

# EDUCATION AND EXAMINATION REGULATIONS (EER)

APPLICABLE FOR THE ACADEMIC YEAR 2018-2019<sup>1</sup>

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**FB2018.2310**

**Faculty of Geo-information Science and Earth Observation  
(Faculty ITC)**

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***The Dean of the Faculty ITC***

hereby adopts the Education and Examination Regulations (EER) that apply to the two Master's programmes:

- Post-initial: M Geoinformation Science and Earth Observation (M.Sc.)  
(CROHO number 75014) (M-GEO)
- Initial: M Spatial Engineering  
(CROHO number 60962) (M-SE)

And to the courses that are based on these Master's programmes:

- Postgraduate Diploma (PGD) Course of the M-GEO
- Short credit bearing courses

These Education and Examination Regulations are formulated in view of the Articles 9.5, 9.15 - paragraph 1a, 7.13 – paragraph 1 and 2, 9.38 - b, 9.18 - paragraph 1a, and 7.59 – paragraph 4b of the Higher Education and Research Act (WHW) taking into account the advice from and approval by the Programme Committee and the Faculty Council on the sections where they can or need to advise or approve.

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<sup>1</sup> These Education and Examination Regulations do not apply for students that started their studies before 1 September 2018. For these students the EER of the academic year in which they started their studies still applies.

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## COMMON ELEMENTS

### SECTION 1: GENERAL PROVISIONS

#### **Art. 1.1 Applicability of these regulations**

- 1) The Education and Examination Regulations apply to all students enrolled in the Master's programmes concerned. They also apply to students following the PGD course in Geo-information Science and Earth Observation or short credit bearing courses which involves students studying part of the Master's programme. Deviations from these Master's programme rules for the PGD course are described in the Regulations Pertaining to the PGD course, included in this document.
- 2) These Education and Examination Regulations do not apply for students that started their studies before 1 September 2018. For these students the EER of the academic year in which they started their studies still applies.
- 3) The Common Elements and the Regulations pertaining to the programme/ course together form the Education and Examination Regulations for the programme/ course concerned.
- 4) Both the Master's programmes and the PGD course have their own Regulations pertaining to the programme/ course which are included in Appendices 1, 2 and 3.
- 5) The Examination Board sets down regulations for the execution of its tasks and powers in accordance with Article 7.12b of the WHW (see also Art. 5.1).
- 6) The legal mandate of the Examination Board extends to all study units that are part of a student's programme.
- 7) The Education and Examination Regulations are only available in English.
- 8) Any requests for special provisions or exceptions from the Education and Examination Regulations should be addressed to the Examination Board.
- 9) In most cases where programmes are taught in conjunction with a partner, the two institutes agree upon additional procedures which may take precedence over these Education and Examination Regulations. The Programme Manager informs the students which Education and Examination Regulations apply.

#### **Art. 1.2 Definitions**

4.TU: The four Universities of Technology of the Netherlands (Twente, Delft, Eindhoven, Wageningen);

Academic year: The period that starts on 1 September and ends on 31 August of the following year;

Certificate: Official document handed out to the student by the Examination Board upon successful completion of a credit bearing short course the undergraduate Diploma course or the PGD course. The Certificate is handed out together with a matching Course Record.

Course Record: An overview of the study units attended and the marks obtained at the Faculty ITC and possibly joint education programme partners.

CROHO: Central Register for Higher Education in the Netherlands;

Credit transfer: The procedure of granting credit to a student for educational experiences or courses undertaken at another university.

Curriculum: The complete set of compulsory and optional study units belonging to the programme, as set down in the regulations pertaining to the programme;

Dean: Head of the Faculty;

Diploma: Official document handed out to the student by the Examination Board upon successful completion of one of the Master's programmes stating that the student has obtained an MSc degree. The Diploma is issued with a matching Diploma Supplement;

Diploma Supplement: International Diploma Supplement with information on the nature and content of the completed Master's programme;

- EC: ECTS Credits according to the European Credit Transfer System. The number of EC expresses the volume of learning based on the defined learning outcomes and their associated workload;
- EER: Education and Examination Regulations;
- Exam: An evaluation of the knowledge, understanding and skills of the student, as well as the assessment of the results of this evaluation (Article 7.10 of the WHW); an exam may consist of a number of tests (in Dutch an Exam is called Tentamen);
- Examination Board: The Examination Board is the body which determines autonomously and objectively whether a student satisfies the conditions that the Education and Examination Regulations set on the knowledge, understanding and skills needed to obtain an MSc degree or Certificate;
- Examiner: The individual who has been appointed by the Examination Board in accordance with Article 7.12c of the WHW to hold exams and tests and determine their results;
- Executive Board: Executive Board of the University of Twente;
- Faculty ITC: Faculty of Geo-Information Science and Earth Observation of the University of Twente;
- Faculty ITC-BOOZ: Dutch abbreviation for the Bureau Education and Research Services of the Faculty ITC;
- Final Examination: The autonomous and objective decision of the Examination Board that the student has successfully completed the Master's programme and that an MSc degree is awarded;
- Initial programme: Initial education is meant for individuals before their first entrance to the labour market. The University receives direct funding from the government for this programme. (in Dutch: *bekostigd onderwijs*);
- Institution: University of Twente;
- Joint Education Programme: Master's programme offered by the Faculty ITC in cooperation with another institute or university;
- Mark: A level of achievement against specified criteria for an individual test or exam. This word is synonym to the word "grade".
- Master's Programme: The programme as described in the regulations pertaining to the Master's programme in the appendix of these Education and Examination Regulations;
- Mentor: The faculty member who offers academic guidance to a student;
- MSc Research Coordinator: The faculty member appointed by a research theme to facilitate and monitor the research of the students who conduct their MSc Research in this theme;
- M-GEO: Master's programme Geo-Information Science and Earth Observation;
- M-SE: Master's programme Spatial Engineering;
- OER: Dutch abbreviation for the *Onderwijs- en Examenregeling* (Education and Examination Regulations; this document);
- OLC: Dutch abbreviation for the *Opleidingscommissie* (Programme Committee);
- OLD: Dutch abbreviation for the *Opleidingsdirecteur* (Programme Director);
- Personal Development Portfolio: The digital environment in which the student keeps his/her personal plans, progress and reflections during the study in the M-SE (abbreviated as PDP);
- Portfolio holder Education: This person is the delegate of the Dean on education matters and member of the Faculty Board.
- Practical exercise: A practical exercise, as described in Article 7.13, Paragraph 2d of the WHW is a study unit or part of a study unit, whereby the emphasis is placed on the student's activities, such as:
- 1) carrying out literature research, an assignment or a preliminary design, writing a Thesis, article or 'position paper', or giving a presentation in public;
  - 2) carrying out a design or research assignment, participating in practicals, practicing skills;

- 3) following an internship, taking part in fieldwork or an excursion;
- 4) participating in other educational activities deemed as necessary and aimed at achieving the required skills;

**Programme Committee:** As referred to in Article 9.18 of the WHW; the Programme Committee is composed of both teacher and student members and approves the EER on specific topics and offers advice on other academic matters (Article 9.18, WHW, and article 12, Faculty Regulations);

**Programme Director:** Person appointed by the Dean to be the governing head of a Master's programme as defined in Article 9.17 of the WHW. The Programme Director is responsible for the development and quality of the programme (in Dutch this person is called Opleidingsdirecteur or OLD);

**Programme Manager:** The person who is responsible for the planning and organisation of the development and implementation of the Master's programme and derived courses.. In the M-GEO certain tasks are delegated to the Specialisation Coordinator;

**Post-initial programme:** Post-initial education is education that someone follows after their first, original education career in full-time education, often after entering the labour market (in Dutch: onbekostigd);

**Quartile:** A teaching and learning period of 10 weeks as defined by the 4.TU calendar.;

**Research Theme Leader:** The person who is responsible for all research carried out by the scientific faculty members, PhD researchers and Master's students connected to that theme;

**Rules and Regulations of the Examination Board:** The Rules and Regulations of the Examination Board (WHW, Article 7.12b, Paragraph 1b);

**Specialisation:** Set of courses offered within the Master's programme or PGD course of the M-GEO focusing on a specific domain.

**Specialisation Coordinator:** Coordinator of the specialisation oriented study units of the Master's programme and PGD course of the M-GEO. The Specialisation Coordinator executes some delegated tasks from the Programme Manager.

**Student:** Anyone registered for a programme or course in accordance with Article 7.34 and 7.37 of the WHW;

**Student Information System (SIS):** The system designated by the board of the institution for the registration of and information relating to the relevant student and study data, as stipulated in the WHW;

**Study Adviser:** Faculty member appointed by the Dean of the Faculty to act as contact between the student and the programme, and in this role represents the interests of the students, as well as fulfilling an adviser role. The role of Study Adviser is assigned to the Programme Manager;

**Study unit:** A unit of study as described in Article 7.3, Paragraphs 2 and 3 of the WHW. A study unit can have different forms such as a module, a course, a case study, electives, or a Thesis. Each study unit is concluded with an exam;

**Teacher:** Faculty member or guest lecturer charged with giving lectures in a study unit;

**Test:** Part of an exam. If a study unit has only one test, this coincides with the exam for the study unit in question;

**Test plan:** A plan indicating how the tests in a study unit lead to the exam;

**Test result:** A result that contributes to the exam for the study unit;

**UT:** University of Twente;

**Working Day:** Any day from Monday to Friday with the exception of official holidays and the prearranged 'bridging days' (brugdagen) on which the staff are free;

WHW The Higher Education and Research Act (in Dutch: Wet op het Hoger onderwijs en Wetenschappelijk onderzoek), Bulletin of Acts, Orders and Decrees 1992, number 593, and as amended since;

Any terms not defined here have the significance assigned to them by the WHW.

## **SECTION 2: ADMISSION**

### ***Art. 2.1 Prior education requirements***

Admission to the programme is obtained if the prerequisites with regard to prior education for enrolment in university education, in accordance with Article 7.30 b of the WHW, have been met.

- 1) Programme-specific admission requirements for the Master's programmes and PGD course are set out in the Regulations pertaining to the programme/ course concerned (see Appendices 1, 2 and 3).
- 2) The Programme Manager is responsible for the assessment of the admissibility of applicants and the issue of admission letters on behalf of the Dean.
- 3) Because of the contents of the Master's programmes, applicants with visual or physical disabilities should only be registered when the disability is not a major obstacle for meeting the learning outcomes. See also Section 7 on Studying with a disability.

## **SECTION 3: CONTENT AND STRUCTURE OF THE MASTER PROGRAMMES**

### ***Art. 3.1 Aims of the programmes***

The aims and learning outcomes of the Master's programmes (Article 7.13, Paragraph 2c of the WHW) are described in the regulations pertaining to the programme (Appendices 1 and 2).

The programme learning outcomes of the Master's programmes of the Faculty ITC fit the internationally recognized level descriptions of the so-called Dublin Descriptors, and are in accordance with the equivalent Criteria for Academic Bachelor and Master Programmes agreed upon by the 4TU.

The Dublin Descriptors are:

- a. Knowledge and insight;
- b. Application of knowledge and comprehension;
- c. Critical thinking;
- d. Communications;
- e. Learning skills.

The 4TU Criteria for Academic Bachelor's and Master's Programmes are:

- a. Expertise in one or more academic disciplines
- b. Research competence;
- c. Design competence;
- d. A scientific approach;
- e. Basic intellectual skills;
- f. Competence in cooperation and communication;
- g. Awareness of temporal and social context.

### ***Art. 3.2 Structure of the Master's programmes***

- 1) The Master's programmes have a study load of 120 EC.<sup>2</sup> 1 EC is equivalent to 28 hours of study.
- 2) The programmes are described in the Regulations Pertaining to the Master's programme concerned (included in this document), in accordance with Article 7.13, Paragraph 2 a to e, h, i, l, s, and t of the WHW.

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<sup>2</sup> The M-GEO is currently registered for 118 EC in the national register for higher education (CROHO) A request for changing it into 120 EC is in progress.

**Art. 3.3 Language of instruction for the Master's programmes**

The language of instruction for the Master's programmes is English.

**Art. 3.4 Exemption**

- 1) The Examination Board can grant the student exemption from one or more completed study units at the student's request. To this end, the student demonstrates that the student has completed a component of a similar content, size and level of a university or has, as a result of work and/or professional experience, sufficient knowledge and skills regarding the study unit concerned.
- 2) In dealing with requests for exemption, the Examination Board obtains advice from the Examiner involved.
- 3) At least 50% of the study load of the Master's programme has to be taken to be eligible for the MSc Degree.
- 4) Exemption is never given for (part of) the MSc Research in the Master's programmes or the Final Assignment in the PGD course.

**Art. 3.5 Credit transfer**

- 1) Students wanting to transfer credits undertaken at another university have to request this to the Examination Board following the procedure defined in the Rules and Regulations of the Examination Board.
- 2) Transferred credits will be mentioned on the Diploma Supplement without the marks obtained at the other university.
- 3) At least 50% of the study load of the Master's programme has to be taken at the Faculty ITC to be eligible for the MSc Degree.
- 4) Credit transfer is not allowed for (part of) the MSc Research in the Master's programmes or the Final Assignment in the PGD course.

**Art. 3.6 Tailor-made Master's programme**

- 1) The Examination Board decides on requests for permission to take a tailor-made programme as stipulated in Article 7.3 h of the WHW. The Examination Board assesses whether the programme is appropriate and consistent with the learning outcomes of the Master's programme.
- 2) Any change in the sequence of study units requires the approval of the Examination Board.
- 3) The procedure for requesting a tailor-made programme are described in the Rules and Regulations of the Examination Board.

**Art. 3.7 Joint Education Programmes**

- 1) The Faculty ITC rules concerning exemptions and credit transfer do not apply to Joint Education Programmes and other cases where the Faculty ITC has an agreement with a partner university or institute that students who have successfully completed a specific curriculum in the partner university or institute in accordance with their regulations are given direct admission to a later part of the Master's programme.
- 2) The Examination Board approves the organisation of a Joint Education Programme as a special case of a tailor-made Master's programme for all students studying in the Joint Education Programme following a quality assurance procedure every three years.
- 3) In case the Examination Board approves the organisation of the Joint Education Programme, all courses followed and the marks obtained in the Joint Education Programme are mentioned on the Diploma Supplement.
- 4) For Joint Education Programmes which have not been gone through the quality assurance procedure yet, the credits obtained outside the Faculty ITC are mentioned on the Diploma Supplement without the marks obtained at the partner university or institute.



## SECTION 4: EDUCATION AND EXAMS

### Art. 4.1 General

- 1) A study unit is completed with an exam.
  - a. The questions, tasks and practical exercises of each exam cannot exceed the learning outcomes of the study unit.
  - b. An outline of the learning outcomes is presented before the start or at the first meeting of each study unit.
- 2) The exam may consist of a number of tests but must result in a single mark. A test can be of the following types: a written or oral test, a practical exercise, or a combination of the types just mentioned.
- 3) The Thesis is published in the Research information system of the University. Theses with a mark of 7 or higher are publicly available. The Examination Board can under exceptional circumstances deviate from this rule. Students can submit a motivated request to not make their Thesis publicly available to the Examination Board.
- 4) Any faculty member who publishes results from the MSc Research is obliged to make a proper reference to the Master's student's work.
- 5) The MSc Research receives one overall mark.
- 6) A test can be taken in several parts, spread over time. Results of these parts are not included in the Student Information System, but can be shared with students via the electronic learning environment of the university,
  - a. The student has the right to view model test questions or practice tests or representative past tests including the corresponding model answers and assessment standard before the actual test. In case a test is given for the first time, the Examiner has to seek for other means to inform the students about what they can expect in the test.
  - b. The maximum duration of a test is 3 hours. Tests of longer duration have to be split in parts.
  - c. Students shall be informed at the start of each study unit:
    - i. The duration of the test;
    - ii. Whether books and/or notes or devices may be used during the test.
  - d. Students shall be informed at the start of each test of:
    - i. If applicable, the number of questions to be answered;
    - ii. The weight of each question.
- 7) Test results are expressed in a mark with one decimal from 1.0 to 10.0 or in a Completed/Fail
- 8) Exam results are expressed in a whole mark from 1 to 10.
- 9) The definitions of the marks for exams are as follows:

<u>Mark:</u>	<u>Qualification:</u>
10	Excellent
9	Very good
8	Good
7	More than sufficient
6	Sufficient
5	Almost sufficient
4	Insufficient
3	Very insufficient
2	Poor
1	Very poor

An exam result of a 6 or higher is a Pass. A result of 5 or lower is a Fail.

- 10) Test and exam results are determined by the responsible Examiner.
- 11) EC are awarded for the study unit if an exam has been passed. EC are awarded to a study unit with a lower exam mark in case the student has passed the final examination of the Master's



programme or PGD course according to the requirements as defined by the Examination Board in their Rules and Regulations. No EC are awarded for parts of study units and/or individual tests passed.

- 12) If a student receives more than one authorized test result for the same test, the last obtained result applies.
- 13) The exams of all study units should lead to a mark on a scale of 1-10.
- 14) For the calculation of the average mark of all exams the marks are weighted conform their study load. Those parts of the Master's programme that were granted exemption are not considered for determination of the average mark
- 15) If the Examination Board wants members of the Examination Board (or an observer representing the Examination Board) to be present during a test, it notifies the Examiner and the student at least one working day prior to the test.

#### **Art. 4.2 Study units**

Each study unit has a Coordinator and an Examiner. This may be the same person. The Coordinator is appointed by the Programme Director. The Examiner is nominated by the Programme Director. The nominated Examiner is appointed by the Examination Board.

#### **Art 4.3 Registering for study units and tests**

- 1) Students enrolled in a Master's programme or PGD course at the Faculty ITC or in a Joint Education Programme have to be registered in the SIS for each study unit that is part of the programme or course.
- 2) Students are automatically registered in SIS for the first opportunities of the tests offered in the study units they are registered for.
- 3) Students have to register for second test opportunities. Students who did not register for a test opportunity are not admitted to participate in that test opportunity.
- 4) Students who intend to not take a test for which they have been (automatically) registered, have to unregister for the test with the Examiner.
- 5) Students have to register themselves for the MSc Research exam at least five weeks before the pre-scheduled exam periods. In exceptional cases the student can request a MSc Research exam outside the pre-scheduled periods for the MSc Research exams from the Programme Director.

#### **Art. 4.4 Test plan**

- 1) The way in which the tests lead to the exam result is laid down in a Test Plan for each study unit.
- 2) The Test Plan is determined by the Examiner.
- 3) The Test Plan must at least include the following:
  - a. Relationship between learning outcomes, teaching methods and exam;
  - b. Mandatory and recommended study material;
  - c. At which moment tests take place and in what format;
  - d. The weighting of the various tests;
  - e. If applicable, the deviation from the standard validity period of test results (Article 4.8).
- 4) In case the test plan includes a minimum mark for a specific test, this cannot be higher than a 5.5.
- 5) The Test Plan must have been published in the study guide (3b, 3c (format), 3d, 3e) before the start of the Master's programme and in more detail (3a to 3e) on the electronic learning environment of the university at the start of the study unit.
- 6) Under approval of the Programme Director the Programme Manager is entitled to make changes to the Test Plan during a study unit in progress in special cases.
  - a. Changes to the Test Plan are only be made in consultation with the responsible Examiner and after advice of the Examination Board. The Examiner and the students are informed of these changes as soon as possible.

- b. In case a change to a Test Plan only implies the rescheduling of tests or parts thereof, consultation with the responsible Examiner suffices. Next, the Programme Director informs the Examination Board of its decision.
- c. Changes to the Test Plan should not be detrimental to the performance of the students.

**Art. 4.5 Test opportunities**

- 1) For each test, two test opportunities are offered per academic year. The student has to be informed on the test format of these two opportunities at the start of the study unit. The level of the test opportunities should be equal.
- 2) If an exam consists of a practical exercise that cannot be repeated or has a study load of more than 40 hours, the Examiner can decide to offer one test opportunity per academic year
- 3) Practical exercises of which the second test opportunity consists of only repairing the first test opportunity can get a maximum mark of 6.0.
- 4) In exceptional cases, the Examination Board can deviate from the number of times and the manner in which tests can be taken.
- 5) In exceptional cases, the Examination Board can decide to grant a third test opportunity for one exam that hinders the admission to the MSc Research of the Master's programme or the Final Assignment of the PGD course. The procedure for this request are described in the Rules and Regulations of the Examination Board.
- 6) In case the student is not able to attend or complete a test due to health or other personal problems, this must be communicated to the Examiner in writing before the start of the test or the submission deadline. Attending or handing in a test is always counted as a test attempt.
- 7) The Programme Manager checks if a valid reason with supporting evidence for not attending a test opportunity has been reported by the student. If the validity of the reason for not attending the test opportunity is confirmed by the Programme Manager and Article 4.5-5 has been followed, the student can apply in writing for a new test opportunity or extension of the deadline for submission of the test to the Programme Manager. This new test opportunity is considered a replacement of the not attended test opportunity.
- 8) A student not attending a scheduled test for which he/she is registered, not completing a practical exercise or not submitting the required work within the specified time, without prior written communication to the Examiner or without a valid reason for absence, will not receive a mark and miss a test opportunity.
- 9) The right to use a test opportunity exists only when the student is registered in the SIS as a student.

**Art. 4.6 Oral tests**

- 1) Proposal and Thesis defences are conducted in public, unless the Examination Board has specified otherwise in a particular case, possibly at the request of the Examiner or the student.
- 2) At least two faculty members must be present at an oral test.

**Art. 4.7 Term for assessment**

- 1) Within 10 working days of the completion of a study unit, the exam result is communicated to the individual student. On request of the responsible Examiner the Programme Manager may decide to extend this period with a maximum of 5 working days, in case the complexity and/or the work load of the work to be assessed gives reason to do so. The students are informed of this extension as soon as possible.
- 2) In case of an oral test, the Examiner notifies the student within one working day of the result. This provision does not apply if the oral test is part of a series of oral tests of the same study unit, which take place on more than one working day. In that case, the Examiner determines the result within one working day after the conclusion of the series of oral tests.

- 3) Rights can only be derived from exam and test results that have been published via the Student Information System.
- 4) Should the Examiner not be able to meet the extended deadline due to exceptional circumstances, then the Examiner reports this with reasons to the Programme Director. The students are informed of the delay as soon as possible by the Programme Manager and given the new deadline by which the result is made known. If the Examination Board is of the opinion that the Examiner has not met the Examiner's obligations, it may assign another Examiner to ascertain the result.
- 5) If two test opportunities are planned shortly after each other, the results of the first test opportunity have to be published at least ten working days before the second test opportunity.

**Art. 4.8 Period of validity**

- 1) The validity period of Exam results can be limited by the Examination Board if the examined knowledge and/or skills are demonstrable outdated.
- 2) Test results are valid for a period of 24 months. Exceptions to this rule have to be formulated in the Test Plan (see Article 4.4-3-e).

**Art 4.9 Right of justification and inspection**

- 1) The student has the right to hear a justification of the results of a test from the Examiner in a discussion. If no collective discussion of the results is held, the student may submit a request for an individual discussion of the results to the Examiner within ten working days of publication of the test results. The discussion must take place at the latest five weeks after the publication of the results of the test, in the presence of the Examiner or a replacement authorized by the Examiner.
- 2) Students have the right of access to their work for a period of two years after the test.
- 3) The student may not make duplicates or copies of the test materials in any way during the inspection of the student's work, unless specified differently by the responsible Examiner.

**Art. 4.10 Filing period for tests**

- 1) The test papers, answers and marked work for written tests are filed for a period of two years after marking in the administration of Faculty ITC-BOOZ.
- 2) The filing period for Master's theses is seven years.

**SECTION 5: EXAMINATION**

**Art. 5.1 Examination Board**

- 1) The Dean installs an Examination Board (WHW, Articles 7.12 and 7.12a).
- 2) The Dean
  - a. appoints the members of the Examination Board on the basis of their expertise in the domain of the relevant Master's programme or group of programmes (WHW, Article 7.12a par. 1);
  - b. consults the members of the relevant Examination Board before proceeding to appoint a member (WHW, Article 7.12a par 4);
  - c. ensures that the independent and professional functioning of the Examination Board is sufficiently warranted (WHW, Article 7.12a par 2).
- 3) In appointing the members of the Examination Board, the Dean ensures that:
  - a. at least one member is involved as a teacher in the relevant Master's programme or in one of the programmes belonging to the relevant group of programmes;
  - b. members of the University Board and other persons with financial responsibilities within the university are excluded;
  - c. at least one member comes from outside the Master's programme or group of programmes in which the programme belongs.
- 4) Examination Boards are themselves responsible, without further consultation, for setting the regulations and guidelines for Examiners, exams and final examinations (WHW, Article 7.12b).

These are set down in a separate document entitled Rules and Regulations of the Examination Board.

- 5) The Examination Board drafts an annual report of its activities. The Examination Board issues the report to the Dean (WHW, Article 7.12b par. 5)

#### **Art. 5.2 Final Examination**

- 1) The final examination requirements are defined in the Rules and Regulations of the Examination Board.
- 2) If the Examination Board declares that the student has met the final examination requirements, the student is invited to accept the Diploma and Diploma supplement.
- 3) The student may submit a motivated request in writing to the Examination Board to postpone declaring the final examination as 'successfully completed' and also to postpone the presentation of the Diploma. The student must indicate the desired length of postponement in this request.
- 4) The details of the stipulation in Article 5.2-3 are included by the Examination Board in the Rules and Regulations of the Examination Board.
- 5) If the student has requested postponement on the basis of Article 5.2-3, the final examination date is the date following postponement on which the Examination Board has decided to declare the student to have successfully completed the final examination.

#### **Art. 5.3 Degree**

- 1) Students who have successfully met all requirements for the final examination of the Master's programme are awarded a Master of Science degree.
- 2) The awarded MSc Degree is stated on the Diploma.

#### **Art. 5.4 Diploma<sup>3</sup>**

- 1) The Examination Board grants a Diploma as proof that the student has successfully passed the final examination of the Master's programme. The Diploma is signed by the chair or the vice chair of the Examination Board.
- 2) The Diploma states the following (WHW, Article 7.11):
  - a. The student's name and date of birth;
  - b. The name of the institution and the Master's programme as referred to in the higher education register (CROHO), referred to in Article 6.13 of the WHW;
  - c. The graduation date;
  - d. The degree awarded (WHW Article 7.10a);
  - e. The date on which the Master's programme was most recently accredited as referred to in Article 5a.9.
- 3) The International Diploma Supplement is appended to the Diploma for the successfully completed final examination (WHW, Article 7.11, Paragraph 4). The purpose of the supplement is to provide information on the nature and content of the completed Master's programme, partly with a view to the international recognition of programmes. This supplement complies with the European standard and contains the following information:
  - a. The name of the Master's programme and the name of the university;
  - b. The fact that it is a Master's programme in academic education;
  - c. A description of the content of the Master's programme; where applicable also stating the specialisation taken;
  - d. The study load of the Master's programme;
  - e. The exams and their marking;
  - f. Additional exams which are not part of the final examination;

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<sup>3</sup> The awarding of certificates for the PGD course is described in Appendix 3.

- g. Average score.
- 4) If the Examination Board has granted the student a designation Cum Laude, this is stated on the Diploma.
  - 5) Students who have passed at least one exam and to whom no Diploma as referred to in Article 5.4-1 is provided with a Certificate and Course Record from the Examination Board stating at least the passed exams and the marks obtained (WHW, Article 7.11, Paragraph 5). The student can choose to include failed exams on the Course Record.
  - 6) The Rules and Regulations for Certification in Faculty ITC courses are described in a separate document.

#### **Art. 5.5 Graduating Cum Laude**

Rules on graduating Cum Laude are published in the Rules and Regulations of the Examination Board.

### **SECTION 6: STUDENT PERFORMANCE**

#### **Art. 6.1 Study progress**

- 1) The student can request a certified study progress overview if required.
- 2) Where a Programme Manager is of the opinion that a students' progress gives cause for concern, the student shall be informed of the situation. .
- 3) Where a student's performance is such that the student is unlikely to obtain a MSc degree or PGD Certificate without a significant improvement in performance, the student shall be informed in writing by the Programme Director.

#### **Art. 6.2 Study advice and mentoring**

- 1) The Study Adviser is responsible for student counselling on study opportunities in or outside the Master's programme.
- 2) Each student is appointed a Mentor, who informally offers advice on study-related matters, as well as personal problems that may affect the student's studies if the student so desires. Student Affairs positioned in Faculty-ITC-BOOZ can assist in non-academic counselling.
- 3) The Study Adviser keeps a record of any agreements made with the student.

#### **Art. 6.3 Fraud**

- 1) The Examination Board sets out rules for handling cases of fraud in the Rules and Regulations of the Examination Board.
- 2) Fraud is understood to mean:
  - a. The use of aids different from those which the Examiner has stated in writing to be allowed before the test.
  - b. The use of aids or help which the student knew or should have known that in the test were not allowed. The following are included among the intended help or aids mentioned in the previous sentence.
    - i. Acquisition of the test items before the start of the test;
    - ii. Cheating through i) copying ii) through making contact to others about the test during the time for sitting the test and when the work has not been handed in and iii) through making use of parts of written work or worked out answers of others;
    - iii. Forgery of documents, including doing or allowing the doing of a test under a false name.
  - c. Behaviour of students, which the teacher has made known to be regarded as fraudulent before taking the test.

- d. Plagiarism: for example, copying without proper reference to sources. Identified forms of plagiarism are amongst others:
  - i. Copying of (parts of) other people's work and ideas and presenting this as own work;
  - ii. Copying of images, sound material, test results, designs, software and programming codes from others without referencing and therefore presenting it as own work;
  - iii. The use of texts that have been written together with others without mentioning this;
  - iv. Handing in work that has been (partly) published before by the student without referencing (self-plagiarism);
- e. Handing in a group assignment knowing that one or more persons did not contribute to the assignment.
- f. Manipulation of results in (group) research assignments or forgery of research data.
- g. Handing in work that was handed in before for another assignment by the student.

## **SECTION 7: STUDYING WITH A DISABILITY**

### ***Art. 7.1 Studying with a disability***

- 1) A disability is a physical, sensory or other impairment that might limit the student's academic progress.
- 2) An evaluation is made, in consultation with the student and on the basis of an interview with the Programme Manager, of what special facilities as referred to in Article 2 of the Equal Treatment Act on the basis of a Handicap/Chronic Illness (WGBH/CZ) are to be considered most effective for this student.
- 3) Special facilities are intended to remove specific hindrances when participating in the programme's educational activities and/or sitting tests. Where necessary, these may concern facilities pertaining to the accessibility of educational infrastructure (buildings, rooms and facilities) and study material, changes to exams, alternative study paths or a custom-made study plan.
- 4) On the basis of the interview described in Article 7.1-2, the student submits a written application for the facilities in consultation with the Study Adviser. The application is submitted to the Dean of the Faculty, preferably immediately after admission to the programme or course.
- 5) The application is supported by documents that can reasonably be requested to assess the application such as a certificate from a doctor or psychologist listed in the register under the Individual Professions Act (BIG), or, in case of dyslexia, from a BIG-registered health care psychologist or remedial educationalist.
- 6) The Dean of the Faculty ITC makes a decision, within twenty working days of receipt of the application or earlier if the urgency of the application necessitates it, on the validity of the application as described in Article 7.1-4, and informs the student and the Study Adviser of the decision.
- 7) The Study Adviser ensures that the relevant parties involved are informed in due time of the facilities granted to the student with a disability.
- 8) Should the Dean of the Faculty turn down the application in full or in part, the Dean informs the student of the justification for this rejection and the possibilities for lodging an objection. Objections must be submitted in writing within six weeks of the decision being announced to the relevant party, at the Complaints Desk at Student Services.
- 9) Should extra facilities be granted, it is stated for what term this grant will apply. The applicant and the Study Adviser evaluate the facilities before the end of this term. During this evaluation, the parties discuss the effectiveness of the facilities provided and whether they should be continued.
- 10) In the case of dyslexia, additional time for a test may be granted, with a maximum of 15 minutes for every hour on the clock.
- 11) The Dean has delegated the processing of the applications referred to in Articles 7.1-4 up till and including 7.1-8 to the Programme Director.



## **SECTION 8: AMENDMENTS, TRANSITIONAL ARRANGEMENTS, APPEALS AND OBJECTIONS**

### ***Art. 8.1 Conflicts with the regulations***

- 1) If other additional regulations and/or provisions pertaining to teaching and/or exams conflict with these Education and Examination Regulations, the present Education and Examination Regulations take precedence.
- 2) For the purposes of international cooperation with higher institutions abroad, the arrangements between the Faculty ITC and foreign institutions may differ from the regulations of this EER. Such arrangements are announced as quickly as possible at the Faculty ITC website.

### ***Art. 8.2 Administrative errors***

If, following the publication of a test result, a list of marks, or an overview of a student's progress, an apparent error is discovered, the discoverer, be it the university or the student, is required to make this known to the other party immediately upon finding the error and to cooperate with rectification of the error.

### ***Art. 8.3 Amendments to the regulations***

- 1) Substantive amendments to these Education and Examination Regulations are determined by the Dean in a separate decision.
- 2) In principle, substantive amendments to these Regulations do not apply to the students in the current academic programme. Substantive amendments to these Regulations may apply to the current academic programme if the interests of the students are not prejudiced, or in circumstances beyond one's control. The Portfolio holder Education decides on this.
- 3) Amendments to these Regulations have no effect on earlier decisions of the Examination Board.

### ***Art. 8.4 Transitional arrangement***

- 1) In the case of amendments to the Education and Examination Regulations, the Dean may decide on a transitional arrangement.
- 2) The transitional arrangement is published on the website of the Master's programme.
- 3) Points of departure for a transitional arrangement if a study programme is changed:
  - a. Changes to a study programme are published before the start of the Master's programme in which they are to apply.
  - b. No guarantee can be given that all the study units of a Master's programme, as they existed at the time of a student's enrolment in a Master's programme, continue to be part of the student's study programme. The study programme as most recently approved by the Dean serves as the basis for establishing the results of the Master's final examination.
- 4) The transitional arrangement requires the approval of the Examination Board pursuant to the provisions of Article 8.4-3.
- 5) In exceptional cases, and if this is to the student's advantage, the Examination Board may allow a deviation from the number of times and the way in which tests may be taken for a study unit that is no longer included in the programme or course.
- 6) Programme specific transitional arrangements are included in the regulations pertaining to the programme.

### ***Art. 8.5 Review of the Education and Examination Regulations***

- 1) The Dean is responsible for the regular review of the Education and Examination Regulations and takes into account the resultant study load for the students to enable this to be monitored and adjusted if necessary.
- 2) Before approval of the Education and Examination Regulations, in accordance with Article 9.18 and 9.38 of the WHW, the Programme Committee and Faculty Council each give their consent to specific parts of the Education and Examination Regulations.



- 3) For other topics, also specified in the WHW, the Deans has to consult the Programme Committee for advice and the Faculty Council can offer their advice.
- 4) The Programme Committee assesses the implementation of the EER on a yearly basis.

#### **Art. 8.6 Complaints**

- 1) Student complaints are first dealt with by the Programme Manager.
- 2) The Programme Manager can be contacted for the following types of complaints:
  - a. Disagreement with the format or procedure of tests or exams (e.g. by an Examiner, Proposal Assessment Board, Thesis Assessment Board or Final Assignment Assessment Board);
  - b. Not receiving the quality of Thesis /Final Assignment supervision required in the regulations;
  - c. Other study hindering matters.
- 3) If the student is not satisfied with the decision of the Programme Manager, the student has a right of complaint with the Examination Board when the disagreement is related to the format or procedure of a test, or with the Programme Director for all other issues.
- 4) In case of a complaint with the Programme Director, the Programme Director can request all relevant materials and correspondence and may hear all parties involved (including the Programme Manager) for relevant information, before the final decision is taken and communicated in writing to the student. In case the complaint is supported, the Programme Director proposes remedial actions. If the complaint of the student is rejected, the reason is described.
- 5) The Programme Manager and Programme Director should deal with the complaint within two weeks of receipt of the complaint.
- 6) Complaints must be made in writing. The Programme Manager or Programme Director responds in writing.
- 7) A complaint is only accepted if the complaint has been made before the official end of the programme or course.
- 8) Regulations on complaints with the Examination Board are published in the Rules and Regulations of the Examination Board.

#### **Art. 8.7 Appeal and objections**

An appeal against a decision made by the Examination Board or an Examiner, and objections to decisions made by the Dean on the basis of these Regulations, must be submitted in writing to the Complaints Desk at Student Services within six weeks after notification of the decision.

#### **Art. 8.8 Hardship clause**

In the event of demonstrable, considerable unreasonableness or unfairness, the Examination Board can permit departures from the provisions of these Regulations.

#### **Art. 8.9 Publication**

The Education and Examination Regulations and the Rules and Regulations of the Examination Board are published via the Faculty ITC website.

#### **Art. 8.10 Date of commencement**

These Regulations take effect on and supersede the Regulations of September 2017.

## **APPENDIX 1: REGULATIONS PERTAINING TO THE MASTER'S PROGRAMME GEO-INFORMATION SCIENCE AND EARTH OBSERVATION (M.SC.)**

### **A. ADMISSION**

#### ***Academic level and background***

Applicants for the Master's programme should have a Bachelor degree or equivalent from a recognised university in a discipline related to the Master's programme, preferably combined with working experience in a relevant field.

#### ***English language***

As all education at the Faculty ITC is given in English, proficiency in the English language is a prerequisite. If students are a national of one of the countries on the list at the Faculty ITC website (<https://www.itc.nl/education/application-financial-support/admission-requirements/>), they are exempted from an English language test. The minimum requirements for the English language tests are also published at this Faculty ITC website.

### **B. STUDY LOAD**

The duration of the Master's programmes is 2 academic years with a total study load of 120 EC.

### **C. PROGRAMME FORMAT**

The Faculty ITC offers the Master's programme in different modes of learning:

- 1) In fulltime face to face mode at the Faculty ITC;
- 2) In fulltime face to face mode at the Faculty ITC and at a partner university or institute (Joint Education Programme);
- 3) In fulltime and part-time distance mode;
- 4) A mix of modes 1 to 3.

### **D. SPECIALISATIONS**

The following specialisations are available:

- Applied Remote Sensing for Earth Sciences;
- Geoinformatics;
- Land Administration;
- Natural Hazards and Disaster Risk Reduction;
- Natural Resources Management;
- Urban Planning and Management;
- Water Resources and Environmental Management.

It is also possible to follow a tailor-made specialisation of 28 EC which can be composed by the student, in consultation with the Study Adviser, from the different specialisation courses offered in the Master's programme. The Examination Board has to approve this tailor-made specialisation as a tailor-made Master's programme as described in Article 3.6 of this EER.

### **E. PROGRAMME LEARNING OUTCOMES**

At successful completion of the Master's programme, the student is able to:

#### ***Domain/ Academic field***

1. Identify and explain principles, concepts, methods and techniques relevant for geo-information processing and earth observation.
2. Analyse problems and cases from a (geo-)spatial perspective.

3. Use and design models to simulate (or: study) processes in the system earth with a spatial component.
4. Apply principles, concepts, methods and techniques in the context of system earth, the user and an application domain to solve scientific and practical problems.
5. Independently design and carry out research in the domain according to scientific quality standards.

#### **Scientific**

6. Analyse issues in an academic manner and formulate judgments based on this.
7. Analyse scientific and practical domain problems in a systematic manner and develop scientifically valid solutions for these problems in a societal context.
8. Communicate both orally and in writing on findings of research work to specialists and non-specialists.
9. Explore the temporal and social context of geo-information science and technology and be able to integrate these insights in the scientific work.

#### **Internationalization**

10. Explain and contrast cultural and contextual differences that influence the collection, classification and visualization of spatial information.
11. Operate professionally and ethically in a multi-cultural environment.

#### **General**

12. Critically reflect on own and other's work.
13. Study in a manner that is largely self-directed and autonomous.

### **F. REQUIRED SEQUENCE OF EXAMS**

- 1) The sequence of the academic years is fixed.
- 2) The sequence of the study units in the first academic year is fixed and choices are limited by the entry requirements of the courses as defined in the study guide.
- 3) The student has to make a study plan for the second academic year taking into account the rules for admission to the MSc Research, the entry requirements of selected courses and the final examination.
- 4) The rules for deviations from this sequence are described in Article 3.6 of the Common Elements of the EER.

### **G. CONTENT AND EXAMS**

The Master's programme is organized into 2 academic years with each 4 quartiles.

Tests are in principal scheduled in the last week of the course, unless communicated otherwise.

During the programme, the student has to make choices in the courses to follow and the focus of the MSc Research:

- Confirmation of the chosen specialisation;
- If applicable, submission of plans for a tailor-made specialisation to the Examination Board;
- Submission of choices for elective courses in Quartile 4;
- Study plan for academic year 2;
- Final selection of the courses for the individual study programme in academic year 2;
- Planning of the MSc research exam.

The dates for these choices will be communicated to the student at the start of the Master's programme.

Possibilities for the MSc Research exam are in principle offered in the last week of each Quartile.

A Master's student who is not admitted to the MSc Research phase of the M-GEO programme or has failed the MSc Research exam of the M-GEO, but has completed the study units of Quartiles 1, 2 and 3, the Specialisation study unit in Quartile 4, and Academic skills can receive a PGD Certificate under conditions detailed in the Rules and Regulations of the Examination Board. This is only applicable if the specialisation or Joint Education Programme studied has a matching PGD course registered in the SIS.

The following table shows the general setup of the curriculum:

Academic year 1				
Quartile 1	Quartile 2		Quartile 3	Quartile 4
Core courses (14 EC)	Specialisation course (7 EC)	Specialisation course (7 EC)	Common course (7 EC)	Specialisation course (7 EC)
			Specialisation course (7 EC)	Elective course 1 (7 EC)
Academic skills (4 EC)				
Academic year 2				
Quartile 5	Quartile 6		Quartile 7	Quartile 8
<i>MSc Research (45 EC)</i>				
<i>Individual study programme (15 EC)</i>				
Elective course 2	Elective course 3	The student can make a choice of: <ul style="list-style-type: none"> <li>- Entrepreneurship course (5 EC)</li> <li>- Internship (10 EC)</li> <li>- Courses offered at ITC or elsewhere</li> </ul>		

## H. COHERENCE AND DIDACTIC CONCEPT

The academic profile of the Master's programme puts strong emphasis on the scientific discipline, a scientific approach, basic intellectual skills, co-operation and communication and the temporal and social context of research. The emphasis on doing research and/or designing or developing new methods or techniques depends on the application domain.

Multi-disciplinary research is an important focus for the Master's programme because (applied) research in practice seldom concerns one discipline but is more likely to be multidisciplinary. Students have to be prepared for that. Starting with a sound basis in their own specialisation they are brought into learning situations in which students from different specialisations work together. It should be noted that most if not all research at the Faculty ITC is already multidisciplinary in nature. This is evident in the wide scope of expertise within departments, and the common denominator to carry out applied research contributing towards development related issues as specified in the Faculty ITC's mission. In their profession, the graduates have to apply knowledge and skills independently. The Master's programme is therefore focused at handing over the control of the learning process to the student. At the end of the first academic year the student has to make choices regarding the MSc Research to conduct and the elective courses to follow in the second academic year. Students take

the lead in their learning process by developing their own learning plan within the Master's programme framework and guidelines. The Mentor provides guidance in this development.

## **I. CONTENT OF PRACTICAL EXERCISES**

The programme contains a large amount of practical exercises which are marked. Please look at the Faculty ITC study guides for details of these exercises at study unit level (<https://www.itc.nl/education/study-details/studyguides/>).

## **J. MSC RESEARCH**

### ***J.1 Admission***

Students can be admitted to the MSc Research if:

- 1) At least 53 EC worth of exams of academic year 1 (including 4 EC Academic skills) have been successfully completed;
- 2) They have received no marks below 5;
- 3) A complete study plan for the second academic year is handed in.
- 4) The MSc Research topic is approved by the Research Theme Leader;
- 5) Possible plans for an Internship are approved by the Internship Coordinator.

The study plan for the second academic year describes:

- 1) The research theme the student will join;
- 2) A choice of the Individual study programme;
- 3) The preliminary title of the MSc Research topic and its overall thrust;
- 4) A time planning for the second academic year.

### ***J.2 Assessment***

The MSc Research focuses on individual research. The research requires that the Master's student carries out the research and reports on progress to the Supervisors according to an agreed schedule for the research and preparation of the Thesis.

The research work is assessed on four occasions:

- 1) The detailed research proposal and presentation. The successful defence of the MSc Research proposal is necessary for continuing with the actual research work and Thesis writing.
- 2) The mid-term presentation. No mark is given. The student receives feedback from the chair of the theme of the research topic (or delegate) and at least one of the Supervisors. In the case of weak performance, the student receives a written warning from the Programme Manager.
- 3) MSc Research exam request: upon approval by the first supervisor, the student requests the MSc Research exam and submits the Thesis.
- 4) MSc Research exam: The assessment of the Thesis and its oral defence.

In addition to these formal assessments, the student receives feedback on the student's performance from the Supervisors throughout the MSc Research.

### ***J.3 Conditions***

- 1) The standard study period for the MSc Research is 30 weeks.
- 2) In case the Thesis is not judged ready to be submitted within a period of 12 months after the date of MSc research proposal approval, the student has to choose a new MSc Research topic and start the MSc Research anew.
- 3) The Thesis, in general 40-60 pages of text (15,000 to 20,000 words, excluding appendices) and presented in the Faculty ITC format for Theses, shall constitute an ordered, logical and critical description of the research and should afford evidence of reasoning power, critical attitude, competence in the scientific discipline (application and/or development of knowledge and skills), and knowledge of relevant literature.

- 4) The Thesis may describe work done in conjunction with the MSc Supervisor or any other person, but the extent of the student's personal contribution must be certified by the MSc Supervisor concerned.
- 5) With the explicit approval of the MSc Supervisor, a student may be permitted to incorporate in the Thesis a limited amount of unpublished work undertaken by the student prior to the start of the research. A student may not incorporate in the Thesis material which has been submitted for achieving the award of a degree from any other educational institution, unless a formal agreement has been established with a partner university as part of a Joint Education Programme leading to a double degree.
- 6) The source of any photograph, map, or other illustration shall be indicated, as shall the source, published or unpublished, of any material not resulting from the student's own work. If material from other work is incorporated verbatim, without proper acknowledgement of the source (plagiarism), the Examination Board is informed and decides on proper action.

#### ***J.4 Supervision***

- 1) Two MSc Supervisors are appointed when the student is admitted to the MSc Research.
- 2) The MSc Supervisors (first and second) are recommended by the MSc Research Coordinator in consultation with the Research Theme Leader and the Master student.
- 3) PhD researchers may be involved in the supervision as adviser and support the work of the MSc Supervisors. MSc Supervisors and advisers are appointed by the management team of the concerned scientific department.
- 4) The two MSc Supervisors and, if applicable, the adviser shall divide the supervision tasks and make a supervision plan and meeting schedule together with the student.
- 5) MSc Supervisor(s) shall:
  - Guide the Master's student in the formulation of a detailed MSc Research proposal.
  - Plan an initial meeting with the student in which they discuss their preferred style of supervision and make clear what they can expect from each other during the MSc Research.
  - Provide general advice and guidance on the execution of the MSc Research.
  - Provide feedback on draft written work, normally within 10 days of receipt.
  - Where appropriate, forward any comments on the performance of the student to the MSc Research Coordinator when the progress of a student gives cause for concern so that action can be taken.
- 6) If a student does not receive the supervision as described in these regulations, the student should seek action from the Programme Manager.

#### ***J.5 Extension of the MSc Research period***

- 1) In special cases, extension of the MSc Research beyond the maximum period (Article J.3.1) without having to start a new Thesis, can be requested with the Examination Board. The procedure for such requests is described in the Rules and Regulations of the Examination Board.
- 2) Extension of the MSc Research period can be given when:
  - a. The main cause of delay has been beyond the control of the student;
  - b. The extension could lead to an acceptable Thesis in the opinion of the supervisors;
  - c. The student is registered at the University during the extension;
  - d. The request is made before the Thesis is submitted.
- 3) The maximum extension of the MSc Research period is three months.

### K. JOINT EDUCATION PROGRAMMES

The following Joint Education Programmes are being offered in cooperation with partner universities and institutes within the Master's programme:

JEP-partner	Location	Programme title	Specialisation offered
Chang 'An University (CAU)	Xi'an, China	Geo-information Science and Earth Observation	All
Capital Normal University (CNU)	Beijing, China	Geo-information Science and Earth Observation for Water Resources and Environmental Management	All
Beijing Normal University (BNU)	Beijing, China	Geo-information Science and Earth Observation for Natural Resource Management	NRM
Kwame Nkrumah University (KNUST)	Kumasi, Ghana	GIS for Natural Resource Management	NRM
Indian Institute for Remote Sensing (IIRS)	Dehradun, India	Geo-information Science and Earth Observation for Geoinformatics	GFM
Gadjah Mada University (UGM)	Yogyakarta, Indonesia	Spatial Planning and Risk Management	NHR
Technical University Bandung (ITB)	Bandung, Indonesia	Development Planning and Infrastructure Development	UPM
Erasmus Mundus Consortium	Sweden, Poland, UK, Iceland	Geo-information Science and Earth Observation for Environmental Modelling and Management	NRM
Lund University, (iGEON)	Lund, Sweden	Geo-information Science and Earth Observation for Environmental Modelling and Natural Resource Management	NRM
Khajeh Nasir Toosi University of Technology (KNTU)	Tehran, Iran	Geo-information Science and Earth Observation for Geoinformatics	GFM

GFM: Geoinformatics

NRM: Natural Resources Management

NHR: Natural Hazards and Disaster Risk Reduction

UPM: Urban Planning and Management

WREM: Water Resources and Environmental Management



## APPENDIX 2: REGULATIONS PERTAINING TO THE MASTER'S PROGRAMME SPATIAL ENGINEERING

### A. ADMISSION

To be able to meet the learning outcomes of the Master's programme Spatial Engineering it is necessary that incoming students have a Bachelor's degree from a research university and knowledge at Bachelor level with courses that (directly) relate to at least 3 of the following topics:

- Water, weather and climate (hydrology, meteorology)
- Earth sciences (geo-engineering, geology, earth surface processes)
- Civil engineering (infrastructure, building, hydraulics, hard interventions)
- Spatial planning and governance (urban and or rural environments)
- Spatial data analysis and visualization (GIS, Remote Sensing)
- Software engineering

Students with a Bachelor's degree from a Dutch research university in the following fields are possibly directly admissible: Civil Engineering, Geo Engineering, Geographical Science, Earth Science Water, Agriculture sciences and Geographical Information Systems. All applications are judged on the basis of an individual CV and motivation letter.

As all education at the Faculty ITC is given in English, proficiency in the English language is a prerequisite. The requirements for the English language tests can also be found at the UT website (<https://www.itc.nl/education/application-financial-support/admission-requirements/>).

### B. STUDY LOAD

The Master's programme Spatial Engineering has a total study load of 120 EC.

### C. PROGRAMME FORMAT

The programme format is fulltime.

### D. SPECIALISATIONS

Students in the Master's programme can design their own study path through the choice options in the programme as described in section F.

### E. PROGRAMME LEARNING OUTCOMES

A Graduate of Spatial Engineering		
1.	Is an expert in integrated knowledge development.	The graduate has a sufficient knowledge of the theory and principles of technical engineering and environmental processes, spatial information science and spatial planning and governance related to policy goals of resilience, sustainability and legitimacy. The graduate is capable of creating added value by combining the disciplines in analysis. The graduate can independently identify his/her knowledge gaps and can revise and extend his/her own knowledge through study.

<b>A Graduate of Spatial Engineering</b>		
2.	Does research in a purposeful and methodological way.	The graduate can independently develop new knowledge in a purposeful and methodical way while dealing with 'wicked' societal problems and take into account the system boundaries. He/she can contribute to scientific knowledge in the Spatial Engineering knowledge base by collecting, processing, analysing and visualising data to produce and validate information in a logical way. The graduate can assess research on its scientific value taking into account scientific quality issues.
3.	Can design interventions for sustainable development.	The graduate can design interventions and scenarios that balance possible solutions between technical possibilities and genuine interests of the parties involved. He/she can adapt and steer the design process taking into account changing external requirements and new information, involving stakeholders in various stages in this process. The graduate can evaluate and justify design decisions, in a systematic and reproducible manner.
4.	Has an academic approach to the development, justified use and validation of theories and models.	The graduate can compare, justify choices and identify possible improvements in state-of-the-art knowledge, theories and methods. He/she can use, develop and validate models; consciously choosing between different modelling techniques for spatiotemporal processes, while accounting for socio-environmental drivers. The graduate can evaluate the impact of scientific and quality issues on the suitability of interventions. He/she can document, reproduce and publish the results of research and design according to scientific standards.
5.	Is competent in reasoning, reflection, and judgment.	The graduate can reflect on his/her own arguments and decisions and adjust these on the basis of this reflection. The graduate can operationalise theoretical concepts and develop research questions. The graduate can analyse the completeness, uncertainty and lineage of data.
6.	Is competent in cooperation and communication.	The graduate can function in different disciplinary contexts; communicate on different levels and has awareness of different perspectives from different scientific backgrounds. He/she can engage effectively in productive teamwork in a variety of roles in diverse teams, applying project management methods. The graduate can convey information and ideas effectively using written, oral, visual and graphical tools. The graduate can present the results of scientific work, including the underlying knowledge, choices and considerations, to peers and to different audiences.
7.	Can work internationally as a global citizen and as an empathic engineer.	The graduate can evaluate the impact and sustainability of an intervention and/or design in various governance contexts. The graduate has professional skills and awareness of ethical values needed to work in international and multicultural teams and environments and as an empathic engineer who aspires to social justice.

## F. REQUIRED SEQUENCE OF EXAMS

The required sequence of exams is determined by the entrance requirements defined for the study units as described in the study guide:

- The Case study projects build upon each other and have to be studied and assessed in the scheduled order;
- The MSc Research can only be entered when the student has successfully concluded the first academic year of the study programme;
- The student can only start the Internship when the MSc Research Thesis has been judged ready to be submitted by the Research Theme Leader and the first Supervisor.

## G. PROGRAMME STRUCTURE

### **Academic year 1**

The first academic year of the Master's programme Spatial Engineering consists of 3 case study projects and one quartile with elective courses:

Case study project 1 (15 EC)	Quartile 1
Case study project 2 (15 EC)	Quartile 2
Case study project 3 (15 EC)	Quartile 3
Electives (15 EC)	Quartile 4

The details of academic year 1 can be found in the study guide of the Master's programme Spatial Engineering.

### **Academic year 2**

The content of the second academic year consists of an International Module which includes a field trip, the Academic and Research phase and an Internship project:

International Module (7.5 EC)	Quartile 5
Academic and Research phase (37.5 EC)	Quartile 6
	Quartile 7
Internship project (15 EC)	Quartile 8

The details of academic year 2 can be found in the study guide of the Master's programme Spatial Engineering.

## H. COHERENCE AND DIDACTIC CONCEPT

### ***Project Led Education***

The first academic year programme is a common programme with some room for choice topics. Students experience the main characteristics and skills of Project Led Education (PLE) in the open-ended team-based case studies which embrace both technology and the societal contexts. Students learn to work with each other under time pressure to define the end-point of their projects, define what information is required, how to construct an effective and coherent argument, and how to defend the collective result. Moreover, students will master a solid basis of the fundamentals of engineering and social science and the mutual relationships between them.

### ***Integrated approach***

Wicked problems require a multi- and transdisciplinary approach. Therefore the programme provides an integrated way of experiencing, observing, conceptualizing and experimenting with the various topics and workflow elements involved. The curriculum focusses on skills that allow one to operate between disciplines and conduct research in areas that do not fully belong to any particular discipline (inter-disciplinary), and further to skills that connect to particular stakeholders and user groups creating ways for co-learning and co-management in projects that are addressed (trans-disciplinary).

### ***International classroom***

The classroom of Spatial Engineering will contain a heterogeneous group of students with different cultural and academic backgrounds. Also the teaching faculty member stem from different cultures and professional backgrounds. This is in itself a very powerful learning environment where informal contacts amongst students and with faculty members will lead to creating awareness for cultural differences and the development of intercultural communication skills. However, the programme wants to go further than that. The power of this learning environment will be explicitly exploited to work on internationalization learning outcomes (see section E, Programme learning outcomes 6 and 8).

### ***Student-centred learning and Personal Development Portfolio***

The students control the learning process and choose the subjects related to the Spatial Engineering knowledge base. They take the lead in the learning process by developing their own plan for personal development within the Master's programme framework and guidelines. A Mentor provides the academic guidance for each student during the first academic year. The personal learning trajectory and results are kept by the student in a digital Personal Development Portfolio (PDP). The PDP contains the choices the student makes on study units to follow, specific knowledge gained in study units and project execution, development on skill learning lines, and reflection on project participation and process. The content of the PDP is, amongst others, used as a basis for the oral test in the case study projects (see Section I). Without a complete PDP that is approved by the Mentor the student cannot participate in the oral test of the Case study project (see Section I.1).

### ***Lifelong learning***

Every person should have lifelong learning opportunities to acquire the knowledge and skills they need to fulfil their aspirations and contribute to their societies. The programme actively connects the learning environment to the scientific developments and the practical applications in the professional field. An Internship allows for the development of skills for work place learning.

## I. CONTENT OF PRACTICAL EXERCISES AND THEIR TESTS AND EXAMS

### ***I.1 Case study projects***

The study unit is the whole project, with a study load of 15 EC. The exam consists of 4 tests: two group based tests and two individual tests. The balance between group-based and individual work is 40%-60%.

The four tests are as follows:

- 1) Group based: *Mid-term group assessment* (15%) of the group's take on the wicked problem.

- 2) Individual: *Mid-term Core knowledge written test (20%)* on theory as learned during the choice topics.
- 3) Group based: *Final report and group presentation (25%)*.
- 4) Individual: *Final Oral test (40%)* of 45 minutes duration constituted of:
  - a. a pitch on what the student sees as the important elements of the project followed by
  - b. a set of questions covering the following aspects (each being weighted equally):
    - i. project choice topics followed (key knowledge areas) and application of theory from these topics
    - ii. overall project work
    - iii. own component project.
    - iv. skills learning lines

A second test opportunity for individual students for all tests is possible by re-taking the written test, upgrading the report or repeating the oral test

### ***J.2 Internship project***

The internship project in the second academic year of study aims to give evidence that the student has gained an MSc level work experience. The internship project can have either a professional or a scientific/ research focus.

Students are only allowed to start their Internship project after they have had approval to submit their MSc Research Thesis for the MSc Research exam (see section J).

An internship proposal needs to be approved by the Examiner before the actual internship can start. The internship is assessed through the internship report by the Examiner.

## **J. ACADEMIC AND RESEARCH PHASE**

### ***J.1 Admission***

At least all but 10 EC worth of the study units of quartiles 1-5 must have been successfully completed and no mark below 5 is allowed.

### ***J.2 Assessment***

The Academic and Research phase focuses on individual research. The research requires that the Master's student carries out the research and reports on progress to the Supervisors according to an agreed schedule for the research and preparation of the Thesis.

The research work and Thesis will be officially reviewed and/or assessed on four occasions:

- 1) The MSc Research proposal defence. A successful defence is necessary for continuing with the research work and Thesis.
- 2) The mid-term presentation. No mark is given. The student receives feedback from the Research Theme Leader (or delegate) and at least one of the Supervisors. In the case of weak performance, the student will receive a written warning from the Programme Manager.
- 3) Academic and Research phase exam request:: Upon the approval of the completed MSc Research by the first supervisor the student requests the Academic and Research phase exam and submits his/her Thesis.
- 4) The MSc Research exam: assessment of the Thesis and its oral defence.

In addition to these formal assessments, the student will receive feedback on the student's performance from the Supervisors throughout the Academic and Research phase.

### ***J.3 Conditions***

- 1) The standard study period of the Academic and Research phase is 7.5 months.

- 2) In case the Thesis is not judged ready to be submitted (see Section J.1) within a period of 12 months after the start of the Academic and Research phase, the student has to choose a new MSc Research topic and start the Academic and Research phase anew.
- 3) The Thesis, in general 40-60 pages of text (15,000 to 20,000 words, excluding appendices) and presented in the Faculty ITC format for Theses shall constitute an ordered, logical and critical description of the research and should afford evidence of reasoning power, critical attitude, competence in the scientific discipline (application and/or development of knowledge and skills), and knowledge of relevant literature.
- 4) The Thesis may describe work done in conjunction with a Supervisor or any other person, but the extent of the student's personal contribution must be certified by the Supervisor concerned.
- 5) With the explicit approval of the Supervisor, a student may be permitted to incorporate in the Thesis a limited amount of unpublished work undertaken by the student prior to the start of the research. A student may not incorporate in the Thesis material which has been submitted for achieving the award of a degree from another educational institution, unless a formal agreement has been established with a partner university as part of a Joint Education Programme leading to a double degree.
- 6) The source of any photograph, map, or other illustration shall be indicated, as shall the source, published or unpublished, of any material not resulting from the student's own work. If material from other work is incorporated verbatim, without proper acknowledgement of the source (plagiarism), the Examination Board will be informed and decide on proper action.

#### **J.4 Supervision**

- 1) The student takes the lead in the planning and organisation of the Academic and Research phase. The student:
  - a. Defines an own MSc Research topic;
  - b. Ensures that the first Supervisor of MSc Research is an Faculty ITC faculty member active in one of the Faculty ITC research themes;
  - c. Submits a topic at the beginning of Quartile 1 of the second academic year, as part of the entrance requirement for the International module;
  - d. Is not be held responsible for a research theme project result, and the research theme project result cannot take precedence over the MSc Research;
  - e. Cannot choose a research topic that cannot be supervised by faculty members of the Faculty ITC;
  - f. Chooses a research objective that is a multidisciplinary; research questions must include 2 out of the 3 core disciplines of Spatial Engineering.
- 2) The Supervisor(s):
  - a. Guide the Master's student in the formulation of a detailed MSc Research proposal;
  - b. Plan an initial meeting with the student in which they discuss their preferred style of supervision and make clear what they can expect from each other during the Academic and Research phase.;
  - c. Provide general advice and guidance on the execution of the MSc Research;
  - d. Provide feedback on draft written work, normally within 10 days of receipt;
  - e. Will where appropriate, forward any comments on the performance of the student to the Programme Manager;
  - f. Inform the Programme Manager when the progress of a student gives cause for concern so that action can be taken.
- 3) If a student does not receive the supervision as described in these regulations, the student should seek action from the Programme Manager

***J.5 Extension of the Academic and Research phase***

- 1) In special cases, extension of the Academic and Research phase beyond the maximum period for this (Article J.3.1) ) without having to start on a new Thesis can be requested with the Examination Board. The procedure for requests is described in the Rules and Regulations of the Examination Board.
- 2) Extensions of the Academic and Research phase can be given when:
  - a. The main cause of delay has been beyond the control of the student;
  - b. The extension could lead to an acceptable Thesis in the opinion of the supervisors;
  - c. The student is registered at the University during the extension;
  - d. The request is made before the Thesis is submitted.
- 3) The maximum duration of extension to the Academic and Research phase is three months.



## **APPENDIX 3: REGULATIONS PERTAINING TO THE POSTGRADUATE DIPLOMA COURSE**

### **A. ADMISSION**

Admission to the PGD course is conform the admission rules of the Master's programme.

Students in the PGD course who wish to take the whole Master's programme have to re-apply for the (second part of the) Master's programme.

### **B. STUDY LOAD**

The duration of the PGD course is ten months fulltime. The total study load of the PGD course is 60 EC.

### **C. PROGRAMME FORMAT**

The Faculty ITC offers the PGD course in different modes of learning:

- 1) In full time face to face mode at the Faculty ITC
- 2) In full time face to face mode at the Faculty ITC and at a partner institute (Joint Education Programme)
- 3) In fulltime and part-time distance mode
- 4) A mix of modes 1 to 3

### **D. SPECIALISATIONS**

The following specialisations are available:

- Geoinformatics;
- Land Administration;;
- Urban Planning and Management;
- Water Resources and Environmental Management.

### **E. COURSE LEARNING OUTCOMES**

At successful completion of the PGD course, the student is able to:

- 1) Analyse problems encountered in professional practice and develop appropriate methods for studying and/or solving these problems.
- 2) Apply appropriate methods for collecting, acquiring and verifying spatial data.
- 3) Use geo-information science and earth observation to generate, integrate, analyse and display spatial data.
- 4) Evaluate and apply relevant and appropriate methods and models for data analysis and problem solving.
- 5) Apply practical skills to carry out an independent Final Assignment.
- 6) Communicate and present results of the Final Assignment.

### **F. REQUIRED SEQUENCE OF EXAMS**

The sequence of courses is fixed. The rules for deviations are described in Article 3.6-2 of the Common Elements of the EER.

### G. CONTENT AND EXAMS

PGD course students study Quartile 1 to 4 of the academic oriented Master's programme and round of with a Final Assignment (project).

Quartile 1	Quartile 2		Quartile 3	Quartile 4
Core courses (14 EC)	Specialisation course (7 EC)	Specialisation course (7 EC)	Common course (7 EC)	Specialisation course (7 EC)
			Specialisation course (7 EC)	Final Assignment (7 EC)
Academic skills (4 EC)				

### H. COHERENCE AND DIDACTIC CONCEPT

The academic profile of the PGD course puts strong emphasis on the scientific discipline, a scientific approach, basic intellectual skills, co-operation and communication and the temporal and social context of research. In their profession, the graduates have to be able to apply knowledge and skills independently. The PGD course is therefore focused at handing over the control of the learning process to the student. At the beginning of the course, the teacher has the main control and the course contains some choices, especially concerning preparation for the Final Assignment. During the course the teacher role develops towards the role of adviser. The student takes the lead in the own learning process by developing a learning plan within the PGD course framework and guidelines. The Mentor provides guidance in this development.

### I. CONTENT OF PRACTICAL EXERCISES

The programme contains a large amount of practical exercises which are marked. Please look at the Faculty ITC study guides for details of these practical exercises at study unit level (<https://www.itc.nl/education/studying-at-itc/study-details/studyguides/>).

### J. FINAL ASSIGNMENT

The Final Assignment focuses on the application of knowledge, methods and techniques in the subject of the specialisation to the task performed or to the topic investigated. Depending on the specialisation, the Final Assignment is be done individually or in small groups.

- 1) At the start of the Final Assignment, students receive terms of reference from supervising and coordinating staff.
- 2) Subsequently, students have to plan and carry out the Final Assignment according to the terms of reference.
- 3) Part of the output of the Final Assignment is a final report and a documented database.
- 4) The output of the Final Assignment is be presented and discussed in public.

#### J.1 Conditions

- 1) A student not completing the Final Assignment within the specified time is considered to have failed. Only in exceptional cases and for reasons beyond the control of the student (at the discretion of the Programme Manager), the student may apply in writing for a new opportunity to meet the above requirements.
- 2) A student or group may not incorporate material in the Final Assignment result that has been submitted for achieving certification from any other educational institution, unless a formal agreement has been established with a partner university as part of a Joint Education Programme leading to a double certificate.
- 3) The source of any photograph, map, or other illustration shall be indicated, as shall the source, published or unpublished, of any material not resulting from the student/group's own work.

If material from other work is incorporated verbatim, without proper acknowledgement of the source (plagiarism), the Examination Board is to be informed and decides on proper action.

### ***J.2 Supervision***

The Study unit coordinator of the Final Assignment sets up a scheme indicating which staff is available for consultation and supervision throughout the Final Assignment. The supervising staff has to be appointed by the management team of their department.

The supervising staff shall:

- 1) Provide the student/group with clear terms of reference.
- 2) Establish a schedule of supervisory meetings with the student/group.
- 3) Provide general advice and guidance on the execution of the Final Assignment.
- 4) Provide feedback on work, normally within three days of submission.
- 5) Forward, where appropriate, any comments on the performance of the student(s) to the Study unit Coordinator.
- 6) Advise the Study unit Coordinator when the progress of a student gives cause for concern so that action can be taken in accordance with these regulations.

If a student/group considers that the student/group is not receiving the quality of supervision required in the regulations, the student/group should seek action from the Study unit Coordinator.

### ***J.3 Extension of the Final Assignment period***

- 1) In exceptional cases extension may be given for the Final Assignment work, but only before the Final Assignment assessment and only when:
  - a. Financing for the extension is available, and
  - b. The main cause of the unsatisfactory level of the Final Assignment has been beyond the control of the student/group, at the discretion of the Programme Manager.
- 2) The student takes the initiative and applies in writing for extension. If the Programme Manager is of the opinion that condition b of point 1 is met the Programme Manager forwards the request to the Programme Director for decision.
- 3) Extensions have a maximum duration of 2.5 weeks.

## **K. JOINT EDUCATION PROGRAMME**

The Faculty ITC offers one PGD course in cooperation with a partner organisation. The PGD course in Geo-information Science and Earth Observation with a specialisation in Geoinformatics is offered in cooperation with the Indian Institute of Remote Sensing in Dehradun, India.