Reference GW-OSC.08.119 version December 2008

Appendices MSc programme Philosophy of Science, Technology and Society (PSTS)

Appendix 1 Goals of the MSc programme Philosophy of Science Technology and Society (PSTS)

The aim of the programme is to equip students with knowledge and skills in the area of general philosophy and the philosophy of technology, with a possible expansion into the multidisciplinary subject area of science and technology studies (STS). This is achieved in such a way that graduates (making use of knowledge gained through a previous Bachelor's programme in a technical field or one of the physical sciences) are able to conduct philosophical or philosophically informed multidisciplinary analyses pertaining to the areas of technology, technical sciences and applied physical sciences, technological developments, and the relationship between technology and society. Graduates possess sufficient knowledge and skills to participate in professional practice, for example as scientific researchers, R&D researchers, consultants, policymakers, educators, or designers. They are able to independently carry out philosophical and/or multidisciplinary STS research and should be considered for a PhD. position.

Appendix 2 Objectives of the MSc programme PSTS

The final qualifications of the programme for each of the five Dublin descriptors are appropriate for a Master's level programme:

Knowledge and insight:
The Master's student continues to build on knowledge from his/her Bachelor's programme in a technical field or one of the physical sciences. This is expressed through the final qualifications pertaining to research skills. For example, the graduate must be able to conduct research where philosophical and/or multidisciplinary STS knowledge and skills are integrated with knowledge from the Bachelor's programme. Final qualifications for the philosophy of technology (PT) and science, technology and society (STS) often assume knowledge of (applied) physical sciences and technology. The final qualifications are oriented toward a philosophical and/or multidisciplinary deepening and broadening of the knowledge gained in the Bachelor's programme.

Application of knowledge and insight:
The final qualifications emphasize research skills whereby the formulation of individual, new positions is important. The research skills are oriented towards creating interesting combinations of knowledge from differing domains (e.g. between philosophical theories and technical knowledge). The skills also emphasize various contexts (e.g. scientific and public debates) in which graduates must be able to exhibit their knowledge and skills.

Making judgements:
The ability to independently collect data, analyze it, and form a judgment as expressed in the final qualifications leads to an ability to form judgments on the basis of incomplete or limited information. Naturally, in a programme in which (applied, professional) ethics plays an important role, the socio-cultural and ethical responsibilities associated with the application of individual knowledge and judgments are also addressed.

Communication:
Communicative skills, and skills relevant to participating in scientific and public debates, are addressed in the final qualifications of the programme.

Learning skills:
As indicated in the programme goals, graduates should merit consideration as doctoral candidates. This should be visible in the final qualifications: skills pertaining to literature study, analysis, independent articulation of one's own position, and further research enable graduates to complete further studies (e.g. as doctoral candidates in the philosophy of science and technology studies) that are largely independent or autonomous.

For the Master's programme, philosophical and general academic qualifications are required along with a number of final qualifications specific to each of the two streams of study. Related to the programme goals, the following final qualifications have been formulated (these qualifications are divided into knowledge and skills):

General qualifications

Knowledge

- Basic understanding of systematic philosophy and history.
- Good knowledge of the philosophy of technology and technical sciences.

Skills
Very good general academic skills, including:

- very good writing and verbal communication skills
- skills in reasoning and arguing
- skills in the analysis of reasoning and arguments
- skills in locating and processing literature from multiple subject areas
- skills in critical analysis and evaluation of texts
- skills in the comparison of differing scientific approaches or paradigms in one's own subject area, the application of these approaches, and the ability to question or cast doubts upon them
- skills in communicating research and solutions to colleagues as well as professionals from other subject areas, and the ability to generate learning processes from the interaction
- reflective capacity pertaining to one's own work, selecting or altering course, and the ability to translate learning trajectories into the development of more general knowledge and methods
- skills in reading and analyzing philosophical texts from both classic and contemporary authors, and particularly philosophical texts pertaining to technology and technical sciences
- skills in locating philosophical literature and the ability to critically assess and process it.
- skills in reading and analyzing scientific, professional, and popular texts that reflect on technology, technical sciences, technological developments, and the relationship between technology and society
- skills in the identification and analysis of philosophical problems, and formulation and argumentation of philosophical positions or statements, with a focus on philosophical problems pertaining to technology and technical sciences
- skills in preparing for a social career wherein philosophical skills such as analytical capacities, reflection, and conceptual strength are required.

Specific qualifications for the Philosophy of Technology track

Knowledge

- Specialist knowledge in one sector of technological specialisation within the philosophy of technology and technical sciences.
  This includes: philosophical anthropology of technology, ethics of technology, the social and political philosophy of technology, the philosophy of technical sciences, and the applied physical sciences; the philosophy and ethics of biomedical technology; the philosophy and ethics of environment and sustainable technology, the philosophy and ethics of information and communications technology; engineering ethics; the philosophy of technological risks.

Skills

- The ability to formulate and argue one's own position in the domain of philosophy of technology and technical sciences and the ability to articulate and defend one's own position in a scientific or public debate.
- The ability to conduct scientific research in the domain of philosophy of technology and technical sciences wherein philosophical methods are used and whereby the further development of knowledge and skills from the previous Bachelor's programme in a technical field or one of the physical sciences is demonstrated.

Specific qualifications for the Science, Technology, and Society track

Knowledge

- Thorough knowledge of theoretical approaches in the STS field, and the ability to place these within relevant disciplinary approaches in philosophy, history, and sociology of science and technology
- Thorough knowledge of the core themes that come into play in the complex exchange of STS (such as technology dynamics, societal embedding, design in use, policy and controversies)
- Knowledge of empirical (sociological and historical) research methods

Skills

- The design and execution of a research design. This consists of the formulation of a problem statement, the development of a line of questioning geared towards a multidisciplinary analysis framework, and the development of an adequate research methodology.
- The ability to conduct scientific research in the domain of science and technology studies whereby further development of knowledge and skills from the previous Bachelor's programme is demonstrated.

Appendix 3 Admission requirements of the MSc programme PSTS (section 7.13 of the WHW)

The following are the formal admission requirements for the MSc programme PSTS:

1. Bachelor's degree or equivalent in:
   - (applied) natural science, engineering science, computer science, biomedical science or environmental science, or
   - any other discipline, in addition to either
     a) a programme of courses in science or engineering at the university level, equating at least one year of study [1], or
     b) at least one year of professional employment in science or engineering, broadly construed, for example as a science writer, laboratory assistant, or computer programmer, or
     c) a specialisation in a non qualifying Bachelor's programme with a strong emphasis on (applied) science or technology; for example, because it focused on the application of technology in a particular professional area.

2. Sufficient mastery of the English language (reading, writing, speaking, listening).
   A IELTS minimum score of 6.5 on the IELTS or an internet-based TOEFL (iBT) minimum score of 90, or equivalent is required.

3. Sufficient entry-level academic skills, including skills in reading, writing, textual analysis, and library skills.

4. Good grades (CGPA – cumulative grade point average) at the Bachelor's level. (In weighing grades, the Admission's Board will also take into consideration the quality of the institution where the applicant took his/her Bachelor's programme.)

Note:
In addition to the fact that basically all international and Dutch applicants are subject to the same formal and content-related admission requirements, the nature and scope of the prior education of Dutch applicants require further explanation.
The admission process is determined by the fact whether a Dutch applicant has a degree from a Dutch research university or a degree from a Dutch university for applied sciences (HBO-instelling).

Applicants with a degree from a Dutch research university:
Students with an appropriate Bachelor's degree or 'Ir-degree' from a Dutch technical university (Delft, Eindhoven, and Twente) automatically qualify for admission, although it is recommended that they take an English test if they have not completed VWO-English. Other Dutch students with university degrees in one of abovementioned fields also qualify for admission, unless they have not completed VWO-English with a passing grade (6 or higher) or HAVO with at least an 8, in which case we require the applicant to take an English test or submit other proof of adequate English-language speaking and writing skills.

Applicants with a degree from a Dutch university for applied sciences (HBO):
Students with an appropriate Bachelor's degree or 'Ing.-degree' from a Dutch HBO have to satisfy the following requirements:

[1] The requirement of at least one year study in science or engineering at research university level might be fulfilled by taking courses at the university of Twente, stipulated by the programme's admission committee. Passing these courses is a prerequisite for admission. During completion of these courses the applicant might be allowed to attend specified courses in PSTS

- Cumulative grade point average (CGPA) of at least 7.0 in the last two years of their HBO studies
- English test, unless they have completed VWO-English with a 6 or HAVO-English, with at least an 8.
- Proof of academic skills, either through an interview or through taking an academic skills test.

Note.
Bachelor's students from the University of Twente are allowed to participate in specific courses and in the tutorial and to enjoy other services on the basis of a mutual agreement and study planning (in Dutch: studieplan), on the premises that the deficiency in their Bachelor's degree programme does not exceed 20 EC's. The admission to the MSc. PSTS takes place only after graduation in the Bachelor's degree programme, in line with the regulations for Dutch research university students as stated above.

Appendix 4 Language in the MSc programme PSTS

The language of communication in the MSc programme Philosophy of Science, Technology and Society is English.

However, this premise requires some additional explanation:

- All study materials are in English.
- All classes (seminars, workshops, practicals, and others) are taught in English as long as non-Dutch speaking students are involved.
- Communication between a student and an instructor may revert to Dutch in case no non-Dutch participants are involved.
- All written examinations and interim examinations are composed in English.
- All presentations (including the Final Presentation) have to be prepared in English
- Students who master Dutch are allowed to complete their examinations and interim examinations in Dutch as long as no non-Dutch students are involved.
- Non-Dutch students are supposed to be aware of the aforementioned rules with regard to the use of English and Dutch.

Appendix 5 Structure of the MSc programme PSTS

There are two specialisation tracks in the programme: a philosophical track—*Philosophy of Technology*—and a philosophically informed multidisciplinary track—*Science, Technology, and Society*. The first three quartiles of the Master's programme constitute a shared foundation for both specialisation tracks. Students formally declare their choice for a specialisation track by the end of the third quartile. After having completed all units of study of quartile 1 to 3, students formally enter one of the two specialisation tracks.
All units of study comprise of 5 EC unless indicated otherwise. EC designates European Credits: One year of study is 60 EC's, meaning that 1.4 EC is about one week of study. The entire study programme is 120 EC; both study programme years are 60 EC; semesters are 30 EC; quartiles are 15 EC.

CORE PROGRAMME

semester 1.1
- Introduction to philosophy
- Introduction to philosophy of technology
- Introduction to science and technology studies
- Introduction to philosophical methods
- Ethics and technology I
- Philosophy of science

Semester 1.2
- Philosophical anthropology and technology
- History of science and technology
- Society, politics and technology
- Ethics and technology II
- Workshop PSTS
- Technology and social order

SPECIALISATION TRACK PHILOSOPHY OF TECHNOLOGY

semester 2.1
- Three out of the following four courses* from:
  - § Philosophical Anthropology and Human-Technology Relations
  - § Technology and the Quality of Life
  - § Ethics and Politics of emerging Technology
  - § Philosophy of engineering Sciences

- An additional course from the list or an individual study

- Specialisation topics (10 EC)
- Thesis proposal

semester 2.2
- Master's thesis – PoT (30 EC)

SPECIALISATION TRACK SCIENCE, TECHNOLOGY, AND SOCIETY

semester 2.1
- Governance of technology
- Science and technology and modern society

- Shaping technology and Use
- Specialization topics STS
- Research Training Project
- Research skills and thesis preparation

Semester 2.2

- Master's thesis STS (30 EC)

The programme of the STS track can be adapted – in consultation with the co-ordinator of the STS track – to meet the requirements for participation in the international PRIME master's degree programme

Year #1

Semester 1			
Code	**Name (+ study load)**	**Examiner(s)**	**Mode of evaluation**
161250	Introduction to philosophy (5 EC)	Dr. E.C. Brouwer	Assignments
161261	Introduction to philosophy of technology (5 EC)	Prof. dr.ir. P.P.C.C. Verbeek, dr. P. Vermaas	Examination, Paper
162250	Introduction to science and technology studies (5 EC)	Prof.dr. N.E.J. Oudshoorn	Assignments and research paper
161252	Introduction to philosophical methods (5 EC)	Dr. E.C. Brouwer	Assignments
161254	Ethics and technology I (5 EC)	Dr. M. Boenink	Examination, Assignments
161253	Philosophy of Science (5 EC)	Dr.ir. M. Boon	Examination, Presentation. Essay or assignment

Semester 2			
Code	**Name (+ study load)**	**Examiner(s)**	**Mode of evaluation**
161255	Philosophical anthropology and technology (5 EC)	Prof.dr. P.J.H. Kockelkoren	Paper, Presentation
161256	Society, politics and technology (5 EC)	Dr. T.E. Swierstra	Paper
161258	Ethics and technology II (5 EC)	Dr. M.J.K.Coeckelbergh	Paper
165250	History of science and technology (5 EC)	Dr. L.L. Roberts	Paper, Presentation
162251	Technology and social order (5 EC)	Dr. L.L. Roberts	Assignments
161260	Workshop PSTS (5 EC)	Dr. P. Vermaas, dr E.J.C. van Oost	To be announced

Year #2

Note: the overview below reveals that the #2 year programme is still under construction.

Semester 1			
Code	**Name (+ study load)**	**Examiner(s)**	**Mode of evaluation**
161266	Philosophical Anthropology and Human-Technology relations	Prof. dr.ir. P.P.C.C. Verbeek	Paper
161xxx	Philosophy of engineering science	Dr. M. Boon	Paper
161267xxx	Technology and the Quality of Life	Prof.dr. P.A.E. Brey	Paper
161265xxx	Ethics and Politics of emerging Technology	Dr. T.E. Swierstra	Paper
161270	Specialisation topics PoT (10 EC)	Dr. M. Boenink (co-ord.)	Paper
161271	Thesis proposal Philosophy of Technology (5 EC)	Dr. M. Boenink (co-ord.)	Thesis proposal
162260	Governance of Technology (5 EC)	Dr. B.J.R. van der Meulen	Paper
162261	Science, Technology and Modern Society (5 EC)	Dr.ir. F.J. Dijksterhuis,	Paper
162252	Shaping Technology and Use (5 EC)	Dr.ir. E.C.J. van Oost	Paper
		Dr.ir. E.C.J. van Oost	Paper
162270	Specialization topics STS (5 EC)	Dr. A.A. Albert de la Bruheze	Paper
162281x	Research Training Project	Dr.ir. E.C.J. van Oost,	Paper

xx		Dr.ir. F.J. Dijksterhuis	
162280	Research skills and thesis preparation (5 EC)	Dr.ir. E.C.J. van Oost (coord.)	Thesis proposal

Semester 2			
Code	**Name (+ study load)**	**Examiner(s)**	**Mode of evaluation**
161290	Master's thesis Philosophy of Technology (30 EC)	Dr. M. Boenink (co-ord.)	Thesis, presentation and oral examination
162290	Master's thesis Science, Technology, and Society (30 EC)	Dr.ir. E.C.J. van Oost (coord.)	Thesis, presentation and oral examination

* In case more than one (1) examiner per unit of study is mentioned, the bold mentioned examiner has been designated as the one who holds first responsibility.

Appendix 6 Adjusting examination formats due to a handicap (art. 4.1 par. 5)

Dyslexia ruling*

- The student in question shares proof of dyslexia with the programme's study counsellor and has a conversation with him/her.
- The student can sit for the interim examination in a separate location; the exam time may be extended by 50% with a maximum of one (1) hour and 30 minutes (if necessary, additional regulations may be implemented by the study counsellor).
- The study counsellor informs relevant lecturers of the situation.
- The student will receive a copy of a letter to the lecturers outlining the ruling.
- The student registers for each exam using TAST and informs the lecturer(s), in terms of timing identical to the regular registration procedure that he/she would like to make use of the dyslexia ruling.
- The information (proof of dyslexia, ruling with agreements, and any correspondence) is stored in the student's file.

* Where applicable, this ruling applies for every handicap.

Appendix 7 Prerequisites in the MSc programme PSTS

Year #1semester 1

Code	Course name	Obligatory prior knowledge
161250	Introduction to philosophy	n/a
161251	Introduction to philosophy of technology	n/a
162250	Introduction to science and technology studies	n/a
161252	Introduction to philosophical methods	161250
161254	Ethics and technology I	n/a
161253	Philosophy of science	n/a

Year #1, semester 2

Code	Course name	Obligatory prior knowledge
165250	History of science and technology	n/a
161255	Philosophical anthropology and technology	n/a
161256	Society, politics and technology	161254
161258	Ethics and technology II	161250, 161251, 161252, 161253, 161254
162251	Technology and social order	162250, 161250, 165250
*	Workshop PSTS	161254

Year #2, Track Philosophy of Technology

Code	Course name	Obligatory prior knowledge
161266	Philosophical Anthropology and Human-Technology relations	Year #1 PSTS fully completed
161xxx	Philosophy of engineering science	Year #1 PSTS fully completed
161267xxx	Technology and the Quality of Life	Year #1 PSTS fully completed
161265xxx	Ethics and Politics of emerging Technology	Year #1 PSTS fully completed
161270	Specialisation topics Philosophy of Technology	Year #1 PSTS fully completed
161272	Thesis proposal Philosophy of Technology	All coursework PSTS
161290	Thesis Philosophy of Technology	All coursework PSTS
	Before the final assessment of the thesis all courses must be completed successfully.	

Year #2, Track Science, Technology and Society

Code	Course name	Obligatory prior knowledge
162252	Shaping technology and Use	Year #1 PSTS fully completed
162260	Governance of technology	Year #1 PSTS fully completed
162261	Science, technology and modern society	Year #1 PSTS fully completed
162270	Specialization Topics STS	Year #1 PSTS fully completed
162xxx	Research training Project	Year #1 PSTS fully completed
162280	Research skills and thesis proposal	All coursework PSTS
162290	Thesis Science, Technology and Society	All coursework PSTS
	Before the final assessment of the thesis all courses must be completed successfully.	

Appendix 8 Registration to and withdrawal from units of study and interim examinations

Registering and withdrawing from units of study
For each unit of study a student would like to follow, there is a registration procedure. This registration should take place via TeleTOP (the university's electronic course management system). For units of study that use seminars or practicals as the dominant teaching method, an alternative registration procedure may also take place (e.g. through written signup sheets). If applicable, information regarding such a signup sheet will be available on the TeleTOP-site of the related unit of study.

The exact time when students may signup for units of study is published and updated regularly via the TeleTOP system. Students, who would like to register for units of study after the final signup date, may submit a request to the TeleTOP co-ordinator. Approval for participation will be dependent on the total number of registered participants and whether or not the examiner deems it feasible to allow additional participants.

Contractual students, subsidiary students, 'backpack students', exchange students, and other non-traditional students, desiring to follow units of study must contact the TeleTOP co-ordinator. Registration for these students will only take place through the co-ordinator.

A registered student who later decides not to participate in a unit of study has to withdraw from the unit of study before the final registration date.

Note: when a student registers for a unit of study, he/she will receive on the concerning TeleTOP-site a message that states that:

- participation in the unit of study may require specific prior knowledge;
- in case the student does not possess the obligatory prior knowledge, he/she has to withdraw from the unit of study before the final registration date (in case there are doubts the student needs to contact his/her study counsellor);
- in case of unpermitted participation, a possible student's interim examination will not be graded (art. 3.2);
- in order to prevent unpermitted sitting for interim examinations, faculty staff will check whether a student has registered for participation through TAST during the interim examination;
- in order to prevent unpermitted sitting for interim examinations, faculty staff will check the identity of the students through their student identification cards during the interim examination.

Registering and withdrawing from interim examinations
The registration for participation in interim examinations is compulsory through TAST. For each interim examination, students must sign up separately. Registration can take place until 8 days before the examination period begins. The examination period starts the Monday when the first examinations are held. After this date, registration will no longer be accepted.

Being registered thus means having the right to participate (provided that the student possesses the required prior knowledge). For these students, sufficient seating will be arranged in the examination room and sufficient copies of the exam will be available.

Note: the staff of the Educational Service Centre will check the TAST registration list whether the registered students are entitled to sit for the interim examination. They will mark those students who unpermitted intend to sit for the interim examination and they will inform the examiner(s).

When students have registered for an interim examination, they have the right to withdraw from it until one day before the exam.
All arrangements regarding registration, withdrawals, and extenuating circumstances are to be handled through the Educational Affairs Offices of the faculty's Educational Service Centre and **not** through the lecturer of the unit of study.

Appendix 9 Procedures during interim examinations

1. In the examination rooms, seats are indicated by their prepared examination papers.

2. The students are required to be seated before the start of the interim examination. Students who arrive late may only sit the interim examination if no other student has left the examination room in the meantime. Students arriving more than half an hour late cannot sit the interim examination.

3. Students must remain sufficiently calm and quiet so as not to hinder fellow students in any way.

4. In case the examiner uses test cards (grade slips), students must complete them completely and legibly with a pen, including the student number, name, initials, address, unit of study code, and date. Also fill in the programme in which you are enrolled. If you are enrolled in more than one programme, indicate the programme where details on the unit of study in question must be kept.

5. Upon completion of the interim examination, each page of the examination paper should include a clearly legible name with initials and the student number. Any student who has not been able to answer any of the questions on the interim examination will submit one page including name, initials, and student number. Interim examinations consisting of multiple pages should be folded together.

6. The work will be submitted to the proctor. When departing examination rooms, students will remain sufficiently calm and quiet so as not to hinder fellow students in any way.

7. A brief bathroom break is possible if approved by the proctor. This facility may only be offered to one person per room at a time.

8. Bags, books, and so forth may not be brought into the room unless with explicit permission. There may be an opportunity to leave items at the front of the examination room.

9. Students may have at their desks only those items deemed absolutely necessary for completing the interim examination.

10. Students are forbidden to have any direct or indirect contact with each other, inside or outside of the examination room, during the examination time.

11. In cases of academic offence, the interim examination will be declared invalid. The result will be a grade of 1. In addition, further reaching repercussions may be sought.

12. In cases of unpermitted participation the student's interim examination will not be graded. In addition, further reaching repercussions may be sought.

13. In each examination room, at least one proctor will be present who is associated with the unit of study to which the exam is related. All directions given by this person should be followed. Complaints from the students may only be addressed after the interim examination has taken place.

14. Students must bring their student identification cards to the interim examination and must place them visibly on the examination desk.

15. The use of calculators, organisers, mobile telephones or other electronic call apparatus is, unless explicitly approved by the proctor, forbidden. Mobile telephones must be switched off during interim examinations.

16. During interim examinations that take longer than two course hours, complimentary coffee or tea will be served.

17. When students hand in their work, they have to paraph the attendance list, and show their student card or other certified identity card to the proctor, before leaving the examination room.

Appendix 10 Board of Examiners PSTS

Board of Examiners PSTS

Chair: Prof. dr. P.A.E. Brey
Members: Prof. dr. N. Oudshoorn, Dr. L.L. Roberts, Dr. M.J.K. Coeckelbergh

Clerk: Mw M W.J. Peijster-Terpelle

Advisers: Dr.ir. P.P.C.C. Paul Verbeek, director of educational programmes
Drs. J.P. van Diepen, programme co-ordinator

Chamber for the track Science Technology and Society
Prof. dr. N. Oudshoorn
Dr. L.L. Roberts

Chamber of the track Philosophy of Technology
Prof. dr. P.A.E. Brey
Dr. M.J.K. Coeckelbergh

Appendix 11 Obligation to attend colloquia

The PSTS student is obliged to participate in a minimum number of colloquia in the domain of the PSTS programme that is offered by the departments that are involved in PSTS. The objective of this obligation is that the student is introduced in the culture and community in the domain of his academic field. The requisite is being present, aware and alert. There is no formal assessment involved. The student asks the speaker to sign for his participation directly after the colloquium. A form is available at the web pages of PSTS. Participation of a minimum of eight colloquia is a prerequisite for graduation as it is integrated in 162280 Research Skills and Thesis Preparation (Track STS) and in 161272 Thesis proposal Philosophy of Technology (track PoT).