TEACHING AND EXAMINATION REGULATIONS (TER)

(see Article 7.13 of the Higher Education and Research Act)

Including the Implementation Regulation (IR)

2015-2016

MASTER'S DEGREE PROGRAMMES

Engineering and Policy Analysis (EPA)

Management of Technology (MoT)

Systems Engineering, Policy Analysis and Management (SEPAM)

DELFT UNIVERSITY OF TECHNOLOGY Faculty of Technology, Policy and Management

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Section 1 - General

Article 1 - Areas to which the regulations apply

- These regulations apply to the teaching and the examinations related to the Master's degree programme in Engineering and Policy Analysis (EPA), Management of Technology (MoT) and Systems Engineering, Policy Analysis and Management (SEPAM) hereafter to be referred to as the programmes.
- 2. The teaching and organisation of the programme is the responsibility of the Faculty of Technology, Policy and Management (TPM) at Delft University of Technology, hereafter to be referred to as the faculty.
- 3. The programme is governed by Implementation Regulations which constitute part of these Teaching and Examination Regulations.

Article 2 - Definitions of terms used

The terms used in these regulations should be interpreted as meaning the same as in the Higher Education and Scientific Research Act, insofar as they are defined in that Act.

The following terms are to be defined thus:

a. the Act: Higher Education and Scientific Research Act (in Dutch, the WHW), in the Dutch

Bulletin of Acts, Orders and Decrees, number 593 and as amended since;

b. the programme: the Master's degree programme as denoted in Article 7.3a paragraph 1, subparagraph

b of the Act;

c. student: anyone enrolled at Delft University of Technology as a student or extraneous student

for the purpose of benefiting from education and/or for the purpose of sitting the examinations and undergoing the degree audit which form part of the programme;

d. cohort: the group of students who have registered for a degree programme for the first time in

a given academic year;

e. teaching period: half a semester;

f. subject: a teaching unit within the programme as intended in Article 7.3, paragraphs 2 and 3 of

the Act; a subject can consist of a number of components;

g. practical: a practical exercise as intended in Article 7.13, paragraph 2, subparagraph d of the

Act, taking one of the following forms:

1. writing a thesis,

2. conducting a project,

3. completing a design or research assignment,

4. conducting a literature review;

5. completing a internship,

6. participating in fieldwork or an excursion,

7. conducting tests and experiments,

8. participating in other educational activities aimed at enabling participants to attain

certain skills;

h. examination: an assessment of the knowledge, insight and skills of a student in relation to

a subject, as well as the marking of that assessment by at least one examiner, appointed for that purpose by the Board of Examiners;

component examination: an assessment of the knowledge, insight and skills of a student in relation to

a component within a subject, as well as the marking of that assessment by at least

one examiner, appointed for that purpose by the Board of Examiners;

j. degree audit: an assessment by which the Board of Examiners, in accordance with Article 7.10 of the

Act, establishes whether all examinations in the various subjects that constitute the

programme have been successfully completed;

k. Board of Examiners: the programme's Board of Examiners, which has been installed in accordance with

Article 7.12 of the Act;

I. examiner: the individual who, in line with Article 7.12, paragraph 3 of the Act, has been

appointed to set the examinations;

m. Implementation

Regulations:

the Implementation Regulations which form part of these Teaching and

Examination Regulations;

n. credit (ECTS): a credit awarded in line with the European Credit Transfer System (ECTS); one credit

denotes a norm study load of 28 hours;

o. working day: Monday to Friday with the exception of recognised national public holidays;

p. study guide: a digital guide to the programme containing specific information pertaining to the

various subjects;

q. institute: Delft University of Technology;

r. Blackboard: the electronic system designed for the exchanging of teaching information;

s. Osiris the electronic education register system;

t. disability: all conditions which are (at least for the specified period) chronic or lasting in nature

and which form a structural limitation for the student in receiving education and/or

sitting examinations or taking part in practicals;

u. dean: The dean of the faculty Technology Policy and Management;

v. lecturer: lecturers who are teaching in the programmes;

w. Programmme director: director of one the programmes;

x. Examination Appeals Board: the board a student can lodge an administrative appeal;

y. Evasys: the evaluation system used by the Faculty TPM;

Article 3a - Objective of the Master programme in EPA

The programme aims to educate students to become a Master of Science in Engineering and Policy Analysis, whereby the final attainment levels described in Article 4 must be achieved.

The Master's programme in Engineering and Policy Analysis intends to educate students as policy analysts for a range of technology sectors, with the ultimate objective to improve the quality of policy-making. The programme focuses on decision making processes regarding large scale systems, in particular infrastructures for transport, telecommunication, energy, water, waste, industrial production and innovation systems. The programme has been designed to transfer multidisciplinary knowledge and practical skills in the areas of problem structuring, systems analysis, policy analysis, modeling and design, decision support, socio-economics and (intercultural) management to candidates with a Bachelor's degree in a relevant technical or engineering discipline.

Article 3b - Objective of the Master programme in MoT

The Master programme in Management of Technology (MOT) educates students with a bachelor degree in engineering as technology managers, innovation managers, and analysts of technological markets. MOT graduates work either as scientists or consultants but also as entrepreneurs in technology-based, internationally-oriented competitive business environments.

The ultimate objective of the programme is to improve the quality of technology and innovation management in the different engineering mono-disciplines in practice through the development of responsible decision makers, professionals and leaders. Students contribute to scientific work in the area of MOT and have the opportunity to apply their knowledge and skills in complex real-world settings, such as advanced technology organizations, laboratories, and high-tech business ventures.

The programme deliberately aims at an international and diverse group of students. Students of MOT are all rooted in at least one of the engineering mono-disciplines as offered at universities of technology or schools of engineering. MOT students work together in order to combine scientific insights from the different engineering disciplines and to apply the diverse aspects of technology and innovation management. The programme focuses on the following core themes: (1) technology, innovation and organization, (2) technology, innovation and commercialization, (3) technology, innovation and engineering economics, (4) research and reflection. In a separate course students learn how to integrate the different themes of the programme.

Article 3c - Objective of the Master programme in SEPAM

The Master's programme in Systems Engineering, Policy Analysis and Management intends to educate students as designers and managers of complex multi-actor technical systems, and of policy and decision making processes regarding such systems, with the ultimate objective to improve the quality of both design and management practice. The programme focuses on designing large-scale technological systems within a multi-actor context, e.g. the design of large-scale and complex systems in the areas of transport (Transport & Logistics), information and communication technology (Information & Communication), industrial production, energy and water management (Energy & Industry) and/or land-use and development (Built Environment & Spatial Development). The programme has been designed to transfer multidisciplinary knowledge and practical skills in the areas of problem structuring, systems analysis and design, policy analysis and design, and decision support to candidates who hold a Bachelor's degree in Systems Engineering, Policy Analysis and Management ('Technische Bestuurskunde') or similar.

Article 4a - Final attainment levels of the Master programme in EPA

A Master's graduate in EPA

1. is competent in one or more scientific disciplines

- Has a thorough mastery of parts of the four basic fields: policy analysis, systems modeling, economics and management extending to the forefront of knowledge (latest theories, methods, techniques).
- Looks actively for structure and connections in the relevant fields and is able to apply these theoretical
 concepts in practice.
- Has the skill and the attitude to apply these methods independently in the context of more advanced ideas or new fields of application.
- Is able to reflect on standard methods and their presuppositions; is able to question these; to propose adjustments and to estimate their implications.

2. is competent in doing research

- Is able to analyse and research data.
- Is able to select and execute adequate modeling techniques.
- Is able to analyse and structure complex problems using analytical modeling techniques.
- Is able to analyse multi-actor perspectives.
- Is able to produce and execute a research plan.
- Is able to work at different levels of abstraction. Given the process stage of the research problem, chooses the appropriate level of abstraction.
- Is able to assess the impacts of a technical solution.
- Is able, and has the attitude, to draw upon other disciplines in his or her own research.
- Is able to deal with uncertainty both in the system under study as in the context of the systems and in the research process or project itself.
- Is able to assess research within the discipline on its scientific value.
- Is able to contribute to the development of scientific knowledge.

3. is competent in design

- Is able to design systems models.
- Is able to design scenarios.
- Is able to design a project plan.
- Is able to design an implementation strategy.

4. has a scientific approach

- Is able to access and assess scientific texts, esp. scientific journal articles,
- Is able to identify and take in relevant developments.
- Is able to critically examine existing theories, models or interpretations in the area of his or her thesis research subject.
- Is able to apply and adapt existing theories and models in the own thesis research project.
- Is able to document adequately the results of research and design with a view to contributing to the development of knowledge in the field and beyond, and is able to publish these results.
- Is able to write in a scientific manner.

5. possesses basic intellectual skills to reflect and decide

- Is able to critically reflect on his or her own thinking, decision making, and acting and to adjust these on the basis of this reflection.
- Is able to reason logically and structure complexity.
- Is able to ask adequate questions, and has a critical yet constructive attitude towards analyzing and solving real life problems in the field.
- Is able to form a well-reasoned decision (and adopt effective strategies) in the case of incomplete data.
- Is able to take a standpoint with regard to a scientific argument in the field, and is able to assess this critically as to its value.

6. is competent in co-operating and communicating in an intercultural and multi-disciplinary environment

- Is able to communicate in writing in English about research and solutions to problems with colleagues, non-colleagues and other involved parties.
- Is able to communicate verbally in English about research and solutions to problems with colleagues, non-colleagues and other involved parties.
- Is able to debate about both the field and the place of the field in society.
- Is able to perform project-based work.
- Is able to work effectively in an interdisciplinary and intercultural team, and is able to assume the role of team leader.

7. takes account of the temporal, market and the social context

- Understands relevant developments in the history of the fields. This includes the interaction between the
 internal developments (of ideas) and the external (social) developments, and integrates this in scientific
 work
- Is able to analyse and to discuss the social consequences (economical, social, cultural) of new developments in relevant fields and integrates these consequences in scientific work.
- Is able to analyse the consequences of scientific thinking and acting on the environment and sustainable development.
- Is fully aware and engaged in discussions on sustainability, sustainable development and climate change.
- Is able to analyse and to discuss the ethical and the normative aspects of the consequences and assumptions of scientific thinking and acting and integrates these ethical and normative aspects in work.

Article 4b - Final attainment levels of the Master programme in MoT

A Master's graduate in MoT

1. is competent in one or more scientific disciplines, in particular the management sciences, and is able to adapt and apply the concepts of these sciences in a high-tech engineering environment.

- Has a thorough mastery of parts of the relevant fields (as named in article 3) extending to the forefront of knowledge (latest theories, methods, techniques and topical questions).
- Looks actively for structure and connections in the relevant fields, and the connections between subfields.
- Has knowledge and skills in the way in which....
 - truth-finding and the development of theories and models
 - o interpretations (texts, data, problems, results)
 - o experiments, gathering of data and simulations
 - decision-making
 - ... take place in the relevant fields.
- Is able to reflect on standard methods and their presuppositions; is able to question these; to propose adjustments and to estimate their implications.
- Is able to spot gaps in his/her own knowledge, and to revise and extend it through study.

2. is competent in doing research

- Is able to reformulate ill-structured research problems. Takes account of the system boundaries in this. Is able to defend the new interpretation against involved parties.
- Is observant, and has the creativity and capacity to discover in apparently trivial matters certain connections and viewpoints and put these into practice for new applications.
- Is able to produce and execute a research plan.
- Is able to work at different levels of abstraction. Given the process stage of the research problem, chooses the appropriate level of abstraction.
- Is able, and has the willingness to draw upon other disciplines in his or her own research.
- Is flexible in dealing with changes in the research process.
- Is able to assess research within the discipline on its scientific value.
- Is able to contribute to the development of scientific knowledge.

3. has a scientific approach

- Is able to identify and take in relevant scientific developments.
- Is able to critically examine existing theories, models or interpretations in the area of his or her graduation subject.
- Has skills in, and affinity with the use, development and validation of models; is able consciously to choose between modelling techniques.
- Has insight into the nature of and differences between management and technical sciences and is able to distinguish and combine scientific fields.
- Is able to document adequately the results of research and thereby contribute to the development of the knowledge in the field, and is able to publish these results.

4. possesses basic intellectual skills to reflect and decide

- Is able to critically reflect on his or her own thinking, decision making, and acting and to adjust these on the basis of this reflection
- Is able to reason logically within the field and beyond; both 'why' and 'what-if'-reasoning.
- Is able to recognize modes of reasoning (induction, deduction, analogy etc.) within the field. And is able to apply these modes.

- Is able to ask adequate questions, and has a critical yet constructive attitude towards analyzing and solving real life problems in the field.
- Is able to form a well-reasoned decision (and adopt effective strategies) in the case of incomplete or irrelevant data.
- Is able to take a standpoint with regard to a scientific argument in the field, and is able to assess this critically as to its value.
- Possesses numerical skills, and has an understanding of orders of magnitude.

5. is competent in co-operating and communicating in an intercultural and multi-disciplinary environment

- Is able to communicate in writing in English about research and solutions to problems with colleagues, non-colleagues and other involved parties.
- Is able to communicate verbally in English about research and solutions to problems with colleagues, non-colleagues and other involved parties.
- Is able to debate about both the field and the place of the field in society.
- Is characterized by professional behavior. This includes: drive, reliability, commitment, accuracy, perseverance and independence.
- Is able to perform project-based work: is pragmatic.
- and has a sense of responsibility; is able to deal with risks; is able to compromise.
- Is able to work within an interdisciplinary and intercultural team.
- Is able to assume the role of team leader.

6. takes account of the temporal, market and the social context

- Understands relevant developments in the history of the fields. This includes the interaction between the
 internal developments (of ideas) and the external (social) developments, and integrates this in scientific
 work.
- Is able to analyse and to discuss the social consequences (economical, social, cultural) of new developments in relevant fields and integrates these consequences in scientific work.
- Is able to analyse the consequences of scientific thinking and acting on the environment and sustainable development and integrates these consequences in work.
- Is able to analyse and to discuss the ethical and the normative aspects of the consequences and assumptions of scientific thinking and acting and integrates these ethical and normative aspects in work.

Article 4c - Final attainment levels of the Master programme in SEPAM

A Master's graduate in SEPAM

1. is competent in one or more scientific disciplines

- Has a thorough mastery of the multidisciplinary field of analysis, design and management of multi-actor systems extending to the forefront of knowledge and practical skills.
- Is capable of applying this knowledge to multi-actor engineering and management problems in at least one of the following technological domains: Transport & Logistics, Energy & Industry, Information & Communication (including Information Architecture) or Built Environment & Spatial Development.
- Has knowledge in the field of institutional economics, ethics, law, and policy and decision making related to the analysis, design and management of multi-actor systems.
- Looks actively for structure and connections in problem structuring, systems analysis and design, policy modelling and design, and decision support in complex and unpredictable professional environments.
- Has the skill and the attitude to apply essential facts, concepts, principles and theories relevant to the
 analysis, design and management of multi-actor systems independently in the context of more advanced
 ideas or applications.
- Is able to make sound judgements in the absence of complete data.
- Is able to reflect on standard methods and their presuppositions; is able to question these; is able to propose adjustments, and to estimate their implications.

2. is competent in doing research

- Is able to reformulate ill-structured research problems. Also takes account of the system boundaries in this. Is able to defend the new interpretation within a multi-actor context.
- Given the process stage of the research problem, chooses the appropriate level of abstraction.
- Is able, and has the attitude to, where necessary, draw upon other disciplines in his or her own research.
- Is able to assess research related to problem structuring, systems analysis and design, policy modelling and design, and decision support on its scientific value.

3. is competent in designing

- Is able to reformulate ill-structured design problems to synthesise knowledge and to solve problems in a creative way when dealing with complex issues. Also takes account of the system boundaries in this. Is able to defend this new interpretation against the parties involved.
- Given the process stage of the design problem, chooses the appropriate level of abstraction and select appropriate views and models and deal with complex issues both systematically and creatively.
- Is able, and has the attitude, where necessary, to draw upon other disciplines in his or her own design.
- Is able to assume leading roles, including management roles, in (inter)national companies and research organisations, and be able to contribute to design .
- Possess the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments.
- Is able to formulate new research questions on the basis of a design problem.

4. has a scientific approach

- Is able to identify and take in relevant developments.
- Is able to critically examine existing theories, models or interpretations in the field of multi-actor systems design.
- Has great skill in, and affinity with the use, development and validation of models which can contribute designing new solutions; is able consciously to choose between modelling techniques.
- Is able to document adequately the results of research and design processes with a view to contributing
 to the development of knowledge in the field and beyond, and is able to publish these results in a
 scientific way.

5. possesses basic intellectual skills

- Is able to critically reflect on his or her own thinking, decision making and acting, and to adjust these on the basis of this reflection.
- Is able to ask adequate questions, and has a critical yet constructive attitude towards analysing and solving real life problems in the field.
- Is able to form a well-reasoned opinion in the case of incomplete or irrelevant data, taking account of the way in which that data came into being.
- Is able to take a standpoint with regard to a scientific argument in the field, and is able to assess this critically as to its value.

6. is competent in co-operating and communicating

- Is able to communicate in writing in English about research and solutions to problems with colleagues, non-colleagues and other parties involved .
- Is able to communicate verbally in English about research and solutions to problems with colleagues, non-colleagues and other involved parties.
- Is able to debate about both the field and the place of the field in society.
- Is able to perform project-based work in (inter)national settings.
- Is able to work within an interdisciplinary team and in a team with great disciplinary diversity, and is able to assume the role of team leader.

7. takes account of the temporal and the social context

- Understands relevant (internal and external) developments in the history of the fields concerned. This
 includes the interaction between the internal developments (of ideas) and the external (social)
 developments, and integrates aspects of this in scientific work.
- Is able to analyse and to discuss the social consequences (economical, social, cultural) of new developments in relevant fields with colleagues and non-colleagues, and integrates these consequences in scientific work.
- Is able to analyse the consequences of scientific thinking and acting on the environment and sustainable development.
- Is able to analyse and to discuss the ethical and the normative aspects of the consequences and assumptions of scientific thinking and acting with colleagues and non-colleagues (both in research and in designing), and integrates these ethical and normative aspects in scientific work.

Article 5 – Admission to the programme

 All students possessing a certificate proving that they have successfully completed their Bachelor of Science studies in a relevant science or engineering programme and owning a 'Verklaring van toelating tot de Masteropleiding EPA, MoT or SEPAM' (confirmation of admission) provided by the dean of the faculty are eliqible for admission. To obtain a confirmation of admission, a student must satisfy the criteria specified in

- article 16 (for EPA and MoT) and article 17 (for SEPAM) of the Implementation Regulations, see Appendix 2 to these regulations.
- 2. Students who do not possess the degree mentioned in paragraph 1 are required to obtain proof of admission to the programme from the dean, who will seek the advice of the Board of Examiners on this matter.
- 3. In order to obtain proof of admission, the student must meet or, as the case may be, possess:
 - a. the general relevant criteria set by the executive board in the "Policy on fees and enrolment" laid down in Appendix 1 of the Student Charter (central part) and clarified in Part 1.2 " Entrance and admission" of the mentioned Student Charter, a certificate, together with the accompanying list of marks, proving that he/she possesses knowledge of a sufficiently high level and broad scope to successfully complete the programme within the allotted period.
- 4. Students who are in possession of the in the first paragraph mentioned Bachelor's degree and owning a 'Verklaring van toelating tot de Masteropleiding EPA, MoT or SEPAM' (confirmation of admission) or the in the second paragraph mentioned- "proof of admission" can under certain conditions apply for admission to the Honours Track and/or Research Specialisation with the degree programme director. The conditions are mentioned on the TPM-website -> student portal -> Honours Programme.

Article 6 – Completion of bridging programme prior to the degree programme

- A student who is enrolled on a Bachelor's degree programme with the aim of following a bridging programme
 prior to the degree programme must complete this bridging programme within one academic year, or within
 the period of study that has been agreed with the student by the Bachelor's degree programme, extended by
 twelve months.
- 2. In the case that the student fails to complete the bridging programme within the specified period, his enrolment will be cancelled as of the first day of the month following the month in which the student would have had to complete the bridging programme. The exclusion from the bridging programme and from the Bachelor's programme applies to the four academic years subsequent to the academic year in which the enrolment is cancelled.

Article 7 - empty

Not applicable.

Article 8 - Taking the programme on a full-time or part-time basis

This programme is taught only on a full-time basis.

Article 9 - Language

- 1. Classes and examinations take place in English.
- 2. Should a student request permission to complete one or more parts of the examination or the degree audit in a language other than English, this will be subject to the stipulations of the Board of Examiners in this regard, as laid down in the Rules and Guidelines of the Board of Examiners.

Section 2 - Composition of the study programme and the degree audit

Article 10 – Composition of the study programme and the degree audit

1. The composition of the study programme and the relevant transitional regulations are laid down in the Implementation Regulations. Teaching will be provided in the manner described in the study guide.

- 2. The Master's degree audit forms part of the programme. The programme has a total study load of 120 credits. When a student follows two Master's degree programmes at TU Delft at the same time, he must obtain at least 60 extra unique credits besides a complete Master's degree programme of 120 credits.
- 3. It is not permitted for any subject in the study programme to have been part of the Bachelor's degree programme on the basis of which the student was admitted to the programme. If a compulsory subject in the study programme was already completed in the aforementioned Bachelor's degree programme, the Board of Examiners will designate an alternative subject in its place. If an elective subject in the study programme was already completed in the aforementioned Bachelor's degree programme the student will choose an alternative elective subject.

Section 3 – Honours Programme

Article 11- Honours Programme Master

- 1. Students who meet the criteria referred to on the TPM website -> student portal -> Honours Programme will be invited to register for the TU Delft Honours Programme Master for outstanding Master's students.
- 2. Based on the criteria referred to on the TPM website -> student portal -> Honours Programme, students will be selected and admitted to the Honours Programme Master by the director of studies or an Honours coordinator or Honours committee established by the director of studies.
- 3. The Honours Programme Master will comprise 20 credits:
 - a. At least 5 ECTS must be completed in the TU Delft-wide component of the Honours Programme Master, which consists of the following parts:
 - the subject "Critical Reflection on Technology"
 - playing an active role within the Honours Programme Master community.
 - b. A maximum of 15 ECTS may be completed in the faculty component of the Honours Programme Master, the composition of which (including its content and options) will be described on the TPM website -> student portal -> Honours Programme.
- 4. Any student selected for participation in the Honours Programme Master must submit his or her options for the faculty component to the director of studies, the Honours coordinator or Honours committee for approval.
- 5. The Board of Examiners will be responsible for assessing whether all the requirements of the Honours Programme Master have been met.¹
- 6. Any student who has successfully completed the Honours Programme Master will be awarded a certificate signed by the chair of the Board of Examiners and the Rector Magnificus.

Section 4 – Registering and withdrawing

Article 12 - Registering for written examinations

- 1. Registration to take part in a written examination is done by entering the required data into the examination registration system no later than 14 calendar days (that is, <u>not</u> *working days*) before the examination.
- 2. Students may submit a request to register for an examination after the deadline mentioned in subsection 1 has passed but no later than 3 calender days before the examination in question, at the central examination desk. The request will be honoured providing that places are available in the room or rooms where the examination is scheduled to take place. The student will be informed one working day before the examination takes place.

The HPM programme is not part of the Master programme, as it consists of extra-curricular modules only.
 Therefore the Board of Examiners doesn't have to be involved. The director of studies or the Honours coordinator of Honours committee should approve of the programme in advance.

- 3. In the case of circumstances beyond a student's control, whereby the student is unable to register for the examination, the Board of Examiners can still permit the student to participate in the examination.
- 4. The following applies upon entering the examination room:
 - only students with valid proof of identity will be admitted to the examination. The following will be accepted as proof of identity: campus card, passport, identity card or driving license.
 - students will only be admitted to the examination with a valid examination ticket and/or if they are included in the list of participants.
- 5. A student who has not registered for the examination and is therefore not included on the list of participants, may report to the invigilator on the day of the examination from 15 minutes before until the start of the examination. In so far that there are seats available, they will be admitted to the examination room half an hour after the start of the examination in the order they reported to the invigilator. The lack of half an hour examination time cannot be compensated. Students who have thus gained access to the exam will be added to the list of participants. The student takes the exam subject to the reservation that it will be investigated whether he/she is entitled to participate in the examination.
- In case the investigation leads to the conclusion that the student was not entitled to participate in the examination, the examination work is invalid, will not be evaluated and does not lead to a result.
- 7. The student can submit a substantiated request to the Board of Examiners to have examination work that is considered to be invalid to be declared valid and to have it evaluated.
- 8. The Board of Examiners will only agree to the request in exceptional circumstances.

Article 13 - Registering for practicals

- Registration for practicals will take place in the manner and by the deadline indicated in the study guide or on Blackboard for the practical in question.
- 2. In special cases the Board of Examiners may deviate from the period of registration referred to in subsection 1, however only in favor of the student.
- 3. Students who do not register for a practical on time may not participate in that practical. In exceptional circumstances the Board of Examiners may allow the student to participate in the practical.
- 4. If a student participates in a practical for which the student was not properly registered, the Board of Examiners will declare the results of the practical to be invalid.

Article 14 - Withdrawal or absence

- 1. It will be possible to withdraw from an examination via examination registration up to 3 calendar days before the examination takes place.
- 2. Any student who has withdrawn from an examination should re-register on a subsequent occasion, in accordance with the provisions of Article 12.

Section 5 - Examinations

Article 15 - Number, times and frequency of examinations

- 1. There are at least two opportunities per module per academic year for written examinations:
 - The first opportunity is at the end of the teaching period for the subject to which the exam in question relates,
 - The second opportunity is at the end of the teaching period directly following the one in which the course was taught. When the course is being taught in teaching period 4, the second exam will take place during the summer resit period.
 - There is one opportunity per academic year for sitting proficiency tests of practicals and projects.

- 2. A timetable of all the opportunities for sitting written examinations is drawn up every semester and distributed before the start of the semester via the TUDelft website -> Student portal -> Information -> Education -> Timetables.
- 3. If there is no indication as to the number of times a particular examination can be taken in any one academic year because it relates to a subject not taught by the programme itself, the relevant stipulations in the Teaching and Examination Regulations of the other programme will apply. The Board of Examiners reserves the right to make decisions that deviate from the norm regarding this matter.
- 4. Notwithstanding the provisions of paragraph 1, there will be at least one chance in a year to sit examinations relating to subjects mentioned in the study guide but not taught in a given academic year.
- In exceptional cases the Board of Examiners may permit a deviation from the standard dates and number of times that certain examinations can be taken.
- 6. Students have a maximum of two examinations per subject/module per year.

Article 16 – Sequence of examinations

The sequence in which students are required to sit examinations and participate in practicals is laid down in the Implementation Regulations.

Article 17 - Validity of examinations

- 1. The result of an examination is valid for an unlimited period of time. However, in cases where the examination result dates from over four years ago, the Board of Examiners may impose an additional or substitute examination.
- 2. The terms of subsection 1 likewise apply to component examinations, unless the validity of the component examination is linked to a period of time in the study guide.

Article 18 – The form of examination and method of assessment

- 1. Examinations are set as described in the study guide.
- 2. The Board of Examiners may deviate from the provisions of paragraphs 1, in favour of the student.

Article 19 - Oral examinations

- 1. Only one student at a time will sit an oral examination, unless the examiner(s) in question specifies (specify) otherwise.
- 2. Oral examinations will be held in public, unless determined otherwise by the Board of Examiners in a special case or unless the student has formally objected to the public nature of the examination.
- 3. Prior to an oral examination, the examiner must ask the student to provide proof of identity.

Article 20 – Determining and announcing the results

- 1. The examiner is required to determine the result of an oral examination as soon as it is finished and to supply the student with a written statement of the result. The determination of the date of the exam is the date of the oral examination itself.
- 2. In the case of written examinations, the examiner is required to determine the result as soon as possible after the examination but within 15 working days at most. The examiner forwards the necessary details to the student administration. Taking due account of the student's right to privacy, the student administration then ensures that the results are registered and communicated within 20 working days of the examination date. If the examiner is not able to meet these requirements due to exceptional circumstances, he or she must inform the Board of Examiners, stating the reasons for the delay. The examiner will also ensure that

the students are informed of the delay as soon as possible. The determination of the date of the written exam is the date of the exam itself.

- 3. Regarding any examinations that are not taken orally or in writing, the Board of Examiners will determine beforehand precisely how and within what period of time the student will be notified of the results. The determination of dates of exams like papers, reports, reviews etc, is the date of the delivery of the definitive version.
- 4. When receiving the result of an examination, the student will be made aware of his or her right to inspect the results as referred to in Article 21, as well as the opportunity to lodge an appeal with the Examination Appeals Board.

Article 21 – The right to inspect the results

- 1. For a period of at least 20 working days after notification of the results of any written examination, the student has the right to inspect his or her marked work, on request. If a student intends to lodge an appeal regarding the marking of his or her work, he or she will be supplied with a copy of the marked answers.
- 2. During the period referred to in paragraph 1, all students who sat the examination may acquaint themselves with the questions and assignments set in the examination, as well as with the criteria used for marking.
- 3. The Board of Examiners may determine that the right to inspection or perusal referred to in paragraphs 1 and 2 will take place at a location specified beforehand and at no less than two specific times, also decided on beforehand. If the student can prove that he/she is or was unable to be present at the location at the set time due to circumstances beyond his or her control, then another opportunity will be provided, if possible within the period stated in paragraph 1. The location and times mentioned in the first sentence will be announced well in advance.

Article 22 - Discussing the examination results

- 1. As soon as possible after the results of an oral examination have been announced, an opportunity can be arranged for the examiner to discuss the results with the student, either at the student's request or at the instigation of the examiner. At this meeting, the reasons behind the marks awarded will be explained.
- 2. For a period of 20 working days after the results have been announced, students who have taken a written examination may submit a request to discuss the results with the relevant examiner. The discussion will take place within a reasonable time span and at a place and time determined by the examiner.
- 3. In cases where a collective discussion is organised by or on the instructions of the Board of Examiners, a student may only submit a request, as described in the preceding paragraph, if he/she was present at the collective discussion and if he/she provides a good reason for the request or if, due to circumstances beyond his/her control, he/she was unable to attend the collective discussion.
- 4. The provisions of paragraph 3 are similarly applicable if either the Board of Examiners or the examiner first gives the student the opportunity to compare his/her answers with model answers.
- 5. The Board of Examiners may permit departures from the provisions of paragraphs 2 and 3.
- 6. Students have the right to appeal to the Examination Appeals Board within 30 working days after publication of the results of the examination. The appeal must be sent to the chair of the Board.

Section 6 - Studying with a disability

Article 23 – Adaptations to help students with a disability

1. Students who have a physical or sensory disability are entitled to adaptations in teaching, examinations and practicals, on written request. These changes will be geared as much as possible to a student's individual needs, but they must not affect the quality or the degree of difficulty of a subject or an examination programme. The facilities provided to this end may involve adapting the form or duration of examinations and/or practicals to the student's individual situation or making practical aids available. Examples of adaptions can be found in Appendix 1 to these regulations.

- 2. The request referred to in paragraph 1 should be accompanied by a recent medical certificate from a doctor or a psychologist. If possible, this certificate should also estimate the extent to which the disability forms an obstacle to study progress. If there is evidence of dyslexia, the request should be accompanied by a document issued by a recognised dyslexia-testing bureau (i.e. registered with BIG, NIP, or NVO).
- 3. Requests for the adaptation of teaching facilities will be decided upon by the dean or by the director of education acting on the dean's behalf. The Board of Examiners will decide on requests for adaptations to examinations.
- 4. The student should ask for the facilities specified in the previous paragraphs within 20 work days from the start of the course. The certificate referred to in paragraph 2 should accompany this request.

Section 7 - Exemptions

Article 24 - Exemption from examinations or practicals

- 1. After having been advised by the relevant examiner, the Board of Examiners may decide to exempt students from an examination or practical on the grounds of:
 - an examination, degree audit or practical completed within the Dutch higher education system or
 elsewhere which, as regards content and study load, corresponds with the subject for which exemption
 is sought,

or

- knowledge and/or skills acquired outside the higher education system.
- 2. The extent of the exemptions may not exceed 15 ECTS.

Section 8 - Degree audit

Article 25 - The times and frequency of the degree audit

All students can apply to take the degree audit as soon as they have fulfilled all the conditions of their degree programme, and have provided the student administration office with proof of all the course components they have passed.

Section 9 - Study progress checks

Article 26 - empty

Not applicable.

Article 27 – empty

Not applicable.

Article 28 - Study progress checks

- 1. The dean is responsible for supervising the progress of all students enrolled on the degree programme.
- 2. The faculty has an evaluation system (Evasys) for the purpose of monitoring and if necessary adjusting study load.
- 3. The faculty board offers support and guidance to students covering programme supervision, counselling and other advice.
- 4. The student administration is responsible for ensuring that each student is able to see and check his/her own results via the student information system Osiris.

Section 20 - Contravention, changes and implementation

Article 29 - Contravening the regulations

If the study guide and/or any other regulations relating to the study programme and/or the examination programme prove to contravene these Teaching and Examination Regulations and the accompanying Implementation Regulations, precedence will be given to the provisions of these Teaching and Examination Regulations in combination with the Implementation Regulations.

Article 30 - Changes to the regulations

- 1. Any changes made to these regulations will be made by special resolution of the dean.
- 2. No changes made will affect the current academic year unless it is reasonable to suppose that the interests of students will not be adversely affected.

Changes made in the regulations cannot lead to a modification of a decision already taken, which is detrimental to the student.

Article 31 - Transitional regulations

- 1. If the composition of the study programme undergoes intrinsic changes or if these regulations are amended, the dean will draw up transitional regulations that will be incorporated into the Implementation Regulations.
- 2. Such transitional regulations are required to include:
 - A provision concerning the exemptions that can be given on the basis of the examinations already passed;
 - The number of times that it is still possible to sit for examinations under the conditions of the old programme;
 - A provision specifying the period of validity of the transitional regulations.
- 3. If a compulsory subject is removed from the study programme, the subject will be taught for one more time after announcing that the subject will be removed, unless there are alternative classes obviously. Four opportunities to sit an examination in this subject will be granted after the last classes have been taught: an examination following on from the classes, a resit in the same academic year, and two resits in the subsequent academic year.

Article 32 - Publication of the regulations

- 1. The dean is responsible for finding a suitable way of publishing these regulations and the relevant Implementation Regulations, as well as any changes to the regulations.
- 2. The Teaching and Examination Regulations, together with the accompanying Implementation Regulations, will always be published on the TPM website -> student portal -> Rules and Guidelines.

Article 33 - Entry into force

These regulations will come into effect on 1 September 2015

Drawn up by the dean of the faculty on 1 July 2015

Appendix 1 to complete Article 23

Adjustments to the assessment procedure, including examinations and other forms of assessment, may concern the following matters, among others:

- the course material (making available course material that is more easily accessible, for example);
- the form of assessment (e.g. replacing a written examination by an oral one, or vice versa, testing knowledge of the studied material by way of interim examinations, or granting an exemption from attendance):
- time-related matters (such as granting more time during examinations, spreading out examinations over the examination period, granting exemptions from admission requirements, or extending the period within which a component must be completed);
- the resources that candidates are allowed to use during examinations (such as an English-Dutch dictionary for candidates with dyslexia);
- the location (taking examinations in a separate distraction-free room).

Adjustments to the educational facilities may concern the following matters, among others:

- making modified furniture available in the classrooms and examination rooms;
- making special equipment available (such as magnifying or Braille equipment for blind or partially sighted students, or audio induction loops and solo equipment for students who are deaf or hard of hearing);
- making more easily accessible course material available;
- making special computer facilities available (such as voice recognition or speech synthesis software);
- making a separate distraction-free room available for a student to take an examination;
- making a quiet room available.

Appendix 2 Implementation Regulations

MASTER'S DEGREE PROGRAMMES in

Engineering and Policy Analysis (EPA)

Management of Technology (MoT)

Systems Engineering, Policy Analysis and Management (SEPAM)

General

Article 1 - Introduction

The implementation regulations of the Teaching and Examination Regulations, hereinafter referred to as the implementation regulations, form an integral part of the Teaching and Examination Regulations.

Article 2 - Master Thesis Project

- 1. A student can start the Master Thesis Project when all other study units of the curriculum have been completed.
- 2. If the requirement in subsection 1 has not been met, the student can be admitted to the graduation work only with the permission of the Board of Examiners. The student can only apply for this permission when the Master Thesis Preparation module has been completed and less than 10 ECTS of the curriculum remain. The Board of Examiners requires a positive advice from the academic counsellor.
- 3. The formation of the student's assessment committee is described in the Rules and Guidelines of the Board of Examiners, Article 27 (TPM website ->Student portal -> Rules and Guidelines TPM).

Article 3 - Confidentiality of thesis and internship

Regarding possible confidentiality of a student's thesis and all external projects, the following rules apply:

- 1. Graduation presentations are public.
- 2. Theses and external project reports are public, unless companies/institutions, in writing and with motivation, request confidentiality because of sensitive information. A thesis/report can be put under embargo for a maximum of one year. If a company requests a longer period, company and student should agree on a separate public version of the thesis/report.
- 3. Lecturers, as reviewers of the thesis/report, always have access to all information necessary for an adequate evaluation of the thesis/report.
- 4. In case of sensitive information, lecturers should sign a declaration of confidentiality, for which a time limit can be set, in accordance with the terms of subsection 2.
- 5. Thesis reports (including confidential parts) should be accessible to members of the exam (graduation) committee and a visitation committee, possibly after signing a declaration of confidentiality.

Article 4 - Annotations

1. Entrepreneurship

Students who are interested in entrepreneurship can opt for the Master Annotation Entrepreneurship programme, which trains students to become entrepreneurial. The examination programme for students who have opted for this annotation must at least include the following:

- WM4001TU Entrepreneurship Annotation Week (2 ECTS)
- a coherent set of courses in the field of entrepreneurship. The set should be composed in consultation with the Delft Centre for Entrepreneurship (DCE). It amounts up to 13 ECTS.
- extra attention to entrepreneurship, on top of regular graduation project activities, for example by
 writing a business plan or doing market research. For this extra effort DCE has formulated objectives
 and final attainment levels on which the extra part will be assessed.

An extra member will be added to the graduation committee who will supervise the student with regard to entrepreneurship. He/she should have expertise in the field of entrepreneurship and preferably be related to the TPM faculty. The additional member together with the DCE decides whether the annotation is granted.

2. Technology in Sustainable Development

Students who are interested in sustainable development might receive an annotation in Technology in Sustainable Development (TiSD) besides their MSc Degree. The examination programme for students who have opted for this annotation must at least include the following:

- WM0939TU Engineering for Sustainable Development (5 ECTS).
- Subjects within or outside the realm of the programme adding up to a total of at least 10 EC to be selected from the two clusters:
 - design, analysis and tools
 - organisation and society.

At least 3 ECTS should derive from each cluster.

• The graduation work must focus on the topic of sustainable development. The referent will test the hypothesis of the graduation project and the way in which it has been tackled against the extent to which sustainable development issues have been integrated into the project.

3. **Infrastructure & Environmental Governance** (not for MoT students).

Students who are interested in potential employment in public or private organisations which deal with issues related to infrastructures and the environment can opt for the Infrastructure and Environment (I&E) annotation. The annotation is offered in cooperation with the Dutch Ministry of Infrastructure and the Environment. The examination programme for students who have opted for this annotation must at least include the following:

- SPM9160 Infrastructure and Environmental Governance (3 ECTS).
- a minimum of 12 ECTS technical courses which are complementary to the core curriculum of the student. The student chooses a relevant theme and selects technical courses that fit within this theme given their (domain) background in consultation with the annotation coordinator.
- a project (7 ECTS) related to the selected theme . This project concerns a current realistic issue from the sector and is supervised by the TU Delft as well as by a supervisor from the Ministry of I&E.
- an I&E related graduation project (30 ECTS). The graduation project is carried out externally in an I&E related organisation (or internally on a relevant subject but with an external committee member). There is a list of organisations a student may choose from available at the annotation coordinator.

Implementation Regulations Master programme EPA

Article 5 - Master Programme EPA composition

- 1. The master's programme EPA, 120 ECTS, consists of the following components:
 - a. compulsory courses and projects, 96 ECTS as laid down in Article 6, Sections 2 and 3.
 - b. a specialisation, 15 ECTS as laid down in Article 6, Section 4a. Students choose a specialisation ('model specialisation') from:
 - Innovation Management and Entrepreneurship (+ annotation, see Article 4)
 - ICT Management and Design
 - Infrastructure and Environmental Governance (+ annotation, see Article 4)
 - Economics and Finance
 - Modelling, Simulation and Gaming
 - Supply Chain Management
 - Cyber Security

These specialisations will take place with sufficient participation only.

- c. Free electives (9 ECTS) as laid down in Article 6, section 4b.
- 2. The student may opt for the following annotation programmes of 15 ECTS as laid down in Article 4:
 - Technology in Sustainable Development
 - Infrastructure and Environment
 - Entrepreneurship
- 3. The student may be eligible for a special individual programme of 20 ECTS on top of the master's degree programme:
 - Honours Programme Master, as laid down in Teaching and Examination Regulations, Article 8a.

4. **EPA** and Harbin exchange programme.

Students can take courses at the School of Management, Harbin Institute of Technology (HIT). The nature and content of the programme is placed on the TPM-website->Student Portal-> MSc TPM -> MSc EPA->MSc EPA programme.

In order to be eligible for a TUDelft EPA degree, double degree students spend the first two semesters in Delft and the third semester in Harbin. The thesis project can be done either in Harbin or Delft under joint supervision. The exact nature and content of the programme is placed on the TPM website -> student portal -> TPM MSc -> MSc EPA -> EPA Programme.

Students can take one quarter or one semester of studies at the School of Management, Harbin Institute of Technology (HIT). This does not lead to a double degree. The nature and content of the programme is placed on the TPM website -> student portal -> MSc TPM -> MSc EPA -> EPA Programme.

The Faculty of Technology, Policy and Management, Delft University of Technology (DUT), Universidad Pontificia Comillas, Madrid-Spain and Université Paris Sud (Paris-France) (and possibly other universities in the future) offer a double/triple degree: the Erasmus Mundus International Master in Economics and Management of Network Industries (EMIN). Students will receive the diploma of each university where they have studied given the requirements of each university and a total study load of 120 ECTS. TPM requires students to have passed the entire first year of the EPA programme.

5. Prerequisites

Some of the courses and projects have prerequisites. The prerequisites are mentioned in the digital study quide. See article 2 of these Implementation Rules for the prerequisites of EPA2942.

6. Skills

Several courses and projects include skills. Skills will be graded by either pass or fail. No credits are linked to the skills, however, all skills must be passed in order to be able to graduate.

- 7. The master programme cannot contain electives from a bachelor programme.
- 8. Optional subjects may not overlap significantly in terms of content with any other unit already included in the study programme of the student concerned. In the event of doubt, the Board of Examiners decides.

9. External Project

Students who are interested in doing an external project can do so by using the elective space of 9 ECTS. For an external project the course code spm5931 is used (internship - 10 ECTS), of a total of 10 ECTS elective space. Students doing an external project will have to meet the following requirements (see also the studyquide for the requirements of course spm5931):

- Students are required to apply for approval to the Board of Examiners in advance
- One of the TPM examiners is involved in the project from start to finish
- An external examiner will be appointed
- The external project will be finalized with a written report
- The external project will be assessed by the TPM examiner by filling out the required assessment form
- Students are required to remain registered as Master student at TU Delft during the entire project.
- 10. A yearly list of rules and regulations concerning (specialisation) electives "Course and Examination Regulations Service Teaching" is published on the TPM- website-> Student portal -> MSc TPM -> MSc EPA -> Rules and quidelines -> Course and examination regulations.
- 11. Any changes made to the examination programme should be presented to the Board of Examiners

Article 6 - Master's programme EPA specifications

1. The first year master's programme EPA consists of compulsory courses and projects. The second year master's programme EPA consists of compulsory courses, projects, specialisation courses and free electives.

2. First year compulsory programme:

Programme offered for the last time in 2015-2016. (See Article 8 Transitional regulations EPA)

The first year consists of the following compulsory courses:

EPA1113	Principles of Policy Analysis (5 ECTS)
EPA1432	Cross Cultural Management (5 ECTS)
EPA1143	Actor and Strategy Models (5 ECTS)
EPA1222	Economics and Regulation (5 ECTS)
EPA1314	Statistical Modelling (5 ECTS)
EPA1322	Continuous Systems Modelling (5 ECTS)
EPA1123	Policy Analysis of Multi-actor Systems (5 ECTS)
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EPA1233 Economy of Infrastructures (5 ECTS)
EPA1132 Technology Development & Impact Assessment (5 ECTS)

EPA1423 Decision Making in Networks (5 ECTS)

EPA1412 Project Management (5 ECTS)
EPA1332 Discrete Systems Modelling (5 ECTS)

These courses and projects include the following skills:

EPA7010 Oral Presentation (skill)
EPA7021 Technical Writing 1 (skill)
EPA7022 Technical Writing 2 (skill)

3. Second year compulsory programme:

EPA2933 Preparation for the Master Thesis EPA (6 ECTS)

EPA2942 Master Thesis EPA (30 ECTS)

These courses and projects include the following skills EPA7030 Interviewing Techniques (skill)

SPM7070 Networking

4. Second year specialisation programme and free electives

a. Students choose a specialisation as listed in Article 5, Section 1 under c. These specialisations will take place with sufficient participation only.

Students who intend to study abroad and students who start the programme in the second semester will have to compose a free specialisation, to be approved by the Board of Examiners.

b. Students choose 9 EC worth of elective courses. These may not be Bachelor courses or language courses and may not overlap significantly in terms of content with any other unit already included in the study programme of the student concerned. In case of doubt, the Board of Examiners decides.

Article 7 - Composing a double degree programme

- 1. All courses in the first year of the EPA programme have been defined as the theoretical and methodological core of the degree. In order to obtain a Master's degree in Engineering and Policy Analysis, students must have passed all of these (non-replaceable) courses.
- 2. Students who participate in double degree programmes (with the EPA degree of the Centre of Technology, Policy and Management of Harbin Institute of Technology, and other possible future partners) and recognized student exchange programmes (with the Engineering Management Programme of Queensland University of Technology and other possible future partners) are allowed to replace the specialisation from their third semester by recognized third semester courses from the other affiliated institution. Provided the official selection of courses is followed, study delays for students can be completely avoided.
- 3. Students must address a request to participate in a double degree programme to the examination board, which will judge the request on the basis of two criteria:
 - a. Are the courses chosen part of the programme offered by an institution with which EPA has developed an official double degree or exchange programme. If this is the case, these courses can fully replace the specialisation offered in the third semester.
 - b. Is the selection of courses not part of an official collaboration programme, both the quality and relevance of the institution and the quality and relevance of the courses will be examined. In such cases, some level of study delay cannot be avoided.

Article 8 - Transitional regulations EPA

In September 2016 a renewed first-year EPA programme will start.

The current EPA programme will be taught for the last time during the academic year 2015-2016. Four opportunities to sit an examination will be granted: an examination at the end of the teaching period involved, a resit in the same academic year (2015-2016), and two resits in the subsequent academic year (2016-2017).

EPA1313 Statistical Modelling (5 ECTS)

2015-2016 replaced by EPA 1314 Statistical Modelling (5 ECTS), (same course, other course code)

Implementation Regulations Master Programme MoT

Article 9 - Master Programme MoT composition

- 1. The master's programme MoT, 120 ECTS, consists of the following components:
 - a. compulsory courses and projects, 96 EC as laid down in Article 10, Sections 2 and 3.
 - b. a specialisation, 15 ECTS as laid down in Article 10, Section 4a.

Students choose a specialisation ('model specialisation') from:

- Innovation Management and Entrepreneurship (+ annotation, see Article 5)
- ICT Management and Design
- Infrastructure and Environmental Governance
- Economics and Finance
- Modelling, Simulation and Gaming
- Supply Chain Management
- Cyber Security

These specialisations will take place with sufficient participation only.

- c. Free electives (9 ECTS) as laid down in Article 10, section 4b.
- 2. The student may opt for the following annotation programmes of 15 ECTS as laid down in Article 5:
 - Technology in Sustainable Development
 - Entrepreneurship
- 3. The student may be eligible for a special individual programme of 20 ECTS on top of the master's degree programme:
 - Honours Programme Master, as laid down in Teaching and Examination Regulations, Article 8a.

4. MoT and Harbin exchange programme.

Students can take courses at the School of Management, Harbin Institute of Technology (HIT). The nature and content of the programme will be placed on the TPM-website->Student Portal->MSc TPM ->MSc EPA->MSc EPA programme.

5. **Prerequisites**

Some of the courses and projects have prerequisites. The prerequisites are mentioned in the digital study quide. See article 2 of these Implementation Rules for the prerequisites of MoT2910.

6. Skills

Several courses and project include skills. Skills will be graded by either pass or fail. No credits are linked to the skills, however, all skills must be passed in order to be able to graduate.

- 7. The master programme cannot contain electives from a bachelor programme.
- 8. Optional subjects should not overlap significantly in terms of content with any other unit already included in the study programme of the student concerned. In the event of doubt, the Board of Examiners decides.

9. External Project

Students who are interested in doing an external project can do so by using the elective space of 9 ECTS. For an external project the course code spm5931 is used (internship - 10 ECTS), of a total of 10 ECTS elective space.

Students doing an external project will have to meet the following requirements (see also the study guide for the requirements of course spm5931):

- Students are required to apply for approval to the Board of Examiners in advance
- One of the TBM examiners is involved in the project from start to finish
- An external examiner will be appointed
- The external project will be finalized with a written report
- The external project will be assessed by the TBM examiner by filling out the required assessment form
- Students are required to remain registered as Master student at TU Delft during the entire project.
- 10. A yearly list of rules and regulations concerning (specialisation) electives "Course and Examination Regulations Service Teaching" is published on the TPM- website-> Student portal -> TPM MSc -> MSc MoT -> Rules and guidelines -> Course and examination regulations.

11. Any changes made to the examination programme should be presented to the Board of Examiners

Article 10 - Master programme MoT specification

1. The first year master's programme MoT consists of compulsory courses and projects. The second year master's programme MoT consists of compulsory courses, projects, specialisation courses and free electives.

2. First year compulsory programme:

The first year consists of the following compulsory courses:

MoT1524	Leadership & Technology Management (5 ECTS)
MoT1412	Technology Dynamics (5 ECTS)
MoT1461	Financial Management (5 ECTS)
MoT1421	Economic Foundations (5 ECTS)
MoT1532	High Tech Marketing (5 ECTS)
MoT1442	Social and Scientific Values (5 ECTS)
MoT1531	Business Process Management & Technology (5 ECTS)
MoT1435	Technology Strategy and Entrepreneurship (5 ECTS)
MoT2312	Research Methods (5 ECTS)
MoT2421	Emerging and Breakthrough Technologies (5 ECTS)
MoT1451	Inter- and intra-organisational decision making (5 ECTS)
MoT1003	Integration Moment (5 ECTS)

3. Second year compulsory programme:

The second year consists of the following compulsory courses and projects

MoT2003	Preparation for Master Thesis (6 ECTS)
MoT2910	Master Thesis project (30 ECTS)

4. Second year specialisation programme

a. Students choose a specialisation as listed in Article 9, Section 1 under b. These specialisations will take place with sufficient participation only.

Students who intend to study abroad and students who start the programme in the second semester will have to compose a free specialisation, to be approved by the Board of Examiners.

b. Students choose 9 ECTS worth of elective courses. These should not be Bachelor courses or language courses and should not overlap significantly in terms of content with any other unit already included in the study programme of the student concerned. In case of doubt, the Board of Examiners decides.

Article 11 - Transitional regulations MoT

MoT1434 Technology Strategy and Entrepreneurship (5 ECTS)

2015-2016 replaced by MoT1435 Technology Strategy and Entrepreneurship (5 ECTS) (same course, other course code). Students who still have to pass the MoT1434 examination, please contact the module manager.

Implementation Regulations Master Programme SEPAM

Article 12 - Master programme SEPAM composition

- 1. The master's programme SEPAM, 120 ECTS, consists of the following components:
 - a. compulsory courses and projects, 78 ECTS as laid down in Article 13, Sections 2 and 4.
 - b. domain related courses, 27 ECTS as laid down in Article 13, Sections 3 and 5.

Students choose at least one out of four domains:

- Information & Communication
- Transport & Logistics
- Energy & Industry
- Built Environment & Spatial Development
- c. a specialisation, 15 ECTS as laid down in Article 13, Section 7

Students choose a specialisation ('model specialisation') from:

- Innovation Management and Entrepreneurship (+ annotation, see Article 5)
- ICT Management and Design
- Infrastructure and Environmental Governance (+ annotation, see Article 5)
- Economics and Finance
- Modelling, Simulation and Gaming
- Supply Chain Management (not for SEPAM T&L-students)
- Cyber Security (not for SEPAM I&C students)
- Cyber Security for I&C students

These specialisations will take place with sufficient participation only

- 2. The master's programme SEPAM, Information Architecture, 121 ECTS, consists of the following components:
 - a. compulsory courses and projects, 106 ECTS as laid down in Article 4, sections 2 and 3.
 - b. a specialisation, 15 ECTS as laid down in Article 4, section 4. Students choose a specialisation as listed in Section 1 under c.
- 3. The student may opt for the following annotation programmes of 15 ECTS as laid down in Article 5:
 - Technology in Sustainable Development
 - Entrepreneurship
 - Infrastructure and Environmental Governance.
- 4. The student may be eligible for a special individual programme of 20 ECTS on top of the master's degree programme:
 - Honours Programme Master, as laid down in Teaching and Examination Regulations, Article 8a.

2. **SEPAM and Harbin exchange programme.**

Students can take courses at the School of Management, Harbin Institute of Technology (HIT). The nature and content of the programme is placed on the TMP-website->Student Portal-> TPM MSc -> MSc EPA-> MSc EPA programme.

3. Prerequisites

Some of the courses and projects have prerequisites. The prerequisites are mentioned in the digital study guide. See article 2 of these Implementation Rules for the prerequisites of SPM5910.

4. Skills

Several courses and project include skills. Skills will be graded by either pass or fail. No credits are linked to the skills, however, all skills must be passed in order to be able to graduate.

- 5. The master programme cannot contain electives from a bachelor programme.
- 6. Optional subjects may not overlap significantly in terms of content with any other unit already included in the study programme of the student concerned. In the event of doubt, the Board of Examiners decides.

7. External projects

Students who are interested in doing an external project can only do so outside the regular study programme, and not by replacing the mandatory course modules. Any exceptions to this rule have to be sent for approval to the Board of Examiners. In exceptional cases the external project can replace domain

modules (9 ECTS), using course code spm5931 (internship - 10 EC). The domain modules will then consist of 10 ECTS. Applications to the Board of Examiners will have to be supported by a strong motivation.

Students doing an external project will have to meet the following requirements (see also the study guide for the requirements of course spm5931):

- Students are required to apply for approval to the Board of Examiners in advance
- One of the TBM examiners is involved in the project from start to finish
- An external examiner will be appointed
- The external project will be finalized with a written report
- The external project will be assessed by the TBM examiner by filling out the required assessment form
- Students are required to remain registered as Master student at TU Delft during the entire project.
- 8. A yearly list of rules and regulations concerning (specialisation) electives "Course and Examination Regulations Service Teaching" is published on the TPM- website-> Student portal -> TBM MSc -> MSc Sepam -> Rules and guidelines -> Course and examination regulations.
- 9. Any changes made to the examination programme should be presented to the Board of Examiners.

Article 13 - Master programme SEPAM specification

- 1. Students from the BSc-TB programme choose the corresponding domain (as mentioned in Article 12, Section 1 under b) they completed during their BSc-TB programme. Students from another BSc programme must choose one out of four domains as mentioned in Article 12,
 - Section 1 under b. They do so in consultation with the study counsellor.
 - In both cases the domain choice stays in principle fixed for the duration of the SEPAM programme.
- 2. The first year master's programme SEPAM consists of compulsory courses and projects and domain related courses. The second year master's programme SEPAM consists of compulsory courses and projects, domain related courses and specialisation courses.

3. **First year compulsory programme**

Programme offered for the last time in 2015-2016. (See Article 15 Transitional regulations SEPAM)

The first year consists of the following compulsory courses and projects:

SPM4111	Introduction to Designing Multi-actor Systems (2 ECTS)
SPM4123	Designing Multi-actor Systems from an Engineering Perspective (8 ECTS)
SPM4133	Designing Multi-actor Systems from an Actor Perspective (8 ECTS)
SPM4142	Multi-actor Systems Design: an Integrated View (3 ECTS)
SPM4416	Strategic Management of Large Engineering Projects (6 ECTS)
SPM4423	Legal Aspects of MAS Design (5 ECTS)
SPM4115	Ethical Aspects of Design and Management of Technology (3 ECTS)
SPM5920	SEPAM Design Project (7 ECTS)

These courses and projects include the following skills:

SPM7010	Creativity and Communication
SPM7020	Management and Negotiation
SPM7030	Interdisciplinary Collaboration
SPM7040	Collective Reasoning
SPM7050	Critical Reading
CDMZOCO	A d

Advanced self-reflection and communication skills SPM7060

4. First year domain programme

Students choose at least one out of fours domains as mentioned in Article 12, Section 1 under b. The domains consist of the following courses:

Built Environment & Spatial Development

Design of spatial concepts (4 ECTS) SPM4710 SPM4720 Design of Housing Programs (5 ECTS) SPM4730 Strategies in Urban Restructuring (4 ECTS) SPM4740 Value Capturing in Land Management (5 ECTS)

Energy & Industry

SPM4510 Design of systems in energy & industry (6 ECTS)

SPM4520 Electricity and gas: market design and policy issues (3 ECTS)

SPM4530 Agent Based Modelling of Complex Energy and Industrial Networks (4 ECTS)

SPM4540 Technology & Economy of Future Energy Systems (5 ECTS)

Information & Communication

SPM4340IA Design of Innovative ICT-infrastructures and Services (6 ECTS)

SPM4430 ICT Infrastructures Architectures (3 ECTS)
SPM4440 (r)evolution in ICT-infrastructures (4 ECTS)
SPM4450 Fundamentals of Data Analytics (5 ECTS)

Transport & Logistics

SPM4612 Statistical Methods for Behavioural Analysis SPM4621 Supply Chain Analysis and Engineering (6 ECTS)

SPM4631 Transport Policy (6 ECTS)

5. Second year compulsory programme

The second year consists of the following compulsory courses and projects:

SPM5905 SEPAM Thesis Project Definition (6 ECTS) SPM5910 SEPAM Master Thesis Project (30 ECTS)

This includes the following skill: SPM7070 Networking

6. Second year domain programme

The domains consist of the following courses:

Built Environment & Spatial Development

SPM9750 Environmental Sustainability in the Built Environment (4 ECTS)

SPM5710 Integrative Regional Development (5 ECTS)

Energy & Industry

SPM9539 Economy, Ecology and Technology of Industrial Networks (3 ECTS)

SPM5520 Engineering Optimization in Energy and Industry (3 ECTS) SPM5530 Systems Innovation in Energy and Industry (3 ECTS)

Information & Communication

SPM5440 Cyber Security Essentials (4 ECTS) SPM5430 Service Systems Engineering (5 ECTS)

Transport & Logistics

SPM5610 Planning and design of multi-modal infrastructure networks (5 ECTS) SPM5620 Design and management of multi-modal logistics chains (4 ECTS)

7. Second year specialisation programme

Students choose a specialisation as listed in Article 12, Section 1 under c. These specialisations will take place with sufficient participation only.

Students following the domain Transport & Logistics cannot choose the specialisation Supply Chain Management.

Students who intend to study abroad and students that start the programme in the second semester will have to compose a free specialisation, to be approved by the Board of Examiners

Article 14 - Master programme SEPAM, Information Architecture (IA) domain

1. Information Architecture (IA) is a multidisciplinary master's degree domain. It is a collaborative programme of the Faculty of Electrical Engineering, Mathematics & Computer Science (EEMCS) and the Faculty of Technology, Policy and Management (TPM).

The first year master's programme SEPAM IA consists of compulsory courses and projects. The second year master's programme SEPAM. IA consists of compulsory courses and project and specialisation courses.

2. First year programme SEPAM IA

SPM5920IA

The first year consists of the following compulsory courses and projects:

SPM4111	Introduction to Designing Multi-actor Systems (2 ECTS)
SPM4123	Designing Multi-actor Systems from an Engineering Perspective (8 ECTS)
SPM4133	Designing Multi-actor Systems from an Actor Perspective (8 ECTS)
SPM4142	Multi-actor Systems Design: an Integrated View (3 ECTS)
SPM4340IA	Design of Innovative ICT-infrastructures and Services (6 ECTS)
SPM4430	ICT Infrastructures Architecture (3 ECTS)
SPM4416	Strategic Management of Large Engineering Projects (6 ECTS)
SPM4115	Ethical Aspects of Design and Management of Technology (3 ECTS)
IN4325	Information Retrieval (5 ECTS)
IN4315	Software Architecture (5 ECTS)

IA Design Project (6 ECTS) SPM4450 Fundamentals of Data Analytics (5 ECTS)

These courses and projects include the following skills: Creativity and Communication SPM7010 SPM7020 Management and Negotiation Interdisciplinary Collaboration SPM7030

Collective Reasoning SPM7040

3. Second year compulsory programme SEPAM IA

The second year consists of the following compulsory courses and projects:

SPM5430 Service Systems Engineering (5 ECTS)

Specialisation (15 ECTS)

Web Science & Engineering (5 ECTS) IN4252 SEPAM Thesis Project Definition (6 ECTS) SPM5905 SPM5910 SEPAM Master Thesis Project (30 ECTS)

This includes the following skill: SPM7070 Networking

4. Second year specialisation programme

Students choose a specialisation as listed in Article 12, Section 1 under c. These specialisations will take place with sufficient participation only.

Students who intend to study abroad and students that start the programme in the second semester will have to compose a free specialisation, to be approved of by the Board of Examiners.

Article 15 - Transitional regulations SEPAM

In September 2016 a renewed first-year SEPAM programme will start.

The current SEPAM programme will be taught for the last time during the academic year 2015-2016. Four opportunities to sit an examination will be granted: an examination at the end of the teaching period involved, a resit in the same academic year (2015-2016), and two resits in the subsequent academic year (2016-2017).

Sepam IA

From 1 September 2015 SEPAM IA will no longer be a SEPAM track, but IA will then be one of the SEPAM domains.

Students who started SEPAM IA in academic year 2014-2015 or earlier will receive a diploma with a special IA remark. Students who started SEPAM IA 1 September 2015 or later will not receive a special remark on the diploma.

Built Environment & Spatial Development

SPM4710 Design of urban concepts (4 ECTS)

2015-2016 replaced by SPM4710 Design of spatial concepts (4 ECTS), same course, other title **SPM5710 Integral Regional Development** (5 ECTS)

2015-2016 replaced by SPM 5710 Integrative Regional Development (5 ECTS), same course, other title

Admission requirements

Article 16 - Admission requirements Master programmes EPA and MoT

A programme selection committee will evaluate each individual application to decide whether the applicant can be admitted. Students always need permission from the selection committee and can never be admitted directly to the Master's programme based on the requirements.

Foreign students

- 1. A monodisciplinary technical BSc degree or a BSc degree in engineering or natural sciences* (or equivalent) of high quality and level. The main subject focused on during the BSc phase should match the MSc degree course student intends to pursue at the TPM faculty of TU Delft.
- 2. A Grade Point Average (GPA) for the Bachelor study of at least 75% of the scale maximum, unless specific requirements are defined for the country in which the student obtained his/her Bachelor's degree certificate (see website TU Delft).
- 3. Proof of English language proficiency**:
 - A <u>TOEFL</u> *** (Test of English as a Foreign Language) score of at least 90 (internet based TOEFL). Please note that we only accept the TOEFL internet based test, **or**
 - IELTS *** (academic version) overall Band score of at least 6.5, or
 - have passed the <u>University of Cambridge 'Certificate of Proficiency in English'</u> or the <u>University of Cambridge 'Certificate in Advanced English'</u>.

Nationals of the People's Republic of China please note: You need a 'NESO-certificate' to apply for TU Delft's MSc programmes.

- * Please note that if you are in the process of obtaining your Bachelor's degree, you may apply for admission to an MSc programme at TU Delft. TU Delft may conditionally admit you, based on your transcripts and detailed information about the curriculum, relevant research and the expected date of graduation. The conditional admission letter will include the deadline date for obtaining your degree.

 ** Please note that exclusively nationals from the USA, U.K., Ireland, Australia, New Zealand and Canada
- are exempted from the English test requirement.

 *** As the whole process of collecting information, registering for the tests and receiving the test results

 may take several months, we advise you to register for the IELTS, or TOEEL tests between September and

may take several months, we advise you to register for the IELTS or TOEFL tests between September and December.

Dutch Academic students

A monodisciplinary technical BSc degree* or a BSc degree in engineering or natural sciences (or equivalent) of high quality and level. Students with a BSc degree in Architecture or Industrial Design Engineering and similar BSc programmes cannot be admitted without additional requirements set by the selection committee. The main subject focused on during the BSc phase should match the MSc degree course you intend to pursue at the TPM faculty of TU Delft.

* Please note that if you are in the process of obtaining your Bachelor's degree, you may apply for admission to an MSc programme at TU Delft. TU Delft may conditionally admit you, based on your transcripts and detailed information about the curriculum, relevant research and the expected date of graduation. The conditional admission letter will include the deadline date for obtaining your degree.

Dutch University of Engineering students

A monodisciplinary Bachelor of Engineering degree or Bachelor degree in natural sciences* (or equivalent) of high quality and level. The main subject focused on during the Bachelor phase should match the MSc degree course you intend to pursue at the TPM faculty of TU Delft.

Background	Conditions for admission
Grade point average \geq 7,5 within 4 years	The selection committee may decide for
and final assignment or thesis work \geq 8.	immediate admission
Grade point average > 7 and < 7,5 within 4 years and final assignment or thesis work >7.	The selection committee may decide for admission to the bridging programme
Grade point Average < 7	Will not be admitted
Finished bridging programme during HBO Bachelor	Will be admitted to the Master's programme.

Article 17 - Admission requirements Master programme SEPAM

A programme admission committee will evaluate each individual application to decide whether the applicant can be admitted. Students always need permission from the admission committee and can never be admitted directly to the Master's programme based on the requirements, except for students holding a SEPAM BSc degree.

Foreign students

- 1. A multidisciplinary technical BSc degree of high quality and level*. The main subject focused on during the BSc phase should match the MSc degree course the student intends to pursue at the TPM faculty of TU Delft. If there are small deficiencies, the admission committee might decide that the student should take several courses in addition to the SEPAM MSc. The free elective part of the MSc programme can be used for these courses.
- 2. A Grade Point Average (GPA) for the BSc study of at least 75% of the scales maximum, unless specific requirements are defined for the country in which the student obtained his/her Bachelor's degree certificate (see website TU Delft).
- 3. Proof of English language proficiency**:
 - A <u>TOEFL</u> *** (Test of English as a Foreign Language) score of at least 90 (internet based TOEFL). Please note that we only accept the TOEFL internet based test, **or**
 - IELTS *** (academic version) overall Band score of at least 6.5, or
 - have passed the <u>University of Cambridge 'Certificate of Proficiency in English'</u> or the <u>University of Cambridge 'Certificate in Advanced English'</u>.

Nationals of the People's Republic of China please note: You need a <u>'NESO-certificate'</u> to apply for TU Delft's MSc programmes.

- * Please note that if you are in the process of obtaining your BSc degree, you may apply for admission to an MSc programme at TU Delft. TU Delft may conditionally admit you, based on your transcripts and detailed information about the curriculum, relevant research and the expected date of graduation. The conditional admission letter will include the deadline date for obtaining your degree.
- ** Please note that exclusively nationals from the USA, U.K., Ireland, Australia, New Zealand and Canada are exempted from the English test requirement.
- *** As the whole process of collecting information, registering for the tests and receiving the test results may take several months, we advise you to register for the IELTS or TOEFL tests between September and December.

Dutch Academic students

Students with a relevant multidisciplinary engineering degree* such as Industrial Engineering &
Management may enter the programme directly. Students holding a BSc degree in systems engineering
('Technische Bestuurskunde') from Delft University of technology are automatically admitted. If there
are small deficiencies, the admission committee might decide that you should take several courses in
addition to the MSc SEPAM programme. The free elective part of the MSc programme can be used for
these courses. The main subject focused on during your BSc phase should match the MSc degree

- course you intend to pursue at the TPM faculty of TU Delft.
- 2. Students holding a monodisciplinary technical BSc degree or a BSc degree in engineering or natural sciences (or equivalent) of high quality and level need to successfully complete the SEPAM minor (30 EC). The courses in the SEPAM minor may vary depending on the BSc degree.
- * Please note that if you are in the process of obtaining your BSc degree, you may apply for admission to an MSc programme at TU Delft. TU Delft may conditionally admit you, based on your transcripts and detailed information about the curriculum, relevant research and the expected date of graduation. The conditional admission letter will include the deadline date for obtaining your degree.

Dutch University of Engineering students

An interdisciplinary technical Bachelor degree* of high quality and level. The main subject focused on during the Bachelor phase should match the MSc degree course you intend to pursue at the TPM faculty of TU Delft.

* Please note that if you are in the process of obtaining your Bachelor degree, you may apply for admission to an MSc programme at TU Delft. TU Delft may conditionally admit you, based on your transcripts and detailed information about the curriculum, relevant research and the expected date of graduation. The conditional admission letter will include the deadline date for obtaining your degree.

Background	Conditions for admission
Grade point average > 7 within 4 years	Admission to the bridging programme (after
and final assignment or thesis work > 7	the permission from selection committee)
Grade point Average < 7	Will not be admitted
Finished bridging programme during HBO	The selection committee may decide for
Bachelor	immediate admission

If admitted, you have to follow a bridging programme of 30 EC. There are two options: courses are distributed over one year with a workload of 20 hours a week, or scheduled as a half-year full-time programme. In some cases, this bridging programme can be taken as a minor embedded in your Bachelor's programme.