



MSc Philosophy of Science, Technology and Society  
University of Twente

© 2024 Academion

[www.academion.nl](http://www.academion.nl)  
[info@academion.nl](mailto:info@academion.nl)

Project code P2225

# Contents

- Summary ..... 4
  - Score table ..... 5
- Introduction..... 6
  - Procedure..... 6
  - Panel ..... 7
  - Programme information..... 8
- Description of the assessment..... 9
  - Organization ..... 9
  - Standard 1. Intended learning outcomes ..... 9
  - Standard 2. Teaching-learning environment ..... 11
  - Standard 3. Student assessment ..... 17
  - Standard 4. Achieved learning outcomes ..... 20
  - General conclusion ..... 21
  - Development points ..... 21
- Appendix 1. Intended learning outcomes ..... 22
- Appendix 2. Programme curriculum..... 24
- Appendix 3. Programme of the site visit..... 27
- Appendix 4. Materials ..... 28

## Summary

### Standard 1. Intended learning outcomes

In the panel's view, the master's programme in Philosophy of Science, Technology and Society has a unique, clear, and distinctive profile in the global educational arena. The programme attracts students with diverse backgrounds in technology, social sciences and philosophy, who strive to critically analyse and evaluate the role of technology and science in society from a philosophical perspective. The Ethics and Technology track and the linked Business Administration and Public Administration trajectories supplement the PSTS's distinctive profile well. The programme's profile is translated into a comprehensive set of intended learning outcomes divided into knowledge and skills learning outcomes. The panel welcomes the fact that these ILOs have been agreed with the Employment Sector Committee. It also sees sufficient alignment with the Dublin descriptors and the learning outcomes formulated in the domain-specific frame of reference (DSFR) for specialized master's programmes in philosophy. The panel concludes that the programme's level and orientation are sufficiently assured in the ILOs and are in line with the expectations of the professional field and the philosophical discipline. The panel considers the ILOs, as formulated, attainable for students but supports the programme management's plans to refine them so that they set clearer expectations. It considers the proposed revision of the skills ILOs an improvement and recommends including transdisciplinarity and team science more explicitly. It also recommends including a skills learning outcome related to obtaining an overview of relevant developments in a specific technological domain.

### Standard 2. Teaching-learning environment

The panel concludes that the PSTS master's programme provides a challenging and inspiring teaching-learning environment that meets the standard. PSTS offers a coherent and streamlined curriculum with a clear four-semester structure. The content themes in each semester are judged by the panel to be appropriate for a master's level with relevant subject matter and good links to current developments in society and research. The Ethics and Technology track and the joint education programmes offer students opportunities to deepen or broaden their knowledge. At the course level, the ILOs are translated into concrete and relevant learning objectives. The programme makes good use of its small size by providing ample space for interactive teaching methods. The panel welcomes the development of a skills learning line with skills training in courses, mentoring, and a skills portfolio. It recommends that this development ensures that students have a similar mentoring experience. In addition, the portfolio approach should be reconsidered. If the PSTS programme management decides to continue with a portfolio approach, it should choose one that is more forward-looking and provides sufficient added value for students.

The panel believes the curriculum structure, in which a common knowledge base and shared vocabulary allow room for depth and individual profiling, ensures that the diverse student population achieves the same basic level while providing sufficient challenge for students from different backgrounds. The international focus is a valuable addition. The panel considers that the choice of English as the medium of instruction is well-founded and suitably implemented. The PSTS's distinctive profile, international research, and international classroom learning prepare students for an international (technological) workplace. The panel is impressed with the way in which the programme management recognizes the challenges of a diverse student population. Staff respond well to differences to create an environment that enables students to learn from each other's expertise and accommodates different backgrounds without attempting to equalize them. It is necessary to have clear preconditions to manage this process well, and the programme provides these in the form of course entry requirements, staff available to advise students, and detailed information for students. One limitation is that it is not always clear to students with special needs how much flexibility is possible in their situation. The panel recommends that the programme management follow standardized

procedures for dealing with exceptions and communicate clearly what assistance can and cannot be provided.

### Standard 3. Student assessment

The panel found that the assessment programme includes all the intended learning outcomes. The assessment formats are sufficiently varied, frequent, and appropriate for the level and focus of an academic master's programme. Comments on thesis assessments are generally clear and concise, and students value the feedback they receive on their work. With the SAQ protocol, the examination board is working on a professional control mechanism to monitor assessment quality, and it sufficiently fulfils its tasks concerning assessment quality assurance. The procedures for assessing final works are adequate, but the panel recommends ensuring the second assessor's independence and improving the weighting by increasing the content-based criteria's significance. It also advises formally implementing and monitoring the procedure for addressing (suspected) thesis plagiarism. Furthermore, the procedure should be communicated to all concerned. In the panel's view, the programme has a sufficiently valid, transparent, and reliable system of assessment.

### Standard 4. Achieved learning outcomes

The panel concludes that the programme's theses are of a master's level and meet the programme's learning outcomes sufficiently. Graduates find relevant work, some in competitive PhD positions, others in commercial, governmental, or non-profit organizations in research, or knowledge-broker positions at the intersection of technology, science, and society.

### Score table

The panel assesses the programme as follows:

#### *M Philosophy of Science, Technology and Society*

Standard 1: Intended learning outcomes	meets the standard
Standard 2: Teaching-learning environment	meets the standard
Standard 3: Student assessment	meets the standard
Standard 4: Achieved learning outcomes	meets the standard
General conclusion	positive

Prof. dr. Martin van Hees  
Chair

Dr. Irene Conradie  
Secretary

Date: 18 January 2024

# Introduction

## Procedure

### Assessment

On 27 and 28 September 2023, the master's programme Philosophy of Science, Technology and Society of the University of Twente was assessed by an independent peer review panel as part of the assessment cluster Philosophy. The assessment cluster consisted of 29 programmes, offered by Leiden University, Erasmus University Rotterdam, Radboud University, University of Groningen, Tilburg University, University of Twente, Utrecht University, University of Amsterdam and Vrije Universiteit Amsterdam. The assessment followed the procedures and standards of the NVAO Assessment Framework for the Higher Education Accreditation System of the Netherlands (September 2018).

The quality assurance agency Academion coordinated the assessment upon request of the Philosophy cluster. Fiona Schouten acted as both coordinator and secretary, and Irene Conradie, Mariette Huisjes, Marieke Schoots, and Anne-Lise Kamphuis acted as secretaries in the cluster assessment. They were certified and registered by the NVAO.

### Preparation

Academion composed the peer review panel in collaboration with the institutions and taking into account the expertise and independence of the members as well as consistency within the cluster. On 20 July 2023, the NVAO approved the composition of the panel. The coordinator instructed the panel chairs on their role in the site visit according to the Panel chair profile (NVAO 2016).

The programme, in consultation with the coordinator, prepared a schedule for the site visit (see Appendix 3). The programme selected representative partners for the various interviews. It also decided that the development dialogue would be part of the site visit. A separate development report was produced on the basis of this dialogue.

The programme provided the coordinator with a list of graduates for the period 2019-2022. In consultation with the coordinator, the panel chair selected 15 theses. They took into account the diversity of final grades and examiners. Prior to the site visit, the programme provided the panel with the theses and the accompanying assessment forms. They also provided the panel with the self-evaluation report and additional materials (see Appendix 4).

The panel members studied the information and sent their findings to the secretary. The secretary compiled the panel's questions and comments in a document and shared this with the panel members. In a preliminary meeting, the panel discussed the initial findings on the self-evaluation report and the theses, as well as the division of tasks during the site visit. The panel was also informed about the assessment framework, the working method and the planning of the site visits and reports.

### Site visit

During the site visit, the panel interviewed various representatives of the programme (see Appendix 3). The panel also offered students and staff members the opportunity for confidential discussion during a consultation hour. No consultation was requested. The panel used the final part of the site visit to discuss its findings in an internal meeting. Afterwards, the panel chair publicly presented the preliminary findings.

## Report

The secretary wrote a draft report based on the panel's findings and submitted it to the coordinator for peer review. The secretary then sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programme in order to check for factual irregularities. The secretary discussed the comments received with the panel chair and changes were made accordingly. The panel then finalised the report, and the coordinator sent it to the Faculty of Behavioural, Management and Social Sciences of the University of Twente.

## Panel

The following panel members were involved in the cluster assessment:

- Prof. dr. Martin van Hees, professor of Moral and Political Philosophy (VU Amsterdam) and Dean of Amsterdam University College (AUC) – chair;
- Prof. dr. Gerd Van Riel, professor of Ancient Philosophy, KU Leuven – chair and panel member;
- Prof. dr. Mariëtte van den Hoven, professor of Medical Ethics, Amsterdam UMC;
- Prof. dr. Thomas Reydon, professor of Philosophy of Science and Technology, Leibniz University Hannover;
- Em. prof. dr. Jos de Mul, professor of Philosophical Anthropology, Erasmus University Rotterdam;
- Prof. dr. Sonja Smets, professor in Logic and Epistemology, University of Amsterdam;
- Prof. dr. Bart Raymaekers, professor of Moral Philosophy and Philosophy of Law, KU Leuven;
- Prof. dr. Geert Van Eekert, professor of European Philosophy, University of Antwerp;
- Prof. dr. Martine Prange, professor of Philosophy of Humanity, Culture, and Society, Tilburg University;
- Prof. dr. Wybo Houkes, professor of Philosophy of Science and Technology, Eindhoven University of Technology;
- Prof. dr. Federica Russo, professor in Philosophy of Science and Technology, University of Amsterdam;
- Dr. Victor Gijsbers, assistant professor Philosophy, Leiden University;
- Prof. dr. Vincent Blok, professor of Philosophy of Technology and Responsible Innovation, Wageningen University;
- Prof. dr. Rein Raud, professor of Asian and Cultural Studies, Tallinn University;
- Prof. dr. Corien Bary, professor in Logical Semantics, Radboud University;
- Dr. Elsbeth Brouwer, assistant professor in Philosophy of Language and Cognition, University of Amsterdam;
- Prof. dr. Erik Weber, professor of Philosophy, Ghent University;
- Dr. Constanze Binder, associate professor Philosophy, Erasmus University Rotterdam – referee;
- Dr. Bruno Verbeek, assistant professor of Ethics and Political Philosophy, Leiden University – referee;
- Sarah Boer, MA student Philosophy, Politics, and Society, Radboud University – student member;
- Tim van Alten, MSc student Philosophy of Science, Technology and Society, University of Twente – student member;
- Christa Laurens, MA student Modern European Philosophy, Leiden University – student member.

The panel assessing the master's programme Philosophy, Science and Society at the University of Twente consisted of the following members:

- Prof. dr. Martin van Hees, professor of Moral and Political Philosophy (VU Amsterdam) and Dean of Amsterdam University College (AUC) – chair;
- Prof. dr. Wybo Houkes, professor of Philosophy of Science and Technology, Eindhoven University of Technology;
- Prof. dr. Federica Russo, professor in Philosophy of Science and Technology, University of Amsterdam;
- Prof. dr. Erik Weber, professor of Philosophy, Ghent University;
- Sarah Boer, MA student Philosophy, Politics, and Society, Radboud University – student member.

## Programme information

Name of the institution:	University of Twente
Status of the institution:	Publicly funded institution
Outcome institutional quality assurance assessment:	Positive
Programme name:	Philosophy of Science, Technology and Society
CROHO number:	60024
Level:	master
Orientation:	academic
Number of credits:	120 EC
Specialisations or tracks:	- Philosophy of Science, Technology and Society - Ethics and Technology
Location:	Enschede
Special features:	dual degrees with MSc Business Administration and MSc Public Administration, University of Twente
Educational minor:	not applicable
Mode(s) of study:	full-time, part-time
Language of instruction:	English
Submission date NVAO:	1 May 2024



## Description of the assessment

### Organization

The Philosophy of Science, Technology and Society (PSTS) programme is jointly offered by two sections within the Faculty of Behavioural Management and Social Sciences (BMS) at Twente University: Philosophy, and Science, Technology and Policy Studies (STePS). At the beginning of 2023, STePS merged with the Center for Higher Education Policy Studies (CHEPS) to form a new section called Knowledge, Transformation and Society (KiTeS). PSTS is now a joint offering of Philosophy and KiTeS.

### Standard 1. Intended learning outcomes

The intended learning outcomes tie in with the level and orientation of the programme; they are geared to the expectations of the professional field, the discipline, and international requirements.

### Findings

#### *Mission and profile*

The English-language master's programme Philosophy of Science, Technology and Society (PSTS) is the only philosophical two-year master's programme offered by a Dutch technical university. The programme trains students with various backgrounds (including technology, social sciences and philosophy) to understand and critically assess the impact of scientific and technological developments on society from a philosophical perspective. This approach aligns well with the University of Twente's ambition to be an innovative institution where science and technology are applied to achieve the best possible impact in a changing world. The programme is characterized by its small size, strong international focus, and practice-oriented approach. Rather than focusing on the philosophical tradition or understanding technology in general, the emphasis is on specific scientific and technological developments and their impact on society. Examples include developments in biomedical technologies, climate change forecasting, technologically augmented bodies, or machine learning, AI and artificial epistemology. The PSTS *philosophy of science in practice* approach is partly descriptive, in its understanding of how science and technology shape and are shaped by society and culture, and partly normative since it evaluates scientific and technological developments, technologies and their social and cultural impacts. Due to the combination of philosophy and technology, the PSTS fits into the domain-specific frame of reference (*Domeinspecifiek referentiekader Wijsbegeerte 2016*; henceforth DSFR) as a specialized master's programme in philosophy that corresponds with research expertise in the philosophy of technology and related fields. The panel believes that the profile of PSTS stands out in the European landscape for its philosophical focus on technological domains, empirical methods and approaches, and strong emphasis on empirical philosophy.

PSTS offers a specialist track and two linked trajectories in addition to the regular programme. Ethics and Technology is a selective one-year track to which students can be admitted in the second year (see also Standard 2). This track is offered in close collaboration with the 4TU.Centre for Ethics and Technology (4TU.Ethics), a partnership between the philosophy departments of the universities of Delft, Eindhoven, Twente, and Wageningen. The 4TU.Ethics offers this specialization in the ethics of technology in preparation for a PhD, for example within its own PhD programme in Ethics and Technology. Within the field of the philosophy of technology, there is currently an increased emphasis on the ethics of technology. The panel recognizes the social relevance of this specialist track and the opportunity it offers graduates to pursue academic careers.

Students can also follow PSTS in a linked trajectory, known within the University of Twente (UT) as a joint education programme, in which a student can obtain two master's degrees at the UT within two years (see also Standard 2). This programme can be completed with the PSTS-Link Business Administration (BA), where students examine how the interaction between science, technology and society is reflected in innovation processes in business and management, or the PSTS-Link Public Administration (PA), where students address complex political-administrative, societal and technological challenges in the public sector. The regular programme, Ethics and Technology track and linked Business Administration and Public Administration trajectories constitute the distinctive profile of PSTS.

#### *Intended learning outcomes*

The programme's objectives have been translated into six knowledge-based (K1–6) and ten skill-based (S1–10) intended learning outcomes (ILOs). The programme provides an overview of the ILOs' alignment with the Dublin descriptors at the master's level (see Appendix 1 for the ILOs and the overview). The ILOs have been approved by the Employment Sector Committee, a committee of representatives from relevant non-academic organizations (and potential PSTS intern or graduate employers), to meet the expectations of the professional field. The panel reviewed the learning outcomes in line with the Dublin descriptors and the DSFR (particularly the 3b learning outcomes of the specialized master's programmes in philosophy (60–120 EC)) and considers them generally appropriate for a specialized master's programme in philosophy. Advanced knowledge is acquired within the broadly defined subfield of the philosophy of technology, and the ILOs cover the acquisition of knowledge and understanding, its application (in a wider context), judgement, communication and learning skills development.

The panel also reflected on the formulation of the knowledge ILOs, which appear to be more detailed and ambitious than the outlines of the domain-specific frame of reference (DSFR). In particular, the combination of K2 and K5 seems to create an expectation that, in a case study in the philosophy of technology, students should also relate its implications to general philosophy. In the panel's view, this is not something that can be expected of every student in a diverse student population. The panel believes that the knowledge ILOs, while ambitious, may need to be reconsidered, taking into account the specific characteristics outlined in the DSFR. Although technology is a subject of study and the students' work frequently demonstrates a familiarity with technologies, it is not explicitly mentioned in the knowledge ILOs. The panel notes that this is a deliberate choice and understands the programme management's rationale that the rapid pace of technological development requires a flexible approach that does not presuppose specific technological knowledge but in which students learn to view technology through particular approaches, frameworks, and lenses. The panel recommends that the programme management consider including a skills ILO that expresses this approach (e.g. referring to the ability to gain an overview of the relevant developments in a particular technological field).

The panel agrees with the programme management's assessment that some refinement of the skills ILOs is needed. The programme management provided the panel with proposals for modifying the skills ILOs in a new set in the coming year. The panel appreciates the more detailed description of the intended (master's) level and considers the revised versions for S1, S2, and S10, in particular, to be an improvement. The panel suggests including transdisciplinarity and team science more explicitly (in line with DSFR 3b point g). The panel considers the PSTS programme well suited to this, even more so if Challenge-Based Learning (CBL) is incorporated into the programme. This idea was further discussed in one of the theme sessions (see also Standard 2).

## Considerations

In the panel's view, the master's programme in Philosophy of Science, Technology and Society has a unique, clear, and distinctive profile in the global educational arena. The programme attracts students with diverse backgrounds in technology, social sciences and philosophy, who strive to critically analyse and evaluate the role of technology and science in society from a philosophical perspective. The Ethics and Technology track and the linked Business Administration and Public Administration trajectories supplement the PSTS's distinctive profile well. The programme's profile is translated into a comprehensive set of intended learning outcomes divided into knowledge and skills learning outcomes. The panel welcomes the fact that these ILOs have been agreed with the Employment Sector Committee. It also sees sufficient alignment with the Dublin descriptors and the learning outcomes formulated in the domain-specific frame of reference (DSFR) for specialized master's programmes in philosophy. The panel concludes that the programme's level and orientation are sufficiently assured in the ILOs and are in line with the expectations of the professional field and the philosophical discipline. The panel considers the ILOs, as formulated, attainable for students but supports the programme management's plans to refine them so that they set clearer expectations. It considers the proposed revision of the skills ILOs an improvement and recommends including transdisciplinarity and team science more explicitly. It also recommends including a skills learning outcome related to obtaining an overview of relevant developments in a specific technological domain.

## Conclusion

The panel concludes that the programme meets Standard 1.

## Standard 2. Teaching–learning environment

The curriculum, the teaching–learning environment and the quality of the teaching staff enable the incoming students to achieve the intended learning outcomes.

## Findings

### *Curriculum*

The Master programme of Philosophy of Science, Technology, and Society offers a full and part-time English-language programme (for a curriculum overview, see Appendix 2). In principle, part-time students follow the same 120 EC curriculum as full-time students but at a slower pace. For part-time students, the standard structure of three courses per block requires careful planning given the courses' admission requirements. The programme offers part-time students a model programme (see Appendix 2) and support. The findings and considerations in this report apply to part-time and full-time students unless otherwise stated.

The full-time PSTS programme comprises two years or four semesters. Each semester consists of two blocks or quartiles. Several courses are taken in parallel during each quartile. Courses are usually taught during the first eight weeks of the quartile, followed by two weeks of examinations. Semester objectives have been formulated to guide the development of content knowledge and skills:

1. Introduction to the relevant sub-disciplines
2. Reflection on technology and technoscience
3. Specialization
4. Final thesis

These semester objectives represent the different stages of academic development. Each semester builds upon the knowledge and skills obtained in the previous semester.

The introduction to the relevant sub-disciplines consists of six 5 EC courses that provide an overview of philosophical theories and methods, the philosophy of technology, and the multidisciplinary field of science, technology, and innovation studies, as well as ethics, history of science and technology, and philosophy of science. In the second semester, this foundation is strengthened by six 5 EC courses that focus on the philosophical analysis of technology and technoscience in society. The core courses in the first half of the programme provide students with a common set of concepts and theories upon which they can further develop their own ideas and differentiate themselves in the second half of the programme. The third semester offers a choice of the PSTS elective courses (25 EC) and the MasterLab module (5 EC). The electives cover different areas of research closely linked to the lecturer's research and provide students with an insight into ongoing research and debates in the PSTS field. Students are required to build a skills portfolio (0 EC) and attend at least eight colloquia (0 EC) in addition to taking the core and elective courses.

The MasterLab course (5 EC) is compulsory and part of a milestone approach that prepares students for undertaking their thesis. In the second semester, students choose appropriate electives (Milestone 1). In the third semester, the MasterLab module encourages students to explore potential research areas for their final project and write a thesis proposal (Milestone 2). Once this has been approved, the programme culminates in the fourth semester with the final project (master's thesis), in which students design and undertake their research project. Students can choose their master's thesis topic at the intersection of science, technology, and society. The project can take the form of either a 30 EC master's thesis or a 10 EC internship combined with a 20 EC master's thesis. The programme has contacts with various non-academic organizations that welcome interns, both in the Netherlands and overseas. During their internship, the student works on an assignment at the level of an entry-level academic. The internship is supervised by an internal (UT) supervisor and an external supervisor from the host organization. This assignment, resulting in an internship report, is preferably related to the intended master's thesis topic. While writing their master's thesis, students attend MasterLab meetings where they discuss their progress with MasterLab staff and give and receive feedback to and from fellow students. The MasterLab course is taught by doctoral staff members. Prolonged thesis writing has been adequately addressed by incorporating more thesis guidance into the MasterLab course, setting a maximum word count, and limiting the number of students per supervisor.

The panel reviewed the curriculum and content of several courses in detail (see Appendix 4). The course descriptions in the Osiris course catalogue link the course objectives to the ILOs, and the PSTS assessment plan aligns the ILOs with the courses and course assessments. Based on this information, the panel concludes that the courses align with the ILOs. The panel also believes the courses' content and level meet the quality standards. For example, the panel found Philosophical Theories and Methods to be a well-designed course in which critical engagement with texts and argumentation skills were both taught and practiced. Video-recorded lectures combined with pre-class assignments allow class time to be used interactively for discussion and hands-on methodology training. During the site visit, students also confirmed that the staff had made the course accessible to everyone. Students who had already read certain compulsory canonical readings could read and discuss another text in greater depth with other students present to learn from these discussions. The current panel also finds the fact that greater attention is paid to quantitative methods in several courses a sufficient response to the previous panel's recommendation. The panel concludes that the programme has translated the ILOs into a coherent, structured, and challenging curriculum. The panel was impressed with the programme's empirical orientation and attention to societal impact and the creativity of several student and staff showcase presentations that it had the opportunity to view and discuss.

### *Skills*

Since the 2020–2021 academic year, a dedicated skills learning line has been established within PSTS. Students receive an explanation of the learning line in an introductory meeting at the beginning of the programme and are assigned a mentor. During the first and second years, the student and mentor have several meetings to discuss the student's skills development, identifying what has been achieved and what still requires work. The student collects material for their skills portfolio in their personal e-learning environment (Canvas skills course page). Skills development takes place in the courses; the course catalogue lists which skills are covered in a course. A checklist linked to the skills ILOs serves as a starting point for discussion between student and mentor. No credits are attached to this module; the mentor assesses whether the components of the skills learning line have been met on a pass/fail basis during the mentor meetings.

During interviews, the staff noted that the skills learning line was introduced during the COVID-19 period and was still being evaluated and adjusted. The students confirmed this and informed the panel that while some found the skills learning line useful, others found it less so. The issues they identified were that mentoring was not interpreted in the same way by all mentors and that several students struggled with the amount of non-credit work involved in compiling the portfolio. The panel appreciates the programme management's commitment to improvement and finds the Canvas information on the learning line informative and detailed. The panel encourages the programme management to continue to develop the skills learning line. It considers students' and staff' positive experiences of mentoring indicative that the programme is on the right track and recommends ensuring that students' mentoring experiences are consistent. The panel also proposes that the programme management reconsider the portfolio approach. While the students value the skills portfolio, in its current form, it is regarded as a chore with limited added value. The panel suggests that it be made more forward-looking to avoid a 'box-ticking' exercise. For example, the portfolio could be linked to a self-designed next career step. The portfolio allows students to reflect on what skills are relevant to this step and allows them to showcase their skills based on what they have achieved in the programme.

### *Academic orientation*

The research colloquia strengthen the link between education and research by bringing students into contact with current research topics and debates and allowing them to be part of the academic community. The colloquia are organized by either the Philosophy section or the KiTeS section. These colloquia typically include (international) guest speakers. They are also used to present the research groups' work or the final PSTS master's thesis presentations. Students value these colloquia; they are well organized, provide insight into the academic staff's areas of expertise, and bring research closer to home. The panel is impressed by the strong sense of academic community among staff and students. A close-knit academic community suits the programme's small size, and the panel appreciates the programme management's ability to foster this while simultaneously being open to and engaged with the outside world.

The programme prepares students for academic and non-academic careers. Representatives from external organizations, including alumni, are regularly invited to give guest lectures. An annual PSTS career day is organized in cooperation with the study association Ideefiks and the alumni association Nestorix. Students confirmed that the outward-looking academic community and Ideefiks play an important role in linking with the alumni network, allowing students to talk to many individuals and explore numerous options. It also helps that PSTS is a recognized name. The result is a network that extends beyond academia, across disciplines and time.

### *Custom curricula*

The joint education programmes' curriculum predominantly differs from the PSTS curriculum in the second year (see Appendix 2). Students pursuing the BA PSTS link follow courses from the MSc Business Administration as their elective courses. Examples include Entrepreneurial Leadership and Responsible Design, and Management and Governance of Innovation and Creativity. Students complete the joint education programme with two master's degrees by writing a joint master's thesis, which must meet two sets of criteria and is assessed by each programme separately. In preparation for this, students attend, as much as possible, the PSTS MasterLab course and the BA Master class. A similar structure applies to the PA PSTS link, including courses from the MSc Public Administration, such as Deliberative Governance of Knowledge and Innovation, Public Governance and Policy Networks, and Crisis Management in Technological Domains.

The Ethics and Technology track curriculum only differs from the PSTS curriculum in the second year of study (see Appendix 2). Students can apply for the track, which is offered in collaboration with the 4TU.Centre for Ethics and Technology, at the end of the first year. The Ethics and Technology track consists of external PhD-level courses in the ethics of technology, in addition to ethics-focused PSTS courses. The courses at the TUD, TU/e and WUR are usually concentrated into one week, after which an individual assignment is given. The final project allows students to specialize in their preferred area of research. It focuses on the topic of a potential future doctoral dissertation and is supervised by ethicists from the 4TU Ethics Centre. The panel praises this track's academic excellence and feels that it provides great opportunities for graduates to progress in research careers.

### *Teaching formats*

Due to its small size (approximately 20 to 30 students per academic year), the programme employs interactive sessions, such as seminars, as its main teaching format. In these sessions, the lecturer discusses the course material with the students, leaving ample room for discussion and interaction, occasionally mixed with student-driven group work or methodological training. The topics discussed are often closely related to the lecturer's research, giving students an insight into ongoing research and debates in the field. In addition, students receive training in skills such as critical reading, argumentation, research and analysis, and written and oral communication. Students indicated in interviews that they were very satisfied with the teaching formats and appreciated the interaction and opportunity to contribute to the discussion. Group work also helps students develop skills such as communication, feedback, and visualizing their work, which they consider valuable in their future careers. The panel is positive about the teaching formats employed in the programme.

### *Admission*

Students are selected for the programme based on their previous education, their affinity with the programme and their performance in an entry assignment. The selection procedure is predominantly based on qualitative elements. Applications are invited from students with a bachelor's or comparable degree in a natural, engineering, social, philosophical, or other subject with a focus on (social) science or technology, and a strong interest in science and technology and their impact on people and society. The programme's admission committee assesses whether a student applicant meets the admission criteria. This committee comprises two members of staff from the Philosophy and KiTeS sections who are programme examiners. The panel considers the admissions procedure appropriate.

Students wishing to undertake the BA or PA PSTS link must apply to each programme separately. Therefore, they must meet the admission criteria for the PSTS and the partner programme. It is possible to transfer from PSTS to a link programme, but this decision must be made before the end of the first semester to avoid

study delays. In the case of the Ethics and Technology track, both entry requirements and exit criteria apply. Students must include a letter of motivation in their application, and in the first year, they must have completed at least 55 EC with an average grade of 7.5 in three core ethics courses. Once admitted, their academic performance should remain at an above-average level. Otherwise, the student should leave the track and continue in the PSTS programme. The panel notes that the bar is high, which fits the track's ambitions and the fact that courses are taken alongside PhD students.

#### *Feasibility and student guidance*

Prior to the visit, the panel noted that the main feasibility challenge was to bring the highly diverse student body up to a common master's level. Enrolment figures indicate that, over the years, students from technical, philosophical, social science, and other backgrounds have each made up approximately a quarter of the student body. Concerns that some students would find it difficult to keep up while others might not be sufficiently challenged have not been confirmed. The programme management is aware of the challenges. The curriculum is designed so that substantial investment is made in building a shared knowledge base and vocabulary at the beginning of the course. Teachers respond to differences among students by organizing mixed groups to encourage knowledge sharing. In addition, mentorship provides space to discuss individual (skills) development. Teachers indicated that the programme's profile is so specialized that few students have a directly relevant background, meaning that new knowledge is gained by all. Students indicated that the programme was accommodating to all without forcing them to conform. They also felt that the teaching process allowed them to learn from each other, which they felt was one of the programme's strong points. The panel recognizes that a mixed student population presents a challenge, but one that PSTS manages well and, given the added value of obtaining experience in team science, follows best practice.

The student chapter and interviews with students revealed that students with different needs did not always find the solution they were looking for. Examples included students with health problems or those organizing a tailored part-time programme. Nevertheless, the students indicated that the programme staff were willing to help. The panel found it difficult to identify the root of the problem, as support was available and staff seemed committed. At the BMS faculty, student support is the responsibility of a student services staff member, the study advisor, and the programme coordinator. Furthermore, the PSTS is characterized by a high level of personal attention. It could be that in a close-knit, informal community, some people find it easier to find their way around than others. In such a case, it could be beneficial to adhere closely to standardized procedures for exceptions and communicate them clearly to students.

The panel appreciated the information provided to support students (e.g., the Programme Guide, Final Project Guide, Internship Guide, and online Methodology Shop), all of which gave the panel the impression of a well-maintained infrastructure and organization. The Programme development plan, course evaluations and screenings, student feedback meetings, the Programme Committee's active involvement, the Ideefiks study association, and open discussions on Teachers' Day and during staff lunches confirm that continuous efforts are made to ensure the quality of education and that student feedback is taken seriously.

The panel concludes that the curriculum is feasible based on its construction, extensive guidance, and the detailed information provided to students.

#### *Language and internationalization*

The PSTS programme has an international focus. This is reflected in the language of instruction, the international staff and the substantial intake of students from around the world. The panel sees the programme's distinctive technological profile to be a clear reason for the international focus. English is often the working language in the relevant workplaces. Furthermore, the link between education and research,



and the prominent international position of Dutch research in the philosophy of technology, requires the use of English and increases the students' chances on the (international) labour market. The panel and the programme representatives also discussed the language choice of the programme during the site visit. The use of English in the PSTS programme enhances the quality and thus the achievement of the intended learning outcomes by interweaving the expertise and experience of Dutch and international lecturers in the various courses. This includes offering students high-level guest lectures and contributions from international experts in the research colloquia.

#### *Teaching staff*

The programme's teaching staff are based in the departments of Philosophy and KiTeS and are all active researchers in the PSTS field. All teaching staff at the University of Twente are required to obtain their (Basic) University Teaching Qualification (UTQ/BKO) within three years of beginning their employment. The programme director has a Senior University Teaching Qualification (SUTQ/SKO). Since all the PSTS teaching staff are appointed by the BMS Examination Board, they can therefore act as examiners; course examiners hold a doctorate. Of the 33 appointed PSTS examiners, 45% have received a temporary exemption. This exemption is valid for a maximum of three years, after which the individual cannot be appointed as an examiner without meeting the requirements. The teaching staff have successfully passed the UT English Proficiency Assessment where required. The panel is positive about the quality of the teaching. Teachers are active researchers in the field involved in national and international research projects, notably the Ethics of Socially Disruptive Technologies (ESDiT) project. The panel is aware that staff members represent a wide range of sub-disciplines and areas of expertise that fit the PSTS's profile.

During the site visit, students informed the panel that they were very satisfied with the programme's small size and the teachers' close involvement with students. The panel recognizes that lecturers appreciate their involvement in the programme and working with the motivated students it attracts. However, the panel was also informed about the lecturers' high workload. The workload does not appear to be specifically due to the demands of teaching within the programme but the variety of additional responsibilities, including the proportion of service teaching in other programmes. The panel appreciates that the programme management is aware of the concerns and considers the increased workload a crucial element in its decision-making.

#### *Considerations*

The panel concludes that the PSTS master's programme provides a challenging and inspiring teaching-learning environment that meets the standard. PSTS offers a coherent and streamlined curriculum with a clear four-semester structure. The content themes in each semester are judged by the panel to be appropriate for a master's level with relevant subject matter and good links to current developments in society and research. The Ethics and Technology track and the joint education programmes offer students opportunities to deepen or broaden their knowledge. At the course level, the ILOs are translated into concrete and relevant learning objectives. The programme makes good use of its small size by providing ample space for interactive teaching methods. The panel welcomes the development of a skills learning line with skills training in courses, mentoring, and a skills portfolio. It recommends that this development ensures that students have a similar mentoring experience. In addition, the portfolio approach should be reconsidered. If the PSTS programme management decides to continue with a portfolio approach, it should choose one that is more forward-looking and provides sufficient added value for students.

The panel believes the curriculum structure, in which a common knowledge base and shared vocabulary allow room for depth and individual profiling, ensures that the diverse student population achieves the same basic level while providing sufficient challenge for students from different backgrounds. The international



focus is a valuable addition. The panel considers that the choice of English as the medium of instruction is well-founded and suitably implemented. The PSTS's distinctive profile, international research, and international classroom learning prepare students for an international (technological) workplace. The panel is impressed with the way in which the programme management recognizes the challenges of a diverse student population. Staff respond well to differences to create an environment that enables students to learn from each other's expertise and accommodates different backgrounds without attempting to equalize them. It is necessary to have clear preconditions to manage this process well, and the programme provides these in the form of course entry requirements, staff available to advise students, and detailed information for students. One limitation is that it is not always clear to students with special needs how much flexibility is possible in their situation. The panel recommends that the programme management follow standardized procedures for dealing with exceptions and communicate clearly what assistance can and cannot be provided.

### Conclusion

The panel concludes that the programme meets Standard 2.

### Standard 3. Student assessment

The programme has an adequate system of student assessment in place.

### Findings

#### *System of assessment*

The institution-wide UT Assessment Policy, established in 2016, provides guidelines for assessment. At the programme level, the programme guide contains a brief description of how assessment is used in the PSTS programme. The course information and rubrics define the learning objectives and assessment criteria in advance. Students supported being informed of the criteria in advance and said that they appreciated the feedback given on their assignments. Examiners should have a PhD and a UTQ, and these requirements are checked by the examination board. The programme uses an overall assessment plan to ensure the intended learning outcomes are covered by the set of assessments. The plan also describes the types of assessment used for this purpose. The examination board reviews the PSTS assessment plan annually. A plagiarism check is a standard part of the assessment of final projects. Following the previous panel's recommendation on thesis assessment, the programme management revised the assessment form, introduced a rubric, clarified the division of roles in the Graduation Guide, and increased consistency between assessors with thesis carousel meetings, where supervisors and assessors are invited to exchange views on thesis assessment. Overall, the panel considers the assessment system is adequate.

#### *Assessments*

Based on the PSTS assessment plan and the course files and catalogue, the panel confirms that most assessments are individual assignments, such as essays, research papers, or weekly reflections on assigned readings. In the first year, individual assignments are interspersed with several open-book written exams. Presentations and class participation are assessed in the second year. The Student Chapter mentioned that students would like to practice an oral examination before entering the thesis stage, as this is part of the final project. Students feel that giving a presentation does not provide the same experience. The Philosophical Theories and Methods course has now introduced a group (30%) and individual (70%) oral examination to meet this request. Overall, several forms of assessment are used to meet the learning objectives. A reasonable amount of group work is also undertaken. The panel appreciates that assessment focuses on

individual contributions to group work and, at the course level, includes individual work, which tends to be weighted more heavily. The panel also found the internship assessment's design adequate. The internship assessment grade is determined by the internal supervisor. It is based on the external supervisor's contribution (20%), the UT supervisor's observations on the learning process (20%), and the quality of the internship report (60%).

The master's thesis assessment procedure comprises four components starting from the moment the student submits the final draft of their thesis:

1. Green-light meeting: During the green-light meeting, the supervisor and second reader (examiner) inform the student whether they receive a green light and clarify where and how they can improve their work.
2. Thesis assessment: After receiving the final version of the student's thesis and before the oral examination or colloquium, the supervisor and second reader independently evaluate the thesis, each completing the PSTS Final Project Assessment Form.
3. Oral examination: The oral examination assesses the student's ability to reflect on the research topic and the (limitations of the) results and their ability to respond to critical questions.
4. Colloquium: The student explains their research to a non-expert audience in a public presentation.

The thesis assessment is carried out by the supervisor and a second assessor. A third assessor becomes involved in the case of a significant difference of opinion. The assessment form assigns different weightings to the following components: content (50%), report (15%), process (15%), and oral examination and colloquium (20%). These components determine the overall grade. The grade for content and report is the average of the supervisor's and second assessor's grades. The process is assessed by the supervisor only, and the oral examination and colloquium are assessed jointly by the supervisor and second assessor. The supervisor and second assessor receive the BMS assessment forms; the second assessor gives theirs to the supervisor who submits them. Until three years ago, the first and second readers would meet to discuss the final assessment. Now, PSTS has separate assessment forms, and the only collaboration is on feedback. The supervisor is expected to communicate both sets of feedback to the student.

The panel discussed the thesis assessment procedure with the programme representatives during the site visit. It considers the procedure to be adequate but identified areas for improvement. The panel believes the current procedures should be adapted to better facilitate independent judgements. It recommends strengthening the second assessor's independence by excluding them from the green-light component and submitting the independent assessments to a third party rather than the supervisor. The interviews revealed that the green-light meeting not only gives the student an indication of whether the draft is of a sufficient level but also what is needed to achieve a higher grade. The panel believes it is better to maintain the second assessor's independence by excluding them from an informal improvement process immediately before the final assessment.

In addition, the panel examined the assessment forms and the rubric, a scoring guide that helps assessors articulate specific components and expectations of the master's thesis. Comments to students are typically informative while remaining concise. The panel believes that the content component requires a higher weighting in the assessment and strongly recommends that an adjustment be made. Based on the assessed theses, the panel observes that such an adjustment would not affect the number of theses that obtain a passing grade. However, it can be expected to help prevent over-grading. The panel considers the rubric to be a useful tool. The thesis carousel meetings are helpful for calibration, although they do not act as a quality check for the oral examination.

The panel largely agreed with how the theses were graded. In several cases, the panel found that the assessment form described weaknesses that were not sufficiently reflected in the corresponding grades. Nevertheless, this did not lead to substantial discrepancies in the final grade, partly because of the weighting of the different components. The panel was also informed that the university had changed its grading system in recent years. The panel approves of this change, as the rounding procedure affected the final grade too strongly in several older theses.

The assessment of a thesis in the joint education programmes follows a similar procedure. The thesis is assessed for each programme according to its assessment criteria, and the assessment is recorded based on the programme's assessment form. This procedure requires coordination between the supervisors involved, which occurs more smoothly in some assessments than in others. PSTS has a policy that the second examiner must also be someone from PSTS. The panel agrees that this is appropriate.

#### *Examination Board*

The examination board for Interdisciplinary Sciences, one of the four examination boards of the BMS Faculty, is responsible for safeguarding the quality of assessment in the PSTS programme. It carries out its duties based on the Safeguarding Assessment Quality (SAQ) Protocol. This protocol includes a checklist covering the quality of assessment at the programme level and for individual tests and theses, the quality of the assessment organization and the examiners' qualifications. At monthly meetings, the board discusses the appointment of examiners, drafts advice on the EER, discusses safeguarding assessment quality, optimizes procedures, and addresses non-routine student enquiries that cannot be answered via email. The board's annual report provides an overview of how it fulfils its statutory duties, and the panel appreciates the level of reflection and focal points of action the board describes within the report. The chair of the examination board recently helped write the policy on AI in assessments.

Since the 2021 academic year, all theses have been checked for plagiarism using Turnitin software. In unclear cases, the supervisor completes a form and submits it to the examination board. The board investigates the matter and hears the parties involved before making a decision. The assessment form of one of the theses selected by the panel indicated that the supervisor had suspected plagiarism in the draft version, and the student had amended it by following a procedure agreed with the examination board. The panel is of the opinion that the case was not handled correctly. The examination board indicated in the interview that it had tightened up the procedure for addressing plagiarism identified in thesis assessments as a result of this case. The panel recommends that the procedure for dealing with (suspected) thesis plagiarism be formalized, monitored and made known to all concerned.

#### *Considerations*

The panel found that the assessment programme includes all the intended learning outcomes. The assessment formats are sufficiently varied, frequent, and appropriate for the level and focus of an academic master's programme. Comments on thesis assessments are generally clear and concise, and students value the feedback they receive on their work. With the SAQ protocol, the examination board is working on a professional control mechanism to monitor assessment quality, and it sufficiently fulfils its tasks concerning assessment quality assurance. The procedures for assessing final works are adequate, but the panel recommends ensuring the second assessor's independence and improving the weighting by increasing the content-based criteria's significance. It also advises formally implementing and monitoring the procedure for addressing (suspected) thesis plagiarism. Furthermore, the procedure should be communicated to all concerned. In the panel's view, the programme has a sufficiently valid, transparent, and reliable system of assessment.

## Conclusion

The panel concludes that the programme meets Standard 3.

## Standard 4. Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

## Findings

### *Final works*

The intended learning outcomes are assessed at the final level in the master's thesis. Prior to the site visit, the panel read a selection of fifteen theses and their assessment forms. The selection proportionally included theses from full-time and part-time students enrolled in the regular programme, the Ethics and Technology track, and the two joint education programmes, the BA and PA PSTS links. The panel assessed that all but one of the theses achieved the final level intended. In this single case from the regular programme, the panel noted that philosophical depth was lacking. The panel did not see a pattern of similar concerns in the other theses. Overall, the writing is good, and most theses have a clear structure and reflect a fascination and engagement with technologies.

The panel noted that different types of thesis work were produced, ranging from applied philosophical case studies of technologies to more in-depth philosophical treatises. In particular, the Ethics and Technology theses reviewed by the panel were more theoretical-philosophical and less applied to specific technological practices. This finding is in line with the nature of the Ethics and Technology track, which is oriented toward preparation for doctoral research. Although several final papers demonstrated less philosophical depth than expected, the panel still found them to be of a passing standard. It is also reasonable that a differentiated input would produce an equally differentiated output. The panel suggests that the different PSTS thesis formats should be explained and communicated more clearly. This finding is linked to the panel's recommendation to revise several of the more ambitious knowledge ILOs (see Standard 1).

### *Alumni*

The programme students take up diverse positions in different types of organizations after graduation. According to the PSTS website, approximately a third study for a PhD at a Dutch or foreign university, while others choose to work in R&D, consultancy, policy-making organizations and commercial companies. Approximately 75% find a job within six months of graduation. Graduates work in positions such as ethics and digitalization consultant, technology and policy researcher, analyst and community lead, or innovation adviser. Based on testimonials and quantitative data, graduates are valued for their knowledge of current technological developments and their ability to evaluate them philosophically and methodologically. The interviews also revealed that the graduates felt suitably prepared to work in a relevant position at an academic level.

## Considerations

The panel concludes that the programme's theses are of a master's level and meet the programme's learning outcomes sufficiently. Graduates find relevant work, some in competitive PhD positions, others in commercial, governmental, or non-profit organizations in research, or knowledge-broker positions at the intersection of technology, science, and society.

## Conclusion

The panel concludes that the programme meets Standard 4.

## General conclusion

The panel's assessment of the M Philosophy of Science, Technology and Society is positive.

## Development points

1. In the planned ILO revisions, ensure the knowledge ILOs have the same level of ambition as the domain-specific framework of reference. Include references to transdisciplinarity and team science in the skills ILOs. Consider including a skills ILO expressing the ability to gain an overview of relevant developments in a particular technological field.
2. Ensure that students have a similar mentoring experience in the skills learning line's development and reconsider the portfolio approach. If continuing to use a portfolio approach, choose one that is more forward-looking and provides sufficient added value for students.
3. In the case of students with particular needs, closely follow standardized procedures for exceptions and clearly communicate to students what assistance can and cannot be provided.
4. Strengthen the second assessor's independence by excluding them from the green-light meeting and submitting the independent assessments to a third party rather than the supervisor.
5. Formalize and monitor the procedure for addressing (suspected) thesis plagiarism and ensure the procedure is known to all involved.
6. Substantially increase the content components' relative weighting in the thesis assessment and adjust the assessment form accordingly to ensure that the most central aspects contribute critically to the final grade.

## Appendix 1. Intended learning outcomes

The objectives of the PSTS programme are summarised in a set of final qualifications, which is listed below. These indicate what knowledge and skills a PSTS student should have attained at the moment of graduation. A PSTS graduate has:

### Knowledge

K1	Extensive knowledge of the philosophy of technology, including its philosophical and STS approaches, and the ability to relate these approaches to each other.
K2	Good knowledge of the various philosophical subfields, including ethics of technology, social and political philosophy of technology, philosophical anthropology of technology, epistemology and metaphysics of technology, and philosophy and history of (engineering) science and technology.
K3	Good knowledge of approaches and themes in STS.
K4	Good knowledge of empirical research methods in STS and philosophical research methods.
K5	A basic understanding of the relation between the philosophy of technology, including its various subfields, methods and history, to general philosophy, including its various subfields, methods and history.
K6	Specialist knowledge of a sub-domain or specialised topic within the philosophy of technology.

### Skills

S1	Writing and verbal communication skills.
S2	Skills in reasoning and arguing and in the analysis of arguments.
S3	Skills in locating, reading and analysing scientific texts from various disciplines in philosophy and STS, as well as professional and popular texts, that reflect on technology, engineering sciences, technological developments, and the relationship between technology and society.
S4	Skills in the identification and analysis of problems related to the role of technology and science in society, and the ability to formulate a position with regard to these problems from a philosophical and/or STS perspective.
S5	The ability to perform original scientific research in the field of philosophy of technology, using philosophical and/or STS methods. This includes the ability to arrive at a well-considered problem formulation, the selection and development of appropriate theories and (empirical) methodologies, and the proper execution of a research.
S6	Skills in the comparison of differing scientific approaches or paradigms in a sub-domain or specialised topic, the application of these approaches, and the ability to critically analyse them.
S7	The ability to generate philosophical and/or STS research results that are relevant for scientific, technological, and/or social practices.
S8	The capacity to collaborate with and communicate research results and solutions to scientists in- and outside one's own academic field, as well as professionals from societal domains, and the ability to generate learning processes from that interaction and collaboration.
S9	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.
S10	Capable to endeavour a career inside or outside of academia wherein philosophical and STS knowledge and skills are required.

These final qualifications are well aligned with the Dublin descriptors (an international benchmark for what completion of master level should entail, see Appendix 1). This implies that PSTS graduates should be capable to function on a master's level.

## 1. Relationship between the Dublin descriptors and the PSTS final qualifications

Aspect	Dublin-descriptor	PSTS Final qualifications
<i>Knowledge and understanding</i>	Have demonstrated knowledge and understanding that is founded upon and extends and/or enhances that typically associated with bachelor's level, and that provides a basis or opportunity for originality in developing and/or applying ideas, often within a research context	K1-6, S3-6
<i>Applying knowledge and understanding</i>	Can apply their knowledge and understanding and problem-solving abilities in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their field of study; have the ability to integrate knowledge and handle complexity.	S4-6
<i>Making judgements</i>	Can formulate judgements with incomplete or limited information, that rather include reflection on social and ethical responsibilities linked to the application of their knowledge and judgements.	S4, S6, S9
<i>Communication</i>	Can communicate their conclusions, and the knowledge and rationale underpinning these, to specialist and non-specialist audiences clearly and unambiguously.	S1, S2, S7, S8
<i>Learning skills</i>	Have the learning skills to allow them to continue to study in manner that may be largely self-directed or autonomous.	S9, S10



## Appendix 2. Programme curriculum

### Curriculum overview - Master Philosophy of Science, Technology and Society

#### 1st year PSTS in 2022-2023

Semester 1		Semester 2	
Quartile 1	Quartile 2	Quartile 3	Quartile 4
Philosophy of technology (201200063) 5 EC	Philosophy of science in practice (201400573) 5 EC	TechnoLab (202000252) 5 EC	PhiloLab (202000253) 5 EC
Science and technology studies (201200064) 5 EC	History of science and technology (201400574) 5 EC	Philosophical anthropology and technology (191612550) 5 EC	Technology and social order (191622510) 5 EC
Philosophical theories and methods (201200059) 5 EC	Ethics and technology 1 (191612540) 5 EC	Society, politics and technology (191612560) 5 EC	Ethics and technology 2 (191612580) 5 EC
PSTS Skills portfolio (202000102) 0 EC			
8 attended colloquia (202200273) 0 EC			

#### 2nd year PSTS in 2022-2023

Semester 1		Semester 2	
Quartile 1 (choose 3 out of 4 electives)	Quartile 2 (choose 2 out of 3 electives)	Quartile 3	Quartile 4
Technologies in use (201800145) 5 EC <i>(elective)</i>	Anticipation and evaluation of emerging technologies (201800149) 5 EC <i>(elective)</i>	<b>Master's Thesis 30 EC</b> (201300088)  <b>or</b>  <b>Internship 10 EC</b> (201300090) <b>&amp;</b> <b>Master's Thesis 20 EC</b> (201300089)	
Transformation of knowledge in a digital age (201800146) 5 EC <i>(elective)</i>	Minds, bodies and technologies (201800150) 5 EC <i>(elective)</i>		
Technologies and discourse (202100093) 5 EC <i>(elective)</i>	Rethinking science-technology relations (201800151) 5 EC <i>(elective)</i>		
Good technology for users and society (201800148) 5 EC <i>(elective)</i>	Ethics and Epistemology of AI: Machines, minds and society (202200010) 5 EC <i>(elective)</i>		
<i>Or other elective outside PSTS (to be approved by Programme Management) *</i>			
<b>MasterLab</b> (202000254) 5 EC <i>(obligatory)</i>			
complete PSTS Skills portfolio (202000102) 0 EC			
complete 8 attended colloquia (202200273) 0 EC			

\* Two already approved (and therefore submitting a request is not necessary anymore) electives are:

201100077 Policy analysis in public and technological domains (from the UT MSc programme Public Administration - PA)

201600012 Management and governance of innovation and creativity (from the UT MSc programme Business Administration – BA)



Curriculum of the part-time programme (2022-2023)

Academic Year	Block 1A	Block 1B	Block 2A	Block 2B	
M1 – a Year 1	<b>Philosophy of Technology</b> (201200063, 5EC)  <b>Science and Technology Studies</b> (201200064, 5EC)  10 EC	<b>Philosophy of Science in Practice</b> (201400573, 5EC)  5 EC	<b>Philosophical Anthropology and Technology</b> (191612550, 5 EC)  <b>Society, Politics and Technology</b> (191612560, 5EC)  10 EC	<b>Technology and Social Order</b> (191622510, 5 EC)  5 EC	
M1 – b Year 2	<b>Philosophical Theories and Methods</b> (201200059, 5 EC)  5 EC	<b>History of Science and Technology</b> (201400574, 5 EC)  <b>Ethics and Technology 1</b> (191612540, 5 EC)  10 EC	<b>TechnoLab</b> (202000252, 5 EC)  5 EC	<b>Ethics and Technology 2</b> (191612580, 5 EC)  <b>PhiloLab</b> (202000253, 5 EC)  10 EC	
M2 – a Year 3	Elective 1 (5 EC) Elective 2 (5 EC)  10 EC	Elective 3 (5 EC) Elective 4 (5 EC)  10 EC	(Elective elsewhere??)  orientation Master's Thesis (individually) + start writing research proposal	(Elective elsewhere??)  orientation Master's Thesis (individually) + start writing research proposal	
M2 – b Year 4	Elective 5 (5EC) MasterLab_sem1 Master's Thesis	MasterLab_sem1 Master's Thesis	Master's Thesis incl. MasterLab_sem2	Master's Thesis incl. MasterLab_sem2	Possible extension combining thesis

Note 1: Apart from this offered part-time plan, part-time students need to follow courses the same way as full-time students, so all the same requirement, deadlines, etc. apply.  
 Note 2: In addition to completing these courses, part-time students are also supposed to participate in Skills Portfolio and to attend at least eight colloquia.

Curriculum of 4TU Ethics & Technology track (2022-2023)

4TU Ethics and Technology Track			
Semester 1		Semester 2	
Block 1A	Block 1B	Block 2A	Block 2B
Good Technology for Users and Society (UT) (201800148) 5 EC	Anticipation and Evaluation of Emerging Technologies (UT) (201800149) 5 EC	Master's Thesis in Ethics & Technology, (201300283) 30 EC  Supervisors are members of 4TU.Ethics from UT, TU Delft, TU Eindhoven or WUR	
	Minds, Bodies and Technologies (UT) (201800150) 5 EC		
<i>Elective Courses</i> Choose two from:  Philosophy of Risk (TU/e) 5 EC  Design for Values (TU/e) 5 EC		If you have been accepted into the 2+3 PhD programme in Ethics of Technology, you write a combined Master's thesis and PhD thesis proposal of 30 EC. The master's thesis is either a stand-alone study on which the PhD thesis builds or a chapter of the future dissertation.	
Upon approval by the director of the PhD graduate programme and the PSTS Programme Director, other relevant courses, e.g. offered by OZSW in the 1 <sup>st</sup> semester			
PSTS MasterLab, (202000254), 5 EC			
PSTS Skills Portfolio (202000102) 0 EC			
8 attended colloquia (202200273) 0 EC			

Curriculum joint education programme PSTS-Business Administration 2023-2024

YEAR 1				YEAR 2				
Semester 1		Semester 2		Semester 1		Semester 2		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Philosophical Theories & Methods (201200059, 5 EC)	Ethics & Technology 1 (191612540, 5 EC)	TechnoLab (202000252, 5 EC)	PhiloLab (202000253, 5 EC)	Entrepreneurial leadership and responsible design (201600002, BA core, 5 EC)	one Kick-off meeting Q3's course Masterclass BA	Masterclass BA (201400018, BA core for double degrees, 5 EC)	Possible FP extension	
Science & Technology Studies (201200064, 5 EC)	History of Science & Technology (201400574, 5 EC)	Society, Politics & Technology (191612560, 5 EC)	Technology & Social Order (191622510, 5 EC)	International Entrepreneurship – a Strategic Technology Perspective (201600011, BA profile, 5 EC)	Business valuation and corporate governance (201800089, BA core, 5 EC)	Combined Final thesis Project		
Philosophy of Technology (201200063, 5 EC)	Philosophy of Science in Practice (201400573, 5 EC)	Strategic Technology Management & Innovation (201600015, BA profile, 5 EC)	Ethics & Technology 2 (191612580, 5 EC)	Management and Governance of Innovation and Creativity (201600012, BA profile & PSTS elective, 5 EC)	Anticipation and evaluation of emerging technologies (201800149, PSTS, 5 EC)	PSTS code: 201900178, 25 EC / BA code: 194100040, 25 EC		
PSTS Skills Portfolio (202000102, 0 EC)				PSTS MasterLab (202000254), 5 EC				
8 attended colloquia (202200273, 0 EC)				complete PSTS Skills Portfolio				
				complete 8 coll.				

Curriculum Joint Education Programme PSTS-Public Administration 2023-2024

YEAR 1				YEAR 2				
Semester 1		Semester 2		Semester 1		Semester 2		
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
Philosophical Theories & Methods (201200059, 5 EC)	Ethics & Technology 1 (191612540, 5 EC)	TechnoLab (202000252, 5 EC)	PhiloLab (202000253, 5 EC)	Policy-making for complex problems PA core (202200090, 5 EC)	Anticipation and evaluation of emerging technologies (201800149, PSTS, 5 EC)	Deliberative governance of Knowledge & Innovation (201100076, PA S&T profile, 5 EC)	combined Final thesis Project	
Science & Technology Studies (201200064, 5 EC)	History of Science & Technology (201400574, 5 EC)	Public governance and legitimacy (194101070, PA core, 5 EC)	Technology & Social Order (191622510, 5 EC)	Technologies and Discourse (202100093, PSTS, 5 EC)	PA Academic research (201500145, 5 EC)	Public governance and policy networks (194111240, PA Core, 5 EC)		
Philosophy of Technology (201200063, 5 EC)	Philosophy of Science in Practice (201400573, 5 EC)	Society, Politics & Technology (191612560, 5 EC)	Ethics & Technology 2 (191612580, 5 EC)	PSTS MasterLab (202000254, 1 EC)	PSTS MasterLab (202000254, 4 EC)			
PSTS Skills Portfolio (202000102, 0 EC)				Crisis management in technological domains (202100089, PA core, 5 EC)				Possible FP extension
8 attended colloquia (202200273, 0 EC)				PSTS code: 201900179, 25 EC / PA code: 194128030, 25 EC				
				Q3+4 optionally participate in MasterLab meetings				
				complete PSTS Skills Portfolio				
				complete 8 coll.				

Note: PSTS-PA joint education programme students are advised to start PSTS MasterLab in Q1 and to decide at the end of Q1 whether they will continue in MasterLab or switch to PA Academic Research

## Appendix 3. Programme of the site visit

Site visit M Philosophy of Science, Technology and Society (PSTS) at the University of Twente

### 27 September 2023

17.00 – 18.30 Panel preparation & consultation hour at hotel

### 28 September 2023

08.45 – 09.00	<b>Welcome</b>
09.00 – 09.45	<b>Showcase PSTS students</b>
09.45 – 10.15	<b>Interview programme management</b>
10.15 – 10.30	Panel meeting
10.30 – 11.15	<b>Interview students</b>
11.15 – 11.30	Panel meeting
11.30 – 12.30	<b>Interview teaching staff</b>
12.15 – 12.45	<b>Board of Examiners</b>
12.45 – 13.15	Lunch
13.15 – 13.45	<b>Future Development I: Internationalization (30 min)</b>
13.45 – 14.00	Panel meeting
14.00 – 14.45	<b>Future Development II: CBL in MSc thesis (45 min)</b>
14.45 – 15.45	Panel meeting
15.45 – 16.15	<b>Concluding session programme management</b>
16.15 – 17.15	Panel prepares preliminary findings
17.15 – 17.30	<b>Oral feedback panel</b>

## Appendix 4. Materials

Prior to the site visit, the panel studied 15 theses. Information on the theses is available from Academion upon request. The panel also studied other material, including:

- Brief introduction to the programme
- Facts and Figures
- Organisation
  - The Future of PSTS Teaching and the Value of Diversity (Report)
  - Programme Development Plan 2022-23
- Improvements implemented following the 2017 panel recommendations
- Developments
  - Internship Report examples
  - PSTS skills covered in courses
- Standard 1: Intended Learning Outcomes
  - PSTS Programme Guide (2022-2023; 2023-2024)
  - PSTS Brochure
  - Website for prospective PSTS students
  - Website for current PSTS students
  - The domain-specific frame of reference (*Domeinspecifiek referentiekader*)
  - Joint Education Programme with Business Administration
  - Joint Education Programme with Public Administration
  - Transdisciplinary Master Insert
  - PSTS Internship Guide
  - 4TU.Centre for Ethics and Technology (4TU.Ethics)
- Standard 2: Teaching and Learning Environment
  - Curriculum PSTS
  - Curriculum joint education programme with Business Administration
  - Curriculum joint education programme with Public Administration
  - Extended course descriptions via Osiris Course Catalogue
  - UT Language Policy document
  - Course information Philosophical Theories and Methods (Y1-Q1)
  - Course information Philosophical Anthropology and Technology (Y1-Q2)
  - Course information Anticipation and Evaluation of Emerging Technologies (Y2-Q2)
  - Course information Rethinking Science-Technology Relations (Y2-Q2)
  - Final Project Guide
  - Graduation Page on PSTS website
  - List of PSTS examiners appointed by the Examination Board
  - BMS Lab (social science innovation lab at the University of Twente)
  - Course evaluations
  - Course screenings
  - Thesis screenings
  - Exit Survey
  - National Student Survey (NSE)
  - National Alumni Survey (NAE)
- Standard 3: Student Assessment
  - PSTS Assessment Plan 2022-23

- Example of a rubric in the course Ethics and Technology II
- Example of a rubric in the course Minds, Bodies and Technologies
- PSTS Master's Thesis assessment form (before Colloquium)
- Assessment form rubric
- Education and Examination Regulation (EER) - Masters BMS; and Programme Specific Appendix (PSA)
- Website of the Examination Boards BMS
- Annual Report 2021-2022 Examination Boards
- Standard 4: Achieved Learning Outcomes
  - Alumni Association Nestorix
  - National Alumni Survey
  - LinkedIn group: Alumni Association VWI Nestorix
  - Testimonials PSTS alumni on the website for prospective students
- Selected theses and assessment forms
- Student Chapter
- SWOT Analysis
- Showcases
- Future Development I - Internationalization
- Future Development II - CBL in MSc thesis