d. The level of the free curriculum must match the objectives and exit qualifications that apply for the programme for which the student is enrolled.

Article B-4.6 – Sequence and admission requirements

Students may participate in examinations (and/or practical exercises) of the units below only if they have passed the examination or examinations for the units mentioned hereinafter:
The student has to successfully complete 18 EC of compulsory courses prior to approval and starting of the master thesis.

Article B-4.7 – Participation practical training and tutorials

Not applicable

Article B-4.8 – Exemption

1. A maximum of 60 EC of the curriculum can be accumulated through granted exemptions
2. This exemption does not apply to the Master Thesis Research Earth Sciences or Research Project Earth Sciences.
3. Exemptions from examinations (or parts thereof), if granted, will be valid for the same period as these examinations.

Article B-4.9 – Validity period for results

The validity period of passed interim examinations and exemptions from interim examinations is until the end of the academic year (31 Aug).

Article B-4.10 – Degree

Students who have successfully completed their Master's examination are awarded a Master of Science degree. The degree awarded is stated on the diploma. If it is a joint degree, this will also be stated on the diploma.

Article B-4.11 – Determining results of examinations

In addition to Article A-4.6 of Part A, in case the examination of a component consists of two or more parts, each part has to be graded with a 5.0 or higher to pass the examination.

Chapter 5. Academic student counselling

Article B-5.1 Academic student counselling

The academic student counselling for this programme consists of:

- a dedicated study advisor for all students of the Graduate School of Life and Earth Sciences;
- a dedicated track coordinator for each track.

Chapter 6. Teaching evaluation

Article B-6.1 Teaching evaluation

Teaching evaluation shall take place as follows:

- Course evaluations of a large selection of courses
- Curriculum evaluation

All evaluation reports are discussed within the Programme Committee.

Chapter 7. Transitional and final provisions

Article B-7.1 – Amendments and periodic review

1. Any amendment to the Teaching and Examination Regulations will be adopted by the dean after taking advice, and if necessary approval by the relevant Programme Committee. A copy of the advice will be sent to the authorised representative advisory body.
2. Any amendment to the Teaching and Examination Regulations requires the approval of the authorised representative advisory body as stated in the WHW.
3. An amendment to the Teaching and Examination Regulations is only permitted to concern an academic year already in progress if this demonstrably does not damage the interests of students.

Article B-7.2 – Cancelled programme components

By way of departure from the Teaching and Examination Regulations currently in force, the following transitional provisions apply for students who started the programme under a previous set of Teaching and Examination Regulations:

Transitional Provisions for students who started in 2016-2017 or earlier

Old component	**Replacement in 2017-2018**	**Remarks**
Applications in GIS and Remote Sensing	GIS/RS Science in Eosystem Dynamics	The contents of the courses are similar.
Geo-ecological Data Analysis	Analysis and Modelling Lab	
Modelling Geoecological Systems	Analysis and Modelling Lab	

Transitional Provisions for students who started in 2017-2018 or earlier

Old component	Replacement in 2018-2019	Remarks
Master Thesis Research Earth Sciences 1	Master Thesis Research Earth Sciences	Individual course exactly the same, only the name has changed.
Master Thesis Research Earth Sciences 2	Research Project Earth Sciences	Individual course exactly the same, only the name has changed.

In general, if a course that was given in the past is not listed above should be replaced by another course, the Examinations Board will be able to advise the student whether and what replacement is needed.

Article B-7.3 - Publication

1. The dean will ensure the appropriate publication of these Regulations and any amendments to them.
2. The teaching and Examination Regulations will be posted in the faculty website and deemed to be included in the course catalogue.

Article B-7.4 – Effective date

These Regulations enter into force with effect from 1 September, 2019.

Thus drawn up by the Dean of the Faculty of Science on 27 August, 2019.

Appendix - Final attainment levels of the major Science in Society, the major Science Communication and Major Teaching, and exit qualification for the minor Science for Sustainability

A. Final attainment levels of the major Science in Society

Dublin descriptor 1: Knowledge and understanding
The graduate has theoretical and practical knowledge of management, policy analysis and entrepreneurship. The graduate:
1. has insight into the various relevant disciplines in the social and behavioural sciences. More specifically the student acquires insight into:
    a. important concepts and theories in the field of policy science, management studies, and entrepreneurship;
    b. the relation of these gamma sciences to the beta sciences;
2. has insight into concepts and the latest theories, research methodologies, analytical models and important research questions related to interdisciplinary research for addressing societal problems;
3. has knowledge of, and insight into, relevant concepts and theories for effective communication and collaboration.

Dublin descriptor 2: Applying knowledge and understanding
The graduate is experienced in carrying out interdisciplinary research, in applying techniques specific to the subject area and in applying scientific knowledge to societal problems. The graduate:
1. has the ability to integrate knowledge from the beta and gamma sciences, as well as from science and practice;
2. can apply scientific knowledge to formulate solutions to societal problems and assess them for appropriateness and societal relevance;
3. adopts an appropriate attitude towards the correct and unbiased use and presentation of data.

Dublin descriptor 3: Making judgments
The graduate is able to independently and critically judge information. The graduate is able to:
1. independently acquire information in relevant scientific areas through a literature review and by conducting empirical research, as well as evaluate such information critically;
2. select and order information, distinguish essentials from trivialities, and recognize connections;
3. formulate personal learning objectives and critically evaluate own performance, both introspectively and in discussion with others.

Dublin descriptor 4: Communication
The graduate is able to transfer knowledge and skills related to his/her subject area to other people and to adequately reply to questions and problems posed within society. The graduate:
1. has acquired skills to report orally and in writing on research results in English;
2. has the ability to communicate research conclusions, and the knowledge and rationale underpinning them, to specialist audiences and non-specialist audiences clearly and unambiguously;
3. can collaborate with researchers from various scientific disciplines;
4. can make essential contributions to scientific discussions about plans, results and consequences of research.

Dublin descriptor 5: Learning skills
The graduate has developed learning skills that enable him/her to continue with self-education and development within the subject area. The graduate:
1. has acquired skills to develop a research plan, giving details of the problem statement, objectives, research questions, research approach, research methods, and planning;

2. is familiar with the general scientific journals, such as Nature and Science, and with journals in the specialisation, such as Research Policy, Health Policy, Science, Technology & Human Values, Social Science & Medicine, and International Journal on Technology Management;
3. has the learning skills to allow him/her to continue to study in a manner that may be largely self-directed or autonomous (life-long learning).

B. Final attainment levels of the major Science Communication

The MSc graduate possesses an academic attitude, skills and competences to operate at the interface of science and society aiming to contribute to a fruitful science-society dialogue. This means that Master's graduates have the following focus:

- Understanding the dynamic relationship between science and society;
- Translating information from the natural sciences to society and vice versa;
- Shaping the dialogue between science and society.

Knowledge

1. Knowledge of and insight into the relevant concepts and theories in the field of science communication, sociology, communication science, philosophy and science & technology studies in relation to the natural sciences;
2. Familiarity with scientific journals in the field of science communication and science & technology studies, as well as familiarity with a variety of popular-scientific media;
3. Insight into the nature and course of interpersonal and group communication processes relevant to the formal and informal dialogue between science and society;
4. Insight into relevant concepts and theories for effective communication and collaboration in relation to diverse science-society interactions;
5. Insight into the popularization of the natural sciences in various media;
6. Insight into the roles and responsibilities of museums in science communication.

Skills

1. Independently acquire, analyse and evaluate relevant information in a variety of scientific disciplines, by conducting literature study and empirical research;
2. Communicate and collaborate effectively with diverse professionals of scientific and non-scientific disciplines as well as lay citizens;
3. Design and facilitate interactive processes in relation to the science-society dialogue;
4. Translate information from various natural science disciplines into more generally accessible language and formats;
5. Produce popular-scientific media output concerning developments in the natural sciences, aimed at a variety of publics;
6. Contribute to the design of museum exhibitions from the perspective of scientific content management and science communication theory;
7. Make an intrinsic contribution to the societal discussion of developments in science and technology.

C. Final attainment levels of the major Teaching

Aan het eind van de opleiding moet de student beschikken over de kwaliteiten ofwel competenties op het gebied van geïntegreerde kennis, inzicht en vaardigheden behorend bij het beroep van leraar in het eerstegraads gebied van het voortgezet onderwijs. De competenties hebben betrekking op de taakgebieden waarvoor wordt opgeleid: onderwijzen, begeleiden, organiseren, ontwikkelen en onderzoeken, en professionaliseren. De competenties zijn de volgende:

Interpersoonlijk competent

Je bent interpersoonlijk competent als je in het contact met leerlingen (en ook met anderen) kunt leiden, begeleiden, bemiddelen, stimuleren en confronteren. Daarmee bereik je een klimaat met open communicatie en een sfeer van samenwerking en wederzijds vertrouwen.

Pedagogisch competent

Je bent pedagogisch competent als je benaderingen kunt ontwerpen, uitvoeren en evalueren om het welbevinden van leerlingen te bevorderen, om ontwikkelings- en gedragsproblemen te signaleren en om groepen en individuen te begeleiden. Daarmee bereik je een veilige leeromgeving waarin leerlingen zich kunnen ontwikkelen tot zelfstandige en verantwoordelijke personen.

Vakinhoudelijk en didactisch competent

Je bent vakinhoudelijk en vakdidactisch competent als je je eigen vak gedegen beheerst, op basis daarvan aantrekkelijke, effectieve en efficiënte leeractiviteiten kunt ontwerpen, uitvoeren, begeleiden en evalueren. Daarmee bereik je een krachtige leeromgeving voor leerlingen.

Organisatorisch competent

Je bent organisatorisch competent als je concrete en functionele procedures en afspraken kunt hanteren en als je de leeromgeving en het leren van leerlingen kunt organiseren en faciliteren en de planning kunt bewaken en bijstellen. Daarmee bereik je een overzichtelijke, ordelijke en taakgerichte leeromgeving.

Competent in het samenwerken met collega's

Je bent competent in het samenwerken met collega's als je informatie deelt, actief bijdraagt aan overleg en samenwerkingsverbanden en deelneemt aan collegiale consultatie. Daarmee bevorder je een collegiale en harmonieuze werksfeer.

Competent in het samenwerken met de omgeving

Je bent competent in het samenwerken met de omgeving als je doelmatige contacten onderhoudt met ouders (verzorgers), maar ook met andere mensen en instanties die te maken hebben met de zorg voor en de opleiding van leerlingen. Daarmee bereik je dat de ontwikkeling van leerlingen op een realistische en constructieve manier wordt ondersteund en dat eventuele problemen tijdig worden onderkend en opgelost.

Competent in reflectie en onderzoek ten dienste van ontwikkeling

Je bent competent in reflectie als je je handelen planmatig kunt bijstellen op grond van ervaringen in beroepssituaties. Daarmee bereik je professioneel leren en ontwikkeling van jezelf. Je bent competent in onderzoek als je de beroepspraktijk in het algemeen en je eigen beroepspraktijk in het bijzonder kunt analyseren met distantie en met onderzoeksmatige deskundigheid. Daarmee bereik je ontwikkeling van je school, van de didactiek van je vak en/of van jezelf.

D. Exit qualification of the Minor Science for Sustainability

After conclusion of the Minor *Science for Sustainability*, students:

- Are aware of the interdependence of the global natural system, the social system and the human system as well as of the importance of the coherence that is required between them to produce effective, science-based sustainable solutions.
- Have developed a view on complex sustainability issues while maintaining a clear focus on one specific disciplinary domain, in which they develop further scientific knowledge and expertise.
- Have learned how sustainable solutions can be realized via system innovations and transition management.
- Have become acquainted with an interdisciplinary approach in developing sustainable, science-based solutions for urgent societal challenges, including the economic and policy aspects related to these issues.
- Have learnt to work collaboratively in an interdisciplinary student project.