TEACHING AND EXAMINATION REGULATIONS (TER)

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

2011-2012

MASTER'S DEGREE PROGRAMME in Systems Engineering, Policy Analysis and Management (SEPAM)

DELFT UNIVERSITY OF TECHNOLOGY

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Teaching and Examination Regulations

Implementation Regulations

Section 1 - General

Article 1 – Areas to which the regulations apply

1. These regulations apply to the teaching and the examinations related to the Master's degree programme in Systems Engineering Policy Analysis and Management (SEPAM), hereafter to be referred to as the programme.

2. The teaching and organisation of the programme is the responsibility of the Faculty of Technology, Policy and Management 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:	the 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;
g. practical:	a practical exercise as intended in Article 7.13, paragraph 2, subparagraph d of the Act, taking one of the following forms: • writing a thesis; • writing a scientific paper; • conducting a project; • completing a design or research assignment; • conducting a literature review; • completing a work placement; • participating in fieldwork or an excursion; • conducting tests and experiments; • 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;

i. 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;
l. 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:	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. disability:	all conditions which are (at least for the period in question) 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;
t. dean	The dean of the faculty Technology Policy and Management;
u. lecturer	lecturers who are teaching in the programme MSc SEPAM;
v. degree programme director	director of the programme MSc SEPAM.

Article 3 – The programme objective

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 for transport (Transport & Logistics), information and communication technology (Information & Communication), industrial production, energy and water management (Energy & Industry), 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 4 – The programme's final attainment levels

A Master's graduate:

1. is competent in one or more scientific disciplines

a 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.
b is capable of applying this knowledge to multi-actor engineering and management problems in one of the following technological domains: Transport & Logistics, Energy & Industry, Information & Communication (including Information Architecture) or Built Environment & Spatial Development.
c 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
d 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
e 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
f Is able to make sound judgements in the absence of complete data
g 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

a 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
b Given the process stage of the research problem, chooses the appropriate level of abstraction
c Is able, and has the attitude to, where necessary, draw upon other disciplines in his or her own research
d 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

a 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
b 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
c Is able, and has the attitude, where necessary, to draw upon other disciplines in his or her own design
d Is able to assume leading roles, including management roles, in (inter)national companies and research organisations, and be able to contribute to design
e possess the qualities needed for employment in circumstances requiring sound judgement, personal responsibility and initiative, in complex and unpredictable professional environments
f Is able to formulate new research questions on the basis of a design problem

4. has a scientific approach

a Is able to identify and take in relevant developments
b Is able to critically examine existing theories, models or interpretations in the field of multi-actor systems design
c Has great skill in, and affinity with the use, development and validation of models for designing new solutions; is able consciously to choose between modelling techniques
d 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 in a scientific way

5. possesses basic intellectual skills

a 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
b Is able to ask adequate questions, and has a critical yet constructive attitude towards analyzing and solving real life problems in the field
c 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
d 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

a Is able to communicate in writing in English about research and solutions to problems with colleagues, non-colleagues and other parties involved
b Is able to communicate verbally in English about research and solutions to problems with colleagues, non-colleagues and other involved parties
c Is able to debate about both the field and the place of the field in society
d Is able to perform project-based work in (inter)national settings
e 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

a 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
b 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
c Is able to analyse the consequences of scientific thinking and acting on the environment and sustainable development
d 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

1. All students possessing a certificate proving that they have successfully completed their Bachelor of Science studies in "Technische Bestuurskunde" issued by the institute TU Delft will be admitted to the programme. See for more information article 23.4 and 23.5.

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, laid down in Section 2 of the Student Charter (central part);
   b. 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. General requirements for admission to the program: see appendix 1 and website.

5. Students who are in possession of the above mentioned bachelors degree's (mentioned in the first paragraph) or proof of admission (mentioned in the second paragraph) can under certain conditions apply for admission to the honours class and/or, research specialisation with the degree programme director. The conditions are mentioned in the implementation regulations and on the website.

Article 6 – Taking the programme on a full-time or part-time basis

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

Article 7 – Language

1. Classes are taught and examinations and degree audits 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 8 – 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.

2. The Master's degree audit forms part of the programme. The programme has a total study load 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.

Article 8a – Honours Class programme

1. Students who meet the criteria referred to on the TPM website will be invited to register for the TU Delft Honours Class programme for outstanding Master's students.

2. Based on the criteria referred to in the Implementation Regulations, students will be selected and admitted to the Honours Class programme by the director of studies or an Honours Class committee established by the director of studies.

3. The Honours Class programme will comprise 30 credits:
    a. At least 5 credits must be completed in the TU Delft-wide component of the Honours Class programme, which consists of the following parts:
    - the subject "Critical Reflection on Technology"
    - playing an active role within the Honours Class community
    b. A maximum of 25 credits may be completed in the faculty component of the Honours Class programme, the composition of which (including its content and options) will be described on the TPM website.

4. Any student selected for participation in the Honours Class programme must submit his or her options for the faculty component to the director of studies or the Honours Class committee for approval.

5. The board of examiners will be responsible for assessing whether all the requirements of the Honours Class programme have been met.

6. Any student who has successfully completed the Honours Class programme will be awarded a certificate signed by the chair of the board of examiners and the Rector Magnificus.

Section 3 - Examinations

Article 9 – Number, times and frequency of examinations

1. There are at least two opportunities per module per academic year for sitting 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 period following the one in which the course was taught. When the course is being taught in period 4, the second exam will take place during the resit period in August.

2. A timetable of all the opportunities for sitting written examinations is drawn up every semester and distributed before the start of the semester.

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.

5. In exceptional cases the board of examiners may permit a deviation from dates and the standard number of times that certain examinations can be taken.

6. Students have a maximum of two examinations/subjects per year.

Article 10 – Sequence of examinations

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

2. In exceptional cases the dean can grant a student permission to take part in one or more exams or lab work of the programme, before the Bsc degree audit has been passed successfully. It is possible that this permission is only valid for a certain period of time.

Article 11 – Validity of examinations

The result of an examination is valid for an unlimited period. However, in cases where the examination result dates from over six years ago, the board of examiners may impose an additional or substitute examination.

Article 12 – The form of examination and method of assessment

1. Examinations are set as described in the Implementation Regulations or the manual.

2. If there is no indication as to the way an examination is to be set because it relates to a subject not taught by the programme itself, the relevant stipulations in the Teaching and Examination Regulations or the manual of the other programme will apply.

3. The board of examiners may, if it so wishes, deviate from the provisions of paragraphs 1 and 2, in favour of the student.

Article 13 – Oral examinations

1. Only one student at a time will sit an oral examination, unless the examiner in question specifies otherwise.

2. A second examiner will be present during oral examinations, unless determined otherwise by the board of examiners.

3. 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.

4. Prior to an oral examination, the examiner must ask the student to provide proof of identity.

Article 14 – 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 published 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. 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 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 15.

Article 15 – 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 will regard the marking of his or her work, he or she will be supplied with a copy of the marked work.

2. During the period referred to in paragraph 1, all interested individuals may acquaint themselves with the questions and assignments set in the examination, as well as with the criteria used for marking, a copy of this information shall be provided.

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 16 – 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 10 working days after the student inspect his or her marked work of a written examination, he or she 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.

Section 4 - Studying with a disability

Article 17 – 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.

2. The request referred to in paragraph 1 should be accompanied by a recent medical certificate from a doctor or a psychologist. 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, NIB, or NVO). If possible, this certificate should also estimate the extent to which the disability forms an obstacle to study progress.

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 of the start of the course. The certificate referred to in paragraph 2 should accompany this request.

Section 5 - Exemptions

Article 18 – 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:
   a. 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
   b. of knowledge and/or skills acquired outside the higher education system.
2. The extent of the exemptions may not exceed 15 EC.

Section 6 - Degree audit

Article 19 – The times and frequency of the degree audit

1. 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 7 - Study progress checks

Article 20 – 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 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 8 - Contravention, changes and implementation

Article 21 – Contravening the regulations

If the manual 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 22 – 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.

3. None of the changes may, to the detriment of the student, influence any decisions concerning a student that are made by the board of examiners on the basis of these regulations.

Article 23 – 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. a provision concerning the exemptions that can be given on the basis of the examinations already passed;
   b. the number of times that it is still possible to sit for examinations under the conditions of the old programme;
   c. 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.

4. Notwithstanding the provisions of art. 5.1, a student who has been registered for the first time in the Bachelor of Science programme "Technische Bestuurskunde" issued by the institute TU Delft before 1 September 2006 and who has not yet completed the entire bachelor programme, can apply for a concession with the Degree Programme Director or the board of examiners. They can grant a concession to attend parts of the Master's programme as Pre-master students in case they fulfil each of the following rules:
   - obtained first year TB diploma (TB propedeuse)
   - finished 75% of 2nd and 3rd TB bachelor year (90 EC)
   - passed module Functioneel Ontwerpen *(spm3120)* (an exception is made for the cohort 2005 of the 'Technische Bestuurskunde BSc, as this module is not part of their programme)

5 Notwithstanding the provisions of art. 5.1, a student who has been registered for the first time in the Bachelor of Science programme "Technische Bestuurskunde" issued by the institute TU Delft on or after 1 September 2006 and who has not yet completed his or her entire bachelor programme, can apply for a concession with the Degree Programme Director or the board of examiners. They can grant a concession to attend parts of the Master's programme as Pre-master students until 1 September 2010 in case they fulfil each of the following rules:

- obtained first year TB diploma (TB *propedeuse*)
- finished 75% of 2nd and 3rd TB bachelor year (90 EC)

Article 24 – 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 programme's website.

Article 25 – Entry into force

This ruling will come into effect on 5 September 2011.

Drawn up by the dean of the faculty on 29 August 2011.

IMPLEMENTATION REGULATIONS
(IR)

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

2011-2012

MASTER'S DEGREE PROGRAMME
in

Systems Engineering, Policy Analysis and Management (SEPAM)

DELFT UNIVERSITY OF TECHNOLOGY

Article 1 Implementation regulations

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 Masters Programme SEPAM specifications

1. The master's programme SEPAM consists of the following courses and projects.
   Students choose one out of four domains.

First year programme

SPM4111	Introduction to Designing Multi-actor Systems (2 EC)
SPM4115	Ethical Aspects of Design and Management of Technology (3 EC)
SPM4123	Designing Multi-actor Systems from an Engineering Perspective (8 EC)
SPM4133	Designing Multi-actor Systems from an Actor Perspective (8 EC)
SPM4142	Multi-actor Systems Design: an Integrated View (3 EC)
SPM4416	Strategic Management of Large Engineering Projects (6 EC)
SPM4423	Legal Aspects of Project Design (5 EC)
SPM9520	SEPAM Design Project (7 EC)

Domain Systems Engineering

Information & Communication

SPM4340IA	Design of Innovative ICT-infrastructures and Services (6 EC)
SPM4430	ICT Infrastructures Architectures (3 EC)

Transport & Logistics

SPM4610	Transport & Logistics Systems Engineering (6 EC)
SPM4620	Supply Chain Analysis (3 EC)

Energy & Industry

SPM4510	Design of systems in energy & industry (6 EC)
SPM4520	Electricity and gas: market design and policy issues (3EC)

Built Environment & Spatial Development

SPM4710	Design of urban concepts (4 EC)
SPM4720	Design of Housing Programs (5 EC)

Domain Modules

Information & Communication

SPM4440	®evolution in ICT-infrastructures (4 EC)
SPM4450	Fundaments Business Intelligence (5 EC)

Transport & Logistics

SPM4630	Transport Policy (5 EC)
SPM4640	Supply Chain Engineering (4 EC)

Energy & Industry

SPM4530	Agent Based Modelling of Complex Energy and Industrial Networks (4 EC)
SPM4540	Technology & Economy of Future Energy Systems (5 EC)

Built Environment & Spatial Development

SPM4730	Strategies in Urban Restructuring (4 EC)
SPM4740	Value Capturing in Land Management (5 EC)

Skills

SPM7010	Creativity and Communication
SPM7020	Management and Negotiation
SPM7030	Interdisciplinary Collaboration
SPM7040	Collective Reasoning
SPM7050	Critical Reading
SPM7060	Advanced self-reflection and communication skills

Second year programme

SPM5905	SEPAM Thesis Project Definition (6 EC)

SPM5910 SEPAM Master Thesis Project (30 EC)
Specialisation (15 EC)
Domain Modules[1]
Information & Communication
SPM9750 Cyber Security (4 EC)
SPM4140 Service Systems Engineering (5 EC)
Transport & Logistics
SPM5610 Planning and design of multi-modal infrastructure networks (5 EC)
SPM5620 Design and management of multi-modal logistics chains (4 EC)
Energy & Industry
SPM9539 Economy, Ecology and Technology of Industrial Networks (3 EC)
SPM5520 Engineering Optimization in Energy and Industry (3 EC)
SPM5530 Systems Innovation in Energy and Industry (3 EC)
Built Environment & Spatial Development
SPM9750 Environmental Sustainability in the Built Environment (4 EC)
SPM5710 Integrated Regional Development (5 EC)

Skills
SPM7070 Networking

2. Students can also start the SEPAM programme in February. The courses are the same as described in the regular programme above, but the domain modules in the second year may differ from the ones in the regular programme:

*Information & Communication**
IN4325 Information Retrieval (5 EC)
IN4332 Business Process Modelling (5 EC) **or**
IN4308 Model-driven Software Development (5 EC)
*Transport & Logistics**
CIE4840 Freight Transportation Systems: Analysis and Modelling (4 EC)
CIE5750 Spatial Planning for the Metropolis (4 EC)
MT725 725 Inland Shipping (2 EC)
Energy & Industry
SPM9539 Economy, Ecology and Technology of Industrial Networks (3 EC)
SPM5520 Engineering Optimization in Energy and Industry (3 EC)
SPM5530 Systems Innovation in Energy and Industry (3 EC)
*Built Environment & Spatial Development**
SPM4840IE Urban Environments and Infrastructures (6 EC)
CIE5510 Water Management in Urban Areas (4 EC)

***** For these domains the number of EC is 10.

3. The virtual master's programme SEPAM IA consists of the following courses and projects.

First year programme SEPAM IA
SPM4111 Introduction to Designing Multi-actor Systems (2 EC)
SPM4115 Ethical Aspects of Design and Management of Technology (3 EC)
SPM4123 Designing Multi-actor Systems from an Engineering Perspective (8 EC)
SPM4133 Designing Multi-actor Systems from an Actor Perspective (8 EC)
SPM4142 Multi-actor Systems Design: an Integrated View (3 EC)
SPM4340IA Design of Innovative ICT-infrastructures and Services (6 EC)
SPM4416 Strategic Management of Large Engineering Projects (6 EC)
SPM4430 ICT Infrastructures Architecture (3 EC)
SPM4450 Fundaments Business Intelligence (5 EC)
SPM9520IA IA Design Project (7 EC)
IN4315 Software Architecture (5 EC)

[1] Students can choose to take domain related courses abroad. These courses will have to be approved by the Board of Examiners.

IN4325 Information Retrieval (5 EC)

Skills
SPM7010 Creativity and Communication
SPM7020 Management and Negotiation
SPM7030 Interdisciplinary Collaboration
SPM7040 Collective Reasoning

Second year programme SEPAM IA
SPM4140 Service Systems Engineering (5 EC)
SPM5905 SEPAM Thesis Project Definition (6 EC)
SPM5910 SEPAM Master Thesis Project (30 EC)
IN4324 Web & Semantic Web Engineering (5 EC)
Electives courses (14 EC) This can be used for a specialisation, see art. 3.

Skills
SPM7070 Networking

Some of the modules and projects have prerequisites. The prerequisites are mentioned in the digital study guide. See article 5 of these Implementation Rules for the preqequisites of SPM5910.

4. Skills will be graded by either pass or fail. No ECTS credits are linked to the skills, however, all skills must be passed in order to be able to graduate.

5. Transitional regulations:

SPM4122 Designing MAS from an Engineering Perspective (9 EC)
2011-2012 Two examinations for SPM4122. Spm4122 can be replaced by SPM4123 (8 EC) and an extra assignment (1 EC).
2012-2013 Two examinations for SPM4122.

SPM4132 Designing MAS from an Actor Perspective (9 EC)
2011-2012 Two examinations for SPM4132. Spm4132 can be Rreplaced by SPM4133 (8 EC) and an extra assignment (1 EC).
2012-2013 Two examinations for SPM4132.

SPM4141 MAS design: an Integrated View (4 EC)
2011-2012 Two examinations for SPM4141. Spm4141 can be replaced by SPM4142 (3 EC) and an extra assignment (1 EC).
2012-2013 Two examinations for SPM4141.

SPM4370 LUD systems engineering (9 EC)
2011-2012 For students who have not yet started SPM4370, this course can be replaced by SPM4710 (4 EC) and SPM4720 (5 EC). Students who already started SPM4370 but have not yet finished it, can contact the module manager.
2012-2013 For students who have not yet started SPM4370, this course can be replaced by SPM4710 (4 EC) and SPM4720 (5 EC). Students who already started SPM4370 but have not yet finished it, can contact the module manager.

SPM4341 Design of Innovative ICT Infrastructures and Services (9 EC)
2011-2012 For students who have not yet started SPM4341, this course can be replaced by SPM4430 (3 EC) and SPM4340IA (6 EC). Students who already started SPM4341 but have not yet finished it, can contact the module manager.
2012-2013 For students who have not yet started SPM4341, this course can be replaced by SPM4430 (3 EC) and SPM4340IA (6 EC). Students who already started SPM4341 but have not yet finished it, can contact the module manager.

SPM4361 TIL Systems Engineering (9 EC)

2011-2012 For students who have not yet started SPM4361, this course can be replaced by SPM4610 (6 EC) and an extra assignment (3 EC). Students who already started SPM4361 but have not yet finished it, can contact the module manager.
2012-2013 For students who have not yet started SPM4361, this course can be replaced by SPM4610 (6 EC) and an extra assignment (3 EC). Students who already started SPM4361 but have not yet finished it, can contact the module manager.

SPM4352 Design of Innovative Systems in Energy and Industry (9 EC)
2011-2012 For students who have not yet started SPM4352, this course can be replaced by SPM4510 (6 EC) and an extra assignment (3 EC). Students who already started SPM4352 but have not yet finished it, can contact the module manager.
2012-2013 For students who have not yet started SPM4352, this course can be replaced by SPM4510 (6 EC) and an extra assignment (3 EC). Students who already started SPM4352 but have not yet finished it, can contact the module manager.

SPM4422 Legal Aspects of Project Design (6 EC)
2011-2012 Two examinations for SPM4422. Spm4422 can be replaced bij SPM4423 (5) and an extra assignment (1 EC).
2012-2013 Two examinations for SPM4422.

Article 3 Specialisations

1. Students choose one out of several specialisations of 15 EC. The following is a provisional list of specialisations. The definitive lists, including the courses, will be placed on the TPM website.

    - ICT Management and Design
    - Infrastructure and Environmental Governance (annotation, see 3.3)
    - Innovation Systems
    - International Finance & Economics
    - Modelling, Simulation and Gaming
    - Research Specialisation
    - Safety and Security
    - Supply Chain Analysis and Management
    - Sustainability (annotation, see 3.4)
    - Entrepreneurship (annotation, see 3.5)
    - Exchange programme

2. Students who started in February choose one out of several specialisations of 15 EC. The following is a provisional list of specialisations. The definitive lists, including the courses, will be placed on the TPM website.

    - Innovation and Strategy
    - Free specialisation
    - Exchange programme

3. 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 Environmental Governance Annotation. The annotation is offered in cooperation with the Dutch Ministry of Infrastructure and the Environment.

    In order be eligible for the annotation students must:
    - Pass an introductory I&E Course (3 EC).
    - Attend a minimum of 12 EC 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.
    - Carry out a project (6 EC) in this area. 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. This can be carried out within the SEPAM Design Project.

- Choose an I&E related graduation project (30 EC). 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.

4. Students might receive an annotation in Technology in Sustainable Development (TiSD) besides their SEPAM 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 EC)
   - Subjects within or outside the realm of the programme adding up to a total of at least 10 credits to be selected from the two clusters:
     - design, analysis and tools
     - organisation and society.

     At least 3 credits 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.

5. Master students who are interested in entrepreneurship can opt for the Master Annotation Entrepreneurship programme, which trains students to become entrepreneurial.

   In order to be eligible for the annotation, students must:
   - Attend a coherent set of courses in the field of entrepreneurship. The set should be composed in consultation with the Delft Centre for Entrepreneurship (DCE). The set consists of 15 EC. Students choose their courses focusing on one of two themes:
     - Starting your own company
     - Corporate entrepreneurship
   - Participate in the Entrepreneurship Annotation Week (EAW) (2 EC).
   - Pay 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.

6. SEPAM and Harbin exchange programme.
   Students can take courses at the School of Management, Harbin Institute of Technology (HIT). This programme will be evaluated in 2011-2012. If the collaboration with HIT is continued in 2012-2013, the nature and content of the programme will be placed on the SEPAM website.

7. A yearly list of rules and regulations concerning (specialisation) electives "Course and Examination Regulations Service Teaching is published on the campus website before September 5th, 2011.

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. Electives from the bachelor programme cannot be put on the master's electives list.

Article 4 Confidentiality of thesis and external project

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 can 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 adeqaute evaluation of the thesis/report.

4. In case of sensitive information, lecturers may sign a declaration of confidentiality, for which a time limit can be set.

5. Theses/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 5 Graduation work spm5910

1. A student may start graduation work if the other study units of the curriculum have been completed in full or to a significant extent, meaning that:
   - The student's specialisations are approved and signed by the board of examiners; and
   - The student has completed all master modules; and
   - The student fulfils the requirements for admission to the program.

2. If the requirements as referred to in paragraph 1 have not been met, the student may only be admitted to the graduation work with the permission of the board of examiners. If the student fulfils the requirements for admission to the programmeand has completed the module spm5905 and less than 10 EC of the MSc SEPAM remain, the student can apply for permission to start spm5910 SEPAM Masters Thesis Project.

3. In the above decision the board of examiners will bear in mind the possibilities of the student's making satisfactory progress in his or her course. The board of examiners needs a positive advice from the academic counsellor.

4. The formation of the student's supervisors MSc: At least three examiners:
   a. the relevant section* full professor;
   b. a graduation supervisor – a member of the scientific staff of the relevant section (first supervisor);
   c. a member of the scientific staff form another section (second supervisor);
   d. if applicable a supervisor from the company/ institution where the student is doing his of her graduation project (external supervisor).

*A list of the relevant sections for SEPAM can be found on the TPM website.

Article 6 Entry into force

This ruling will come into effect on 5 September 2011.

Drawn up by the dean of the faculty on 29 August 2011.

Appendix 1: 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.
3. Proof of English language proficiency**:

    - A TOEFL *** (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 University of Cambridge 'Certificate of Proficiency in English' or the University of Cambridge 'Certificate in Advanced English'.

    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 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

1. 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

1. 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.
2.

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

** 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.*