B Computer Science and Engineering | M Computer Science

Technical University Delft

www.academion.nl
info@academion.nl

Project code P2409

Contents

Summary

Standard 1. Intended learning outcomes

The panel considers the intended learning outcomes of both the BSc CSE and the MSc CS to clearly and convincingly articulate the academic profiles and ambitions of the programmes. For the bachelor's programme, the panel finds that the intended learning outcomes consistently reflect the intended balance between theoretical and mathematical foundations, engineering-oriented competencies and attention to ethical and societal contexts. The systematic benchmarking against internationally recognised reference frameworks supports the conclusion that the level and orientation of the bachelor's learning outcomes are appropriate for an academic bachelor's programme. At the same time, the panel recommends that the forthcoming curriculum redesign be used to further sharpen the intended learning outcomes, making themes such as artificial intelligence, data ethics, sustainability and transversal skills more explicit and measurable. For the master's programme, the panel considers that the intended learning outcomes convincingly capture the programme's research-intensive character. The emphasis on methodological rigour, independent research and advanced design competencies is clearly aligned with expectations for a second-cycle academic programme, as evidenced by the benchmarking against international disciplinary standards and national criteria for academic engineering education. In light of ongoing disciplinary and societal developments, the panel recommends that the programme continues to refine the intended learning outcomes, particularly with regard to AI-related competencies, interdisciplinarity and sustainability, while ensuring that the formulations remain clear and measurable.

With regard to the further development of the intended learning outcomes, the panel notes positively that both programmes present planned updates as forward-looking refinements that build on the current formulation of the learning outcomes and are positioned in relation to developments in the discipline. The panel considers this approach to be consistent with the programmes' profiles and positioning. Finally, the panel considers that the involvement of the Industrial Advisory Board provides a relevant external perspective on developments in the professional field. The regular engagement of the advisory board and the way its input is taken into account contribute to maintaining alignment between the intended learning outcomes and developments in the academic and professional context.

Standard 2. Teaching-learning environment

The panel considers the teaching–learning environment of both the BSc CSE and the MSc CS to be coherent and supportive of the achievement of the intended learning outcomes. Taken as a whole, the curricula, didactic approaches, student guidance arrangements, staffing and facilities are aligned with the academic profiles and ambitions of the programmes. The panel considers the language policy of both programmes appropriate in light of the international character of the discipline and the programmes' academic orientation. The use of English as the main language of instruction is well embedded within an international classroom setting, while the bilingual track in the bachelor's programme supports accessibility for Dutch-speaking students.

For the bachelor's programme, the panel values the structured curriculum organised around learning paths, which supports a cumulative and well-sequenced development of disciplinary knowledge, design competencies and research skills. The panel considers this structure appropriate for a large-scale academic engineering programme. In light of the findings regarding experienced workload, particularly in the second year, the panel recommends that the forthcoming curriculum redesign explicitly addresses workload balance in phases where several demanding components coincide. The panel also considers the redesign an

appropriate opportunity to further strengthen the coherence between learning outcomes, teaching activities and assessment, including the explicit articulation and assessment of professional and meta-cognitive skills.

For the master's programme, the panel finds that the progression from a shared academic foundation to thematic specialisation and an individual research project is well motivated, academically sound and consistent with the programme's research-intensive character. The strengthened thesis process and the use of digital monitoring tools contribute positively to transparency, guidance and feasibility. In line with the findings that supervision capacity is a point of attention in high-demand thematic areas, the panel recommends continued monitoring of supervision capacity and more systematic coordination of supervision across sections where necessary. In addition, given the panel's observation that emerging technological developments are not yet consistently visible across the curriculum, the panel recommends strengthening the curricular embedding of developments such as cloud technologies, DevOps practices and modern computing infrastructures within the master's programme.

The panel appreciates the active-learning orientation of both programmes, including the prominent role of project-based education and the integration of academic and professional skills within disciplinary contexts. In the panel's view, structured exposure to professional practice is an important element in the education of Computer Science graduates. Based on the findings that students in both programmes expressed interest in more structured engagement with industry, the panel therefore recommends that the programmes explore the integration of structured industry engagement, such as optional internships, while safeguarding academic quality and alignment with the intended learning outcomes. In doing so, use can be made of the forthcoming bachelor curriculum redesign and the existing flexibility in the master's programme structure.

The panel appreciates inclusivity measures following the 2023 scan. At the same time, with the share of female students in the bachelor's programme remaining around 16% and some women not always experiencing the learning environment as equally inclusive, it recommends strengthening efforts to improve gender balance and inclusion, notably through targeted outreach and continued attention to an inclusive learning environment.

The panel is positive about the quality, commitment and expertise of the teaching staff. It regards the CSE Teaching Team as a clear asset to the bachelor's programme and values the structured deployment and supervision of TAs, which contribute to continuity and a supportive learning environment. At the same time, the panel notes that sustained attention to staff capacity, diversity and workload remains relevant for maintaining educational quality over time. Finally, the panel considers the available computing facilities appropriate for the scale, technical demands and educational objectives of both programmes.

Standard 3. Student assessment

The panel considers that both the BSc CSE and the MSc CS have coherent and well-functioning assessment systems that are appropriate for their academic level and orientation. A broad range of assessment methods is applied, and assessment criteria are generally transparent and clearly communicated.

For the bachelor's programme, the panel values the structured approach to assessment in project-based components. The combination of group and individual assessment elements, supported by peer assessment, individual deliverables and oral examinations, provides a sound basis for distinguishing individual performance in a large-scale setting. While free-riding is recognised as an inherent risk in group work, the panel finds that the programme applies appropriate and proportionate mechanisms to mitigate this risk. With regard to the final-year Research Project, the panel considers the use of individual supervision,

predefined assessment criteria and an individual oral defence to contribute to a careful and verifiable assessment of students' individual achievement.

For the master's programme, the panel finds the assessment system well suited to a research-intensive academic programme. In particular, the strengthened structure of the master's thesis trajectory, with formal formative milestones, explicit assessment criteria and the application of a four-eyes principle involving a daily supervisor and an examiner, supports transparency, consistency and reliability in the assessment of final projects. The panel considers the procedures for evaluating master's theses to be robust and aligned with the intended learning outcomes at second-cycle level.

The panel considers the Board of Examiners to be active and professional, with systematic monitoring of assessment quality, including targeted reviews of theses and attention to individual contributions within group-based assessment. In the context of the increasing use of generative AI, the panel notes that institutional policies are complemented by course-level decisions. At the same time, the panel recommends that the Board of Examiners further strengthen its proactive role in safeguarding academic integrity by developing a more anticipatory and programme-wide framework for the use of AI tools in assessment.

Overall, the panel concludes that assessment practices in both programmes are robust and appropriate. Continued attention to consistency, clarity of expectations and the evolving implications of AI use will further strengthen assessment quality.

Standard 4. Achieved learning outcomes

The panel concludes that both programmes demonstrate that graduates achieve the intended learning outcomes at the appropriate academic level. For the BSc CSE, the reviewed final works show that students attain the level expected of an academic bachelor's degree. Students demonstrate the ability to apply disciplinary knowledge, conduct supervised research or design activities, and reflect on their work in a structured manner. The panel considers this level appropriate for progression to master's programmes, which is consistent with the programme's academic orientation.

For the MSc CS, the panel concludes that the reviewed theses convincingly demonstrate the programme's research-intensive character. The observed depth, methodological rigour and analytical competence align with the intended learning outcomes and with expectations for a second-cycle academic degree. Graduates demonstrate the ability to conduct independent research or advanced design work and to position their results within relevant academic and technological contexts.

The panel notes that information obtained from interviews and employment data supports the conclusion that graduates are well prepared to apply the competencies developed in the programme in subsequent professional or research-oriented roles.

Taken together, the panel finds that the achieved learning outcomes of both programmes are consistent with the intended learning outcomes, the level of the respective degrees and the programmes' academic profiles.

Score table

The panel assesses the programmes as follows:

Bachelor's programme Computer Science and Engineering

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

Master's programme Computer Science

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

The assessment panel has reviewed the report and agrees with its contents. On behalf of the panel,

Prof. Dr. ir. B. (Bart) Preneel [Chair] E. (Esther) Poort MSc [Secretary]

Date: 3 March 2026

Introduction

Procedure

Assessment

On 17 and 18 November 2025, the bachelor's programme Computer Science and Engineering and the master's programme Computer Science of the Technical University Delft were assessed by an independent peer review panel as part of the cluster assessment. The assessment cluster consisted of 25 programmes, offered by the institutions Open University, University of Groningen, University of Twente, Amsterdam University, University of Amsterdam, Radboud University Nijmegen, Technical University Eindhoven, Technical University Delft and the University of Utrecht. The assessment followed the procedure and standards of the NVAO Assessment Framework for the Higher Education Accreditation System of the Netherlands (April 2024).

Quality assurance agency Academion coordinated the assessment upon request of the Computing Science cluster. Yannick Slagter and Peter Hildering acted as coordinators in the cluster assessment and Esther Poort acted as secretary for the assessment of the programmes of Technical University Delft. They have been certified and registered by the NVAO.

Panel composition

Academion composed the peer review panel in cooperation with the institutions and taking into account the expertise and independence of the members. In order to strengthen the mutual consistency between the assessment panels within the cluster, the coordinator from Academion ensured joint instruction for the panel members and a comparable assessment method for all site visits. This consistency was also a point of attention at all concluding panel meetings during the site visits. Finally, overlap in assessment panels of the various site visits in the cluster further strengthened the consistency. The composition of the panels was designed in such a way that at least one panel member also participated in another assessment panel in the cluster.

On 30 April 2025 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) on 9 December 2024.

Preparation

The programmes composed a site visit schedule in consultation with the coordinator (see Appendix 3). The programmes selected representative partners for the various interviews. They also determined that the development dialogue would be made part of the site visit. A separate development report was made based on this dialogue.

The programmes provided the coordinator with a list of graduates over the period 2023-2024. In consultation with the coordinator, the panel chair selected a representative sample of fifteen students per programme, whose final products were subsequently reviewed. In making the selections, the panel considered the diversity of final grades, examiners, and tracks (when applicable) within the programmes. For the bachelor's programme, this comprised each student's Research Project report and the Software Project report from the second year. For the master's programme, 4 theses were selected from the Data Science & Technology track, 6 theses of the Artificial Intelligence and Technology track, and 5 theses of the Software Technology track. This selection reflected the number of graduates in each particular track proportionally.

Prior to the site visit, the programmes provided the panel with the theses and the accompanying assessment forms. They also provided the panel with the self-evaluation reports and additional materials (see Appendix 4).

The panel members studied the information and sent their findings to the secretary. The secretary collected the panel's questions and remarks in a document and shared this with the panel members. In a preliminary meeting, the panel discussed the initial findings on the self-evaluation reports and the theses, as well as the division of tasks during the site visit. The panel was also informed on 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 programme representatives (see Appendix 3). The panel also offered students and staff members an opportunity for confidential discussion during a consultation hour. One student and one staff member approached the panel to raise an issue and provided a written explanation to clarify their concerns. 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, general observations of the panel and suggestions for development themes.

Report

The secretary wrote a draft report based on the panel's findings and submitted it to the coordinator for peer assessment. Subsequently, the secretary sent the report to the panel for feedback. After processing this feedback, the secretary sent the draft report to the programmes in order to have it checked for factual irregularities. The secretary discussed the ensuing comments with the panel chair and changes were implemented accordingly. The panel then finalized the report, and the coordinator sent it to the Faculty of Electrical Engineering, Mathematics and Computer Science.

Panel

The panel assessing the B Computer Science and Engineering and the M Computer Science at the TU Delft consisted of the following members:

- Prof. Dr. ir. B. (Bart) Preneel, Full Professor Computer Security and Industrial Cryptography at the Faculty of Engineering Sciences at the KU Leuven [Chair];
- Prof. dr. M. (Marco) Aiello, Full professor of Service Computing at the University of Stuttgart;
- Prof. dr. S. (Sjouke) Mauw, Full professor in Security and Trust of Software Systems at the University of Luxembourg (Luxembourg);
- Prof. dr. G. (Gergana) Vladova, Professor Computer Science Education/Computer Science and Society at the Humboldt Universität zu Berlin (Germany);
- F.P. (Floris) Westerman MSc. Alumnus (end of 2024) of the master's programmes Computer Security at the Vrije Universiteit Amsterdam, Computing Science (Track Software Engineering and Distributed Systems) at the Rijksuniversiteit Groningen, and Logic (track Logic & Computation) at the Universiteit van Amsterdam. [Student member]

Each panel member, the panel secretary and the programmes have filled out the Statement of Impartiality and non-disclosure agreement, as required by the NVAO. They can confirm that the assessment was carried out in complete independence.

Information on the programmes

Name of the institution:	Technical University Delft/ Technische Universiteit Delft
Address:	Mekelweg 5, 2628 CD Delft
Website:	www.tudelft.nl
BRIN-number:	21PF
Status of the institution:	Publicly funded institution
Result institutional quality assurance assessment:	Positive
Programme name:	Bachelor Computer Science and Engineering
ISAT number:	56964
Orientation of the programme:	Academic
Level of the programme:	Bachelor (NLQF 6)
Number of credits:	180 EC
Language of instruction:	Dutch/English (Dutch track) English (English track)
Professional requirements:	no
Location:	Delft
Mode(s) of study:	Fulltime
Assessment group:	Computer Science
Awarded degree:	BSc.
Submission date NVAO:	1 May 2026
Programme name:	Master Computer Science
ISAT number:	60300
Orientation of the programme:	Academic
Level of the programme:	Master (NLQF7)
Number of credits:	120 EC
Language of instruction:	English
Professional requirements:	no
Specializations or tracks:	Data Science and Technology Artificial Intelligence and Technology Software Technology
Location:	Delft
Mode(s) of study:	Fulltime
Assessment group:	Computer Science
Awarded degree:	MSc.
Submission date NVAO:	1 May 2026

Description of the assessment

Organization

Both the bachelor's programme in Computer Science and Engineering (BSc CSE) and the master's programme in Computer Science (MSc CS) are embedded in the Faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS) at TU Delft. The faculty is one of eight at the university and has a clear governance structure for education. The dean bears final responsibility for research, education, operations and finance, and is supported by a Management Team composed of the heads of the six departments, the Director of Education and the faculty secretary. Within this structure, the Director of Education oversees faculty-wide educational policy, quality assurance and the coherence of all programmes. The Director also chairs the Educational Board, which brings together all Directors of Studies and the manager of Education & Student Affairs (ESA).

Programme-level management for both BSc CSE and MSc CS is entrusted to the Directors of Studies, who are responsible for programme content, quality, day-to-day monitoring and improvement cycles. In the bachelor's programme, the Director of Studies is supported by two year-coordinators who play an important operational and organisational role. For the master's programme, the Director of Studies is supported by master coordinators, who advise students, evaluate Individual Exam Programmes, monitor study progress and communicate procedural and curricular information.
Both programmes are also supported by ESA programme coordinators who monitor day-to-day processes related to scheduling, course logistics, examinations and communication, and serve as an accessible point of contact for lecturers and support staff.

Recommendations previous panel

The previous accreditation panel formulated several recommendations for both programmes. For the BSc CSE, these concerned strengthening didactic alignment across courses, improving the structured deployment of Teaching Assistants, and enhancing support mechanisms to promote study success and feasibility. For the MSc CS, the recommendations focused on formalising team teaching, improving the monitoring and consistency of thesis assessment, and addressing the prolonged duration of the thesis trajectory.

The current panel considers the follow-up to these recommendations satisfactory. The related measures have now been implemented and are embedded in the programmes. Further discussion of these developments is provided in the relevant sections of this report.

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

Bachelor's programme
The BSc CSE aims to educate academically trained engineers who can analyse, design and evaluate complex computational systems, and who act as responsible engineers with an understanding of ethical and societal implications. The programme positions itself explicitly at the intersection of science and engineering: a

strong theoretical and mathematical foundation is deliberately coupled to design-oriented problem solving and teamwork, and the development of a reflective engineering attitude. The intended learning outcomes (ILOs, see Appendix 1) operationalise this profile. They describe disciplinary knowledge of core computer-science domains, the ability to conduct supervised research, the systematic design of software and systems, a scientific and critical stance, collaboration and communication skills and awareness of ethical and societal contexts.

To ensure international comparability, the programme benchmarked its ILOs against the ACM Computer Science Curricula 2023, the Dublin Descriptors for first-cycle degrees and therefore also the Dutch NLQF framework describing this level (NLQF6) and Meijer's Criteria for Dutch academic engineering programmes. The panel observed that this benchmarking has been carried out systematically and confirms that the ILOs align with internationally recognised expectations for an academic bachelor's programme. The panel further noted that this intended balance between theoretical foundations, mathematical depth and engineering-oriented competencies is consistently reflected in the formulation of the outcomes. Transferable skills and ethical and societal considerations are explicitly included, which staff and students recognised as integral to the programme.

The self-evaluation reports that the ILOs, formulated in 2019, remain fit for purpose but will be updated in the forthcoming curriculum redesign to incorporate themes such as artificial intelligence, data ethics, sustainability and transversal competencies. The panel noted that these plans are presented as a forward-looking development that builds on the existing learning outcomes and is explicitly positioned in relation to ongoing developments in the discipline, rather than as a response to shortcomings in the current formulation.

Master's programme
The MSc CS aims to educate graduates who can advance the field of computer science as an academic discipline while applying their expertise to complex real-world problems. The programme profiles itself as a research-intensive academic programme characterised by methodological rigour, technological innovation and societal relevance. Students develop advanced knowledge in core areas of computer science and further specialise through Computer Science themes such as algorithmics, computer systems, information management, cyber security and machine learning. In doing so, they cultivate the ability to conduct independent research, design sophisticated systems and evaluate computational solutions in multidisciplinary and international contexts.

The intended learning outcomes (ILOs, see Appendix 1) operationalise this profile. They describe advanced disciplinary knowledge, research competence, methodological rigour, the design of complex systems, academic reflection and professional skills. Ethical, societal and sustainability-related aspects are explicitly included, reflecting the programme's emphasis on responsible and reflective engagement with technological developments.

To ensure international comparability, the programme benchmarked its ILOs against the ACM/IEEE/AAAI Computing Curricula 2023, the Dublin Descriptors for second-cycle degrees and therefore also the Dutch NLQF framework describing this level (NLQF7) and Meijer's Criteria for Dutch academic engineering master's programmes. The panel observed that this benchmarking has been carried out systematically, and concludes that the intended learning outcomes align with internationally recognised expectations for a research-oriented academic master's programme.

Based on its review, the panel observed that the ILOs provide a coherent and consistent description of the programme's academic and research-intensive character. In particular, the emphasis on methodological rigour, independent research and advanced design competencies is clearly reflected in the formulation of the outcomes and corresponds with the orientation and level of a second-cycle degree. In this context, the self-evaluation reports that the ILOs were recently revised and are considered fit for purpose. The self-evaluation also notes that ongoing developments in areas such as artificial intelligence and interdisciplinarity require continued attention in the further development of the programme. The panel noted that these plans are presented as a forward-looking refinement of the current learning outcomes, positioned in relation to developments in the discipline rather than as a response to identified shortcomings.

Industrial Advisory Board (both programmes)
Both programmes maintain contact with an Industrial Advisory Board (IAB) that meets twice per year and consists of representatives from industry and research organisations. According to the self-evaluation, the IAB provides input on technological and professional developments and advises on competencies expected of graduates.

The panel observed that the IAB is regularly involved in the programmes and that its feedback has informed recent revisions of the MSc ILOs and ongoing curriculum discussions. The panel considers the involvement of the advisory board to be appropriate and of added value for maintaining the programmes' connection to developments in the professional field.

Considerations

The panel considers the intended learning outcomes of both the BSc CSE and the MSc CS to clearly and convincingly articulate the academic profiles and ambitions of the programmes.

For the bachelor's programme, the panel finds that the intended learning outcomes consistently reflect the intended balance between theoretical and mathematical foundations, engineering-oriented competencies and attention to ethical and societal contexts. The systematic benchmarking against internationally recognised reference frameworks supports the conclusion that the level and orientation of the bachelor's learning outcomes are appropriate for an academic bachelor's programme. At the same time, the panel recommends that the forthcoming curriculum redesign be used to further sharpen the intended learning outcomes, making themes such as artificial intelligence, data ethics, sustainability and transversal skills more explicit and measurable.

For the master's programme, the panel considers that the intended learning outcomes convincingly capture the programme's research-intensive character. The emphasis on methodological rigour, independent research and advanced design competencies is clearly aligned with expectations for a second-cycle academic programme, as evidenced by the benchmarking against international disciplinary standards and national criteria for academic engineering education. In light of ongoing disciplinary and societal developments, the panel recommends that the programme continues to refine the intended learning outcomes, particularly with regard to AI-related competencies, interdisciplinarity and sustainability, while ensuring that the formulations remain clear and measurable.

With regard to the further development of the intended learning outcomes, the panel notes positively that both programmes present planned updates as forward-looking refinements that build on the current formulation of the learning outcomes and are positioned in relation to developments in the discipline. The panel considers this approach to be consistent with the programmes' profiles and positioning.

Finally, the panel considers that the involvement of the Industrial Advisory Board provides a relevant external perspective on developments in the professional field. The regular engagement of the advisory board and the way its input is taken into account contribute to maintaining alignment between the intended learning outcomes and developments in the academic and professional context.

Conclusion

The panel concludes that the bachelor's programme CSE meets standard 1.
The panel concludes that the master's programme CS 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 bachelor's programme

The BSc CSE curriculum is structured around six content-based learning paths and one overarching professional-skills path, which together support coherence and cumulative development across the three study years. The learning paths cover mathematics, algorithms and data structures, programming and software development, computer systems, theoretical computer science, and data and artificial intelligence. The professional-skills path addresses competencies such as collaboration, communication, academic skills and ethical reflection. An overview of the curriculum structure, sequencing and learning paths is provided in Appendix 2. Most courses in the bachelor's programme carry a study load of 5 EC; notable exceptions are the 15 EC Software Project and the 15 EC Research Project.

In the first year, the curriculum focuses on establishing a common academic foundation through courses in mathematics, programming, algorithms and computer systems, which introduce and develop several learning paths in parallel. In the second year, the curriculum deepens theoretical and applied knowledge within these learning paths and introduces differentiation through a shared core and a choice between Variant A, Variant B or Variant C, allowing students to place different emphases while maintaining coverage of all learning paths.

In the third year, students are given increased freedom to shape their individual study trajectory through elective courses or a minor, followed by the individual 15 EC Research Project. Throughout the programme, project-based learning is embedded in the form of course-related group assignments and larger integrated projects. In the earlier years, students work collaboratively on programming, systems or design-oriented assignments within core courses, while in the later stages this approach culminates in the 15 EC Software Project, in which teams integrate knowledge from multiple learning paths in an assignment for an internal or external client, explicitly linking disciplinary knowledge with professional skills.

Students indicated that they value the applied and project-based elements of the curriculum, particularly the Software Project. At the same time, students expressed an interest in more structured opportunities for engagement with industry, such as an optional internship. Programme management indicated that the available minor space is currently being explored as a possible way to accommodate such opportunities as part of the planned curriculum redesign.

The panel finds that the curriculum is coherently structured and that the learning paths provide a clear framework for cumulative development across the three study years. Based on the site visit and the reviewed documentation, the panel considers that the combination of foundational courses, differentiation in the second year and increasing student autonomy in the third year is appropriate for an academic Computer Science and Engineering programme.

With regard to project-based learning, the panel finds that group-based projects at different stages of the programme support the integration and application of knowledge and skills from multiple learning paths. The panel also finds that the integrative nature of the Software Project and the final-year Research Project align well with the programme's academic orientation.

The panel observed that students' interest in more structured engagement with industry reflects a wish to strengthen the connection between academic learning and professional practice, beyond the project-based components currently included in the curriculum. The panel considers structured exposure to industry, for example through internships or similar forms of engagement, to be a relevant element in preparing graduates of a Computer Science and Engineering programme for their future professional roles. It therefore recommends that the programme explore integrating such opportunities within the curriculum.

In addition, the panel observed that emerging technological developments, such as cloud technologies, are not yet consistently addressed in the curriculum. It therefore suggests increasing programme-wide visibility of such developments by embedding them more explicitly and consistently, to support students in connecting their academic training to contemporary professional practice.

The panel notes that the planned curriculum redesign, with the new first-year curriculum and updated intended learning outcomes scheduled to be introduced incrementally from September 2026, is presented as a timely response to ongoing developments in the discipline. It supports the direction of this redesign, which explicitly aims to build on the strengths of the current programme while updating learning paths and revising course content to better reflect emerging developments. In addition, the panel welcomes the redesign's intended strengthening of the integration of professional, responsible-engineering and meta-cognitive skills, including a more explicit embedding of reflection and societal awareness within the technical learning lines.

Curriculum master's programme
The MSc CS is a two-year programme combining a shared foundation in advanced computer science concepts with substantial room for specialisation. The shared foundation is established through the course Software Architecture in the first quarter and Responsible Computer Science in the third quarter, the latter addressing ethical and societal aspects relevant to all students. In addition, students select three core courses from a list of six: two in the first quarter and one in the second quarter (see Appendix 2 for an overview of the curriculum structure).

From the second quarter onward, students choose two Computer Science themes, each consisting of a coherent sequence of three courses. Theme courses carry a study load of 5 EC, and together the themes constitute the main part of the programme's specialised content. Several theme courses also include project-based components, aimed at developing collaboration and application-oriented skills.

In the fourth quarter of the first year, students complete a research-preparation course focusing on skills such as problem formulation, literature review and research design, preparing students for the master's thesis. In the second year, students select broadening and deepening electives, including interdisciplinary

options such as the Joint Interdisciplinary Project (15 EC), in which students from different programmes work together in multidisciplinary teams on a complex societal or technological challenge.

The programme concludes with a 45 EC individual master's thesis project, which includes structured formative milestones such as proposal approval, interim progress reviews and final assessment. According to the programme documentation, constructive alignment is supported through the explicit linkage of course objectives to the intended learning outcomes.

Based on its document review and discussions during the site visit, the panel finds that the curriculum is well structured, with a clear progression from a shared foundation to thematic specialisation and individual research. It considers that the overall design supports coherence and cumulative development and is consistent with the profile of a research-oriented academic master's programme. At the same time, the panel identifies several areas where further strengthening could enhance the programme's implementation and student experience.

Firstly, while students appreciate the opportunity to choose themes that match their interests, they noted that not all theme combinations are feasible in practice and that clearer communication about these constraints would be helpful. During the site visit, the panel learned that the feasibility of certain combinations is partly shaped by staff capacity, as themes rely on specific teaching teams and supervisors with limited availability, which affects both course scheduling and supervision capacity. The panel therefore advises the programme to communicate these constraints more transparently and at an earlier stage, so that students can make well-informed choices within the programme structure.

Second, students expressed interest in more structured forms of industry engagement, such as an optional internship, as a complement to the academic components of the programme. Programme management indicated that the "free" fifth quarter in the programme structure may provide scope to explore such an option. The panel considers structured exposure to professional contexts a valuable element in the education of computer science graduates and therefore recommends exploring the introduction of an optional internship or comparable professional experience.

Finally, the panel finds that, despite the inclusion of Responsible Computer Science and several advanced themes, emerging areas such as cloud technologies, DevOps practices and modern computing infrastructures are not yet consistently visible across the curriculum.

Didactic approach in both programmes
Both programmes adopt TU Delft's educational vision, which emphasises active learning, student engagement and the integration of theoretical and practical components. Teaching methods include lectures, tutorials, programming laboratories, guided self-study and project-based learning, as described in the self-evaluations.

Across the curricula, students apply theoretical concepts in assignments and projects that are intended to reflect the nature of problems encountered in academic and professional contexts. These activities are designed to support the integration of theory and application throughout the programmes.

Students regularly work in teams as part of the didactic approach. Team-based activities are used to support the development of collaboration and communication skills and are applied in various phases of the programmes.

Academic and professional skills are embedded within disciplinary contexts throughout both curricula. Academic skills such as analysis, research and critical reflection are developed through research-oriented assignments and thesis preparation, while professional skills, including teamwork, communication and ethical awareness, are addressed within courses and project work.

Based on the reviewed documentation and the site visit, the panel finds that the didactic approach described by the programmes is consistently implemented across the curricula. The combination of active learning, project-based elements and the integration of academic and professional skills supports students' progression towards increasing independence in research and professional practice. The panel considers this approach to be appropriate to the level and orientation of both programmes.

Language of instruction in both programmes
Both programmes use English as the primary language of instruction, reflecting the international character of the discipline and the predominance of English in scientific and professional communication. English is also used as the working language within the departments. Teaching staff are expected to meet TU Delft's English proficiency requirements (CEFR C1 or higher), and the self-evaluations describe how this is monitored and ensured.

In the bachelor's programme, the transition to English in 2018 supported the programme's international orientation. In 2023, the programme introduced a bilingual (Dutch–English) track for students who are also proficient in Dutch. According to the self-evaluation, this track remains predominantly English and is organised within a shared international classroom setting, while offering additional Dutch-language support and contextualisation, such as Dutch-speaking mentoring, the possibility to offer selected components in Dutch, and attention to Dutch-language communication in specific contexts.

The panel observed that the language policy is clearly formulated and consistently implemented. The panel considers the use of English as the main language of instruction appropriate in light of the programmes' international orientation and the nature of the discipline. With regard to the bilingual track, the panel observed that it functions as an accessibility measure for Dutch-speaking students while maintaining the programme's international classroom setting, coherence of the curriculum and alignment of learning outcomes across tracks. In this context, the panel also observed that the use of English programme names is consistent with the programmes' international orientation and positioning.

Student intake in both programmes
In 2019, the BSc CSE introduced a numerus fixus with a selection procedure in response to the strong growth in student numbers in the preceding years. According to the self-evaluation, this measure was taken to safeguard the feasibility of the programme and the quality of education.

Admission to the bachelor's programme is based on a selection procedure in which candidates are ranked on the basis of a selection test. As described in the self-evaluation, the procedure is designed to assess students' academic preparedness and motivation, and since 2022 includes an explicit focus on teamwork skills as part of the selection process. The bachelor's intake is internationally diverse and consists of Dutch, EER and non-EER students.

The share of female students has remained stable at around 16% per cohort (2019–2024). In 2023, the programme conducted an inclusivity scan with a focus on gender and is currently implementing its recommendations. Measures include introducing a weighted lottery and refining selection-test components, updating marketing and outreach materials, adapting course organisation (e.g., earlier group work and more

inclusive examples), and providing awareness training for staff and Teaching Assistants. The panel appreciates this strengthened focus on inclusion. At the same time, during the site visit it learned that some female students do not always experience the learning environment as equally inclusive. The panel therefore recommends the programme to further strengthen outreach to schools to attract more female students and to continue its efforts to foster an inclusive learning environment for all students.

For the MSc CS, admission follows TU Delft's general requirements and includes discipline-specific prerequisites. Admission decisions are made by the programme's admissions committee, which assesses applicants' prior education and academic background against the programme's entry requirements. Graduates of Dutch research university programmes in Computer Science or Computer Science and Engineering are directly admissible, while applicants from other institutions or related disciplines undergo an individual academic background review.

Where gaps in prior knowledge are identified, the programme prescribes individual bridging requirements. These requirements are defined on a case-by-case basis and may consist of specific courses or subject components that students are required to complete. The programme monitors the fulfilment of these requirements to ensure that incoming students possess the foundational knowledge and skills needed to enter the master's curriculum.

Based on the discussions during the site visit, the panel is of the opinion that the use of a numerus fixus provides a clear framework for managing the size of the bachelor's intake. The panel also observed that the bachelor cohort is internationally diverse and that the bilingual track contributes to maintaining accessibility for Dutch-speaking applicants alongside the programme's international orientation.

For the MSc CS, the panel observed that the admission requirements are clearly formulated and aligned with the competencies expected of incoming students. The panel noted that the combination of direct admission routes, individual academic background review and the use of bridging requirements provides a coherent approach to ensuring that students enter the programme with an appropriate level of preparation to achieve the intended learning outcomes.

Student guidance and feasibility bachelor's programme
First-year students of the BSc CSE are assigned a mentor who supports their transition into the programme and monitors study progress during the first year. Throughout the programme, study advisers and academic counsellors are available to provide individual guidance, discuss study planning and address academic or personal circumstances that may affect students' progress.

During the final-year Research Project, students receive individual supervision from an academic staff member, who guides the research process, provides feedback on interim deliverables and supports students in completing the thesis within the planned timeframe.

Students with functional impairments or special circumstances can access tailored arrangements through Educational Support and Accessibility (ESA). According to the self-evaluation, such arrangements may include adjustments to examinations, deadlines, study planning or the learning environment, depending on individual needs and in line with institutional policies.

During the site visit, students and programme management indicated that the bachelor's curriculum is experienced as demanding, particularly in periods with a high concentration of project work and, notably, in the second year, when several project-based and theoretical courses run in parallel. At the same time, the

self-evaluation shows that study success indicators are strong: the Binding Study Advice (BSA) pass rate remained high between 2020 and 2023, fluctuating between approximately 70% and 85%. This rate exceeds the TU Delft average and points to a relatively favourable level of study success despite the experienced workload.

To support study feasibility, the programme applies measures such as early monitoring of study progress, targeted outreach to students who are at risk of delay, and structured follow-up by study advisers. According to programme management, these measures are complemented by plans in the forthcoming curriculum redesign to place a stronger and more explicit emphasis on meta-cognitive skills, such as planning and self-regulation, within the professional-skills trajectory.

According to the self-evaluation, differences are observed in study progression between the two language tracks, with students in the Dutch–English track on average taking longer to complete the programme. The self-evaluation relates these differences to variation in entry profiles and the transition into the academic Computer Science and Engineering curriculum. The programme monitors these patterns over time and forms mixed project groups to support integration and peer learning between students from both tracks.

Based on the reviewed documentation and discussions during the site visit, the panel observed that the programme has mechanisms in place to monitor study feasibility and that attention is given to guidance and study-skills support for students in both language tracks. The panel noted that workload pressures are recognised within the programme and that study feasibility is an explicit point of attention in the ongoing curriculum development.

Student guidance and feasibility master's programme
According to the self-evaluation, the MSc Computer Science offers an extensive system of guidance throughout the programme. At the start of the academic year, Master Your Start introduces students to the programme and connects them with academic counsellors and master coordinators. The master coordinators advise students on Individual Exam Programmes (IEPs), organise information sessions on theme selection, research preparation and graduation procedures, and follow students' progress throughout the programme.

Improving study feasibility has been a point of attention since the previous accreditation. The revised curriculum places core courses, Computer Science themes and the research-preparation course in a clearer sequence, supporting coherent study planning. In addition, the thesis process was revised in 2023–2024, introducing mandatory planning steps and structured formative feedback moments. During the master's thesis trajectory, students receive individual supervision from an academic staff member, while study progress and milestones are monitored through digital tools such as MyStudyPlanning, Project Forum and MaRe. Academic counsellors provide additional individual support where needed.

As noted in the self-evaluation, the measures introduced require time to demonstrate their full impact. Nevertheless, recent statistics indicate positive developments. The average study duration decreased from 2.8 years for the 2018 cohort to 2.5 years for the 2022 cohort.

Based on the reviewed documentation and discussions during the site visit, the panel observed that guidance and feasibility are coherently organised within the programme. The panel noted that recent changes have increased structure and transparency, particularly in the thesis phase.

Teaching staff bachelor's and master's programme

Both the bachelor's and master's programmes are taught by a diverse team of academic staff. Most lecturers are research-active and hold a University Teaching Qualification (UTQ) or equivalent. Pedagogical development is supported through faculty-wide training opportunities, peer-feedback activities and systematic course-evaluation mechanisms.

In the bachelor's programme, teaching is supported by the CSE Teaching Team, a group of full-time lecturers responsible for teaching innovation, didactic alignment and continuity across courses. According to the self-evaluation, all bachelor's courses are co-taught by at least two lecturers, typically a scientific staff member and a member of the CSE Teaching Team. This structure is intended to support coordination between courses and continuity in a large-scale programme.

Teaching Assistants (TAs) are involved in both programmes under a faculty-wide policy governing their recruitment, task allocation and supervision. TAs support tutorials, lab sessions, project work and, where applicable, formative assessment activities. According to the self-evaluation, TAs operate under the responsibility of the course coordinators and lecturers, who define their tasks and provide supervision during the course.

Based on the reviewed documentation and discussions during the site visit, the panel observed that the teaching staff are well qualified and committed, and that their expertise aligns with the aims and profiles of both programmes. With regard to the CSE Teaching Team, staff indicated that this model supports didactic continuity and coordination across courses, while students highlighted the accessibility and approachability of teaching staff. The panel finds that this team-teaching structure contributes to a coherent and stable learning environment.

The panel further observed that TAs are clearly integrated into the educational processes of both programmes, particularly in the bachelor's programme. Students and staff indicated that TAs play an important role in supporting learning activities. At the same time, the panel noted that responsibility for teaching quality and assessment remains clearly with the academic staff.

The panel observed that gender diversity among teaching staff, particularly at senior levels, remains limited and identified this as a point of attention.

In the master's programme, the panel observed that the availability of TAs can be constrained due to their own study and research commitments. The panel noted the importance of ensuring that supervision and assessment remain well safeguarded, particularly during periods with large student numbers or intensive assessment activities.

The panel further noted that supervision capacity for master's theses is a point of attention, especially in high-demand areas such as cybersecurity and software engineering. According to programme management, steps are being taken to improve supervisor–student matching and to distribute supervision more evenly across research groups. The panel considers that continued workload monitoring and systematic coordination of supervision across sections, including collaboration with neighbouring faculties where appropriate, are important elements in addressing these pressures.

Programme-specific facilities
Both programmes make use of computing facilities that support large-scale computer science education. The BSc CSE offers dedicated computer rooms and specialised software environments for programming

labs, automated testing and version-control workflows. The MSc CS uses the same faculty-wide computing infrastructure and has additional access to designated thesis workspaces located near research groups.

According to the student chapter of the self-evaluation and discussions during the site visit, MSc students are generally positive about the available study and computing facilities. Students indicated that the facilities function well in practice and are accessible when needed for coursework, lab activities and thesis work. At the same time, students noted that workspaces equipped with external monitors can be scarce during peak periods.

Based on the site visit, the panel observed that the available facilities provide access to the specialised software environments and technical infrastructure required for the educational and research activities of both programmes. The panel therefore considers the computing infrastructure appropriate for supporting the teaching and learning environment.

Considerations

The panel considers the teaching–learning environment of both the BSc CSE and the MSc CS to be coherent and supportive of the achievement of the intended learning outcomes. Taken as a whole, the curricula, didactic approaches, student guidance arrangements, staffing and facilities are aligned with the academic profiles and ambitions of the programmes. The panel considers the language policy of both programmes appropriate in light of the international character of the discipline and the programmes' academic orientation. The use of English as the main language of instruction is well embedded within an international classroom setting, while the bilingual track in the bachelor's programme supports accessibility for Dutch-speaking students.

For the bachelor's programme, the panel values the structured curriculum organised around learning paths, which supports a cumulative and well-sequenced development of disciplinary knowledge, design competencies and research skills. The panel considers this structure appropriate for a large-scale academic engineering programme. In light of the findings regarding experienced workload, particularly in the second year, the panel recommends that the forthcoming curriculum redesign explicitly addresses workload balance in phases where several demanding components coincide. The panel also considers the redesign an appropriate opportunity to further strengthen the coherence between learning outcomes, teaching activities and assessment, including the explicit articulation and assessment of professional and meta-cognitive skills.

For the master's programme, the panel finds that the progression from a shared academic foundation to thematic specialisation and an individual research project is well motivated, academically sound and consistent with the programme's research-intensive character. The strengthened thesis process and the use of digital monitoring tools contribute positively to transparency, guidance and feasibility. In line with the findings that supervision capacity is a point of attention in high-demand thematic areas, the panel recommends continued monitoring of supervision capacity and more systematic coordination of supervision across sections where necessary. In addition, given the panel's observation that emerging technological developments are not yet consistently visible across the curriculum, the panel recommends strengthening the curricular embedding of developments such as cloud technologies, DevOps practices and modern computing infrastructures within the master's programme.

The panel appreciates the active-learning orientation of both programmes, including the prominent role of project-based education and the integration of academic and professional skills within disciplinary contexts. In the panel's view, structured exposure to professional practice is an important element in the education of Computer Science graduates. Based on the findings that students in both programmes expressed interest in

more structured engagement with industry, the panel therefore recommends that the programmes explore the integration of structured industry engagement, such as optional internships, while safeguarding academic quality and alignment with the intended learning outcomes. In doing so, use can be made of the forthcoming bachelor's curriculum redesign and the existing flexibility in the master's programme structure.

The panel appreciates inclusivity measures following the 2023 gender scan. At the same time, with the share of female students in the bachelor's programme remaining around 16% and some women not always experiencing the learning environment as equally inclusive, it recommends strengthening efforts to improve gender balance and inclusion, notably through targeted outreach and continued attention to an inclusive learning environment.

The panel is positive about the quality, commitment and expertise of the teaching staff of both programmes. It regards the CSE Teaching Team as a clear asset to the bachelor's programme and values the structured deployment and supervision of TAs, which contribute to continuity and a supportive learning environment. At the same time, the panel notes that sustained attention to staff capacity, diversity and workload remains relevant for maintaining educational quality over time.

Finally, the panel considers the available computing facilities appropriate for the scale, technical demands and educational objectives of both programmes.

Conclusion

The panel concludes that the bachelor's programme CSE meets standard 2.
The panel concludes that the master's programme CS meets standard 2.

Standard 3. Student assessment

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

Findings

Bachelor's programme
The self-evaluation describes a broad and coherent range of assessment methods in the BSc CSE programme, including written examinations, quizzes, lab assignments, project deliverables, code reviews, oral examinations and peer feedback. Course-level assessment criteria are communicated through study guides and rubrics, and assessment methods are explicitly linked to the intended learning outcomes, supporting constructive alignment.

In the programme's project-based components, assessment is designed to monitor both the collaborative process and individual student performance. In the first-year project components and the second-year Software Project, assessment includes a combination of group and individual elements. The programme has strengthened its procedures for assessing individual contributions, for example through structured peer assessment, mandatory individual reflections and individual oral examinations.

The third-year Research Project (15 EC) is assessed on the basis of an individual research report and an individual oral defence. According to the self-evaluation, students are supervised by an academic staff member throughout the project, receive feedback on intermediate deliverables, and are assessed using

predefined criteria addressing research skills, methodological quality, analysis and reflection. Examiners are responsible for the final assessment and grading.

TAs support formative assessment activities under clearly defined supervision arrangements. Their tasks and training requirements follow the faculty-wide TA policy, while responsibility for calibration and final grading in summative assessment remains with the examiners.

Based on its review of the documentation and the discussions during the site visit, the panel finds that the assessment system of the bachelor's programme is varied, transparent and appropriate for a large-scale academic programme. In the context of group-based project components, free-riding is recognised as a potential risk; the panel considers the mechanisms applied by the programme to assess individual contributions in such projects to be appropriate and proportionate. With regard to the Research Project, the panel observed that the use of individual supervision, predefined assessment criteria and an individual oral defence contributes to a careful and verifiable assessment of individual student performance.

Master's programme
The self-evaluation explains that the MSc CS applies a diversified and coherent assessment system aligned with the programme's advanced disciplinary and research-oriented intended learning outcomes. Assessment methods include written examinations, programming assignments, design artefacts, research papers, project reports, presentations and oral examinations. Course-level learning objectives and explicit assessment criteria are communicated through course documentation and rubrics, supporting constructive alignment across the curriculum.

A major element of assessment is the 45 EC individual master's thesis project. Since 2023–2024, the thesis trajectory follows a structured framework that includes mandatory planning documents, formal formative milestones (First Stage Review and Greenlight Review), and documentation of progress and feedback in the MaRe system. Each student is supervised by a daily supervisor and assessed by an appointed examiner, who is responsible for the final judgement. Assessment decisions are informed by discussions between the supervisor and examiner(s), in line with the four-eyes principle.

The panel observed that the assessment of the master's thesis is structured and transparent, and that the use of explicit assessment criteria and rubrics supports consistency across theses. Staff explained that assessment decisions are discussed between supervisors and examiners, and that the application of a four-eyes principle contributes to the reliability and careful conduct of the final assessment.

From its review of the documentation and discussions during the site visit, the panel finds that the assessment system of the master's programme is coherent and appropriate for a research-oriented academic programme. Students generally indicated that assessment criteria are clear, and the panel observed that research and methodological competences are assessed in a structured manner across the curriculum and culminate in the master's thesis.

Board of Examiners
The Board of Examiners (BoE) of the Faculty of Electrical Engineering, Mathematics and Computer Science is responsible for safeguarding the quality of assessment in both the BSc CSE and MSc CS programmes. Its responsibilities include the appointment of examiners, approval and review of assessment plans, systematic checks of course files, monitoring the quality of group assessment and thesis evaluation, and handling requests for exemptions, cases of fraud and appeals. In the MSc programme, the BoE also approves

Individual Exam Programmes (IEPs) and reviews thesis assessment outcomes, including targeted follow-up in cases of exceptionally high or low grades.

The BoE operates through a portfolio-based structure, supported by assessment advisors, and maintains regular contact with programme management and examiners. According to the self-evaluation and the discussions during the site visit, quality assurance activities such as course-file reviews and assessment checks are embedded in the BoE's regular monitoring cycle and are carried out on a recurrent basis.

Calibration is supported through structured discussions between examiners and within course teams, aimed at promoting a shared understanding of assessment criteria and grading standards. In addition, the BoE organises examiner information sessions, which serve to inform examiners about assessment regulations, procedures and recurring points of attention identified through monitoring activities. Together, these arrangements contribute to the consistency, transparency and comparability of assessment practices across courses and programmes.

Based on the documentation and the discussions during the site visit, the panel finds that the BoE operates in a structured manner and is well positioned to safeguard assessment quality. Examiners and staff described interaction with the BoE as constructive, and the panel observed evidence of systematic quality-assurance processes, including structured monitoring of thesis assessments and attention to individual contributions within group-based assessment.

GenAI and assessment
Both programmes operate within university-wide and faculty-level policies on academic integrity and assessment, including provisions relevant to the use of AI and generative tools. These policies provide a general framework for addressing issues related to authorship, integrity and assessment validity.

Within this framework, lecturers make deliberate course-level choices regarding whether and how the use of AI tools is permitted or restricted, reflecting differences in learning objectives, assessment formats and disciplinary contexts. During the site visit, students indicated that they are aware that expectations regarding AI use may vary between courses and that such expectations are communicated by lecturers.

In its meeting with the BoE, the panel discussed the handling of AI-related integrity issues. The BoE indicated that new types of cases are emerging and that existing procedures and interpretations are being refined in response. According to the BoE, particular attention is given to ensuring that assessment remains verifiable and that students' individual contributions can be assessed reliably.

Based on the documentation and the discussions during the site visit, the panel finds that the programmes and the BoE approach the use of AI tools in a considered and responsible manner. The panel considers it appropriate that general institutional policies are complemented by course-specific decisions, given the rapidly evolving nature of AI and its differing relevance across learning objectives. At the same time, the panel notes that continued attention to clarity of expectations for students and to the further development of procedures at programme and faculty level remains important as this area continues to evolve.

Considerations
The panel considers that both the BSc CSE and the MSc CS have coherent and well-functioning assessment systems that are appropriate for their academic level and orientation. A broad range of assessment methods is applied, and assessment criteria are generally transparent and clearly communicated.

For the bachelor's programme, the panel values the structured approach to assessment in project-based components. The combination of group and individual assessment elements, supported by peer assessment, individual deliverables and oral examinations, provides a sound basis for distinguishing individual performance in a large-scale setting. While free-riding is recognised as an inherent risk in group work, the panel finds that the programme applies appropriate and proportionate mechanisms to mitigate this risk. With regard to the final-year Research Project, the panel considers the use of individual supervision, predefined assessment criteria and an individual oral defence to contribute to a careful and verifiable assessment of students' individual achievement.

For the master's programme, the panel finds the assessment system well suited to a research-intensive academic programme. In particular, the strengthened structure of the master's thesis trajectory, with formal formative milestones, explicit assessment criteria and the application of a four-eyes principle involving a daily supervisor and an examiner, supports transparency, consistency and reliability in the assessment of final projects. The panel considers the procedures for evaluating master's theses to be robust and aligned with the intended learning outcomes at second-cycle level.

The panel considers the Board of Examiners to be active and professional, with systematic monitoring of assessment quality, including targeted reviews of theses and attention to individual contributions within group-based assessment. In the context of the increasing use of generative AI, the panel notes that institutional policies are complemented by course-level decisions. At the same time, the panel recommends that the Board of Examiners further strengthen its proactive role in safeguarding academic integrity by developing a more anticipatory and programme-wide framework for the use of AI tools in assessment.

Overall, the panel concludes that assessment practices in both programmes are robust and appropriate. Continued attention to consistency, clarity of expectations and the evolving implications of AI use will further strengthen assessment quality.

Conclusion

The panel concludes that the bachelor's programme CSE meets standard 3.
The panel concludes that the master's programme CS meets standard 3.

Standard 4. Achieved learning outcomes

The programme demonstrates that the intended learning outcomes are achieved.

Findings

Bachelor's programme
The panel reviewed a selection of thirty final works, fifteen from each programme. For the bachelor's programme, this selection included individual final-year Research Projects as well as examples of group-based project work, allowing the panel to obtain a representative view of students' performance at the concluding level of the programme. For the master's programme, the panel examined individual master's theses across several Computer Science themes, examiners and grade bands. All reviewed works were accompanied by completed assessment forms.

With regard to the BSc CSE, the panel observed that the reviewed student work demonstrates achievement of the intended learning outcomes at bachelor level. The individual Research Projects show that students are

able to formulate relevant research questions, select and apply appropriate methods, develop software artefacts or analytical models, and report systematically on their approach and results. The reviewed group-based projects further illustrate that students can collaborate effectively, contribute to shared technical outcomes and articulate their individual roles and responsibilities within a team setting.

Based on the reviewed work, the panel finds that the level of performance corresponds to what may be expected at the end of an academic bachelor's programme in Computer Science and Engineering.

With regard to graduates' next steps, the self-evaluation indicates that a substantial proportion of bachelor graduates continues into master's programmes, most notably the MSc Computer Science at TU Delft, while others pursue master's studies elsewhere. The panel notes that this pattern is consistent with the programme's positioning as an academic bachelor's degree.

Master's programme
With regard to the MSc CS, the panel finds that the reviewed master's theses demonstrate students' ability to conduct independent research or advanced design activities at an appropriate academic level. The theses show evidence of methodological rigour, analytical reasoning, engagement with relevant academic literature and the ability to draw substantiated conclusions. The panel considers the overall level of the final works appropriate for a research-intensive academic master's programme.

In addition to the review of final works, the panel drew on interviews with master's students, alumni and staff, as well as employment information presented in the self-evaluation. This information indicates that graduates typically enter professional roles or research positions that require advanced computer science competencies, often shortly after graduation.

Considerations
The panel concludes that both programmes demonstrate that graduates achieve the intended learning outcomes at the appropriate academic level.

For the BSc CSE, the reviewed final works show that students attain the level expected of an academic bachelor's degree. Students demonstrate the ability to apply disciplinary knowledge, conduct supervised research or design activities, and reflect on their work in a structured manner. The panel considers this level appropriate for progression to master's programmes, which is consistent with the programme's academic orientation.

For the MSc CS, the panel concludes that the reviewed theses convincingly demonstrate the programme's research-intensive character. The observed depth, methodological rigour and analytical competence align with the intended learning outcomes and with expectations for a second-cycle academic degree. Graduates demonstrate the ability to conduct independent research or advanced design work and to position their results within relevant academic and technological contexts.

The panel notes that information obtained from interviews and employment data supports the conclusion that graduates are well prepared to apply the competencies developed in the programme in subsequent professional or research-oriented roles.

Taken together, the panel finds that the achieved learning outcomes of both programmes are consistent with the intended learning outcomes, the level of the respective degrees and the programmes' academic profiles.

Conclusion

The panel concludes that the bachelor's programme CSE meets standard 4.
The panel concludes that the master's programme CS meets standard 4.

General conclusion

The panel judges that the bachelor's programme CSE and the master's programme CS meet all four standards. The panel's assessment of both programmes is therefore positive.

Recommendations

The following recommendations are offered with a view to the further development and strengthening of the teaching–learning environment of the BSc Computer Science and Engineering and the MSc Computer Science.

Bachelor's programme

- Use the forthcoming bachelor curriculum redesign to further sharpen the intended learning outcomes, making themes such as artificial intelligence, data ethics, sustainability and transversal skills more explicit and measurable.
- Use the forthcoming curriculum redesign to explicitly address student workload balance, particularly in the second year where several demanding components coincide.
- Strengthen outreach to schools to attract more female students and to continue efforts to foster an inclusive learning environment for all students.

Master's programme

- Continue refining the intended learning outcomes of the master's programme in response to ongoing disciplinary and societal developments, particularly with regard to AI-related competencies, interdisciplinarity and sustainability, while ensuring that formulations remain clear and measurable.
- Continue systematic monitoring of supervision capacity, particularly in high-demand thematic areas, and strengthen coordination of supervision across sections where necessary.
- Strengthen the curricular embedding of emerging technological developments within the master's programme, including cloud technologies, DevOps practices and modern computing infrastructures.

Both programmes

- Explore the integration of structured forms of industry engagement, such as optional internships.
- Strengthen the Board of Examiners' proactive role in addressing the use of GenAI in assessment by developing a clear, programme-wide framework to safeguard academic integrity.

Appendix 1. Intended learning outcomes

Bachelor's programme Computer Science and Engineering

The graduate:

1. is familiar with existing scientific knowledge in the field of computer science and has the competence to increase and develop this through study:

a. has knowledge of the core concepts and basic methods of the field of computer science such as programming, software engineering, logic, fundamental computer science, databases, web technology, computer systems and networks, information systems and artificial intelligence.
b. has the necessary mathematical knowledge, such as a knowledge of calculus, linear algebra, probability theory and statistics.
c. is aware of the role of computer science in its application fields.
d. can apply the above-mentioned knowledge to problems of limited complexity in the field of computer science and its application fields.

2. is competent in carrying out research in the field of computer science under supervision:

a. has been introduced to research and in particular to modelling in the field of computer science, i.e.
    i. can analyse problems in order to produce a research plan.
    ii. can use scientific literature to find solutions to studied problems.
    iii. can adapt and implement these solutions.

3. has a systematic approach in designing software and software systems:

a. can formulate the requirements to be fulfilled by software and software systems.
b. can take and substantiate design decisions, taking into account technical, ethical preconditions and socio-economic consequences.
c. can effectively model the aspects involved.
d. can choose and apply a suitable software engineering method in order to implement and test that system.

4. has a scientific attitude and approach to computer science:

a. is inquisitive and has an attitude of lifelong learning.
b. has a systematic approach, e.g. in hypothesis driven problem solving or engineering software.
c. has the knowledge and the skills to use, justify and assess concepts and theories in computer science as to their value for research and can adapt these for his or her own use.
d. has insight into the scientific practice in computer science (research system, relation with clients, publication system, importance of integrity, etc.).
e. knows the methods and techniques used in the scientific practice of computer science and can apply them under supervision.
f. is aware of the limitations of science.

5. has the basic skills to critically reflect on the field of computer science:

a. can adopt a critical approach towards and deliberate on his or her own arguments as well as those of others in order to subsequently arrive at a well-founded position.
b. can recognise and use reasoning methods, ask the right questions, and make and understand qualitative and quantitative statements in the field of computer science.

6. is competent in co-operating and communicating:

a. can work in a professional manner within an international team to solve complex software design problems with fellow computer scientists or others.
b. can present the results of the work both orally and in writing to fellow computer scientists or others.*

7. takes account of the ethical, temporal and social context:

a. can analyse and discuss the socio-economic, ethical and legal consequences that ill-considered, incorrect or poorly designed systems can have.*
b. can account for a developed computer science artefact (software, algorithm, database, system, etc.) with respect to the responsible use of data and algorithms and the software development process followed.

* In both the English and Dutch language for the Bilingual track.

Master's programme Computer Science and Engineering

Intended Learning Outcomes 2024

1. Competence in one or more scientific disciplines

The graduate has mastery of Computer Science principles and concepts, enabling the graduate to apply these independently. This consists of:

a. mastery and application of Computer Science concepts and theories.
b. the ability to explain, discuss, analyse and formulate advanced theoretical concepts in Software Engineering and at least three of the areas Computer Graphics, Cyber Security, Data Management, Networked Systems, Machine and Deep Learning, and Programming Languages.
c. mastery of at least two advanced subject areas within the field of Computer Science related to Algorithmics, Computer Graphics, Cyber Security, Information Management, Distributed Systems Engineering, Computer Systems, Machine Learning Applications Engineering, Programming Languages, and Software Engineering.
d. broader and/or deeper mastery of knowledge on Computer Science, adjacent and/or interdisciplinary engineering fields, or application of Computer Science within other fields.

2. Competence in conducting research

The graduate can independently perform and reflect on research that contributes to the development of scientific knowledge on a topic within the field of Computer Science. This consists of:

a. the ability to plan and execute, or replicate, different phases of a research process.
b. the ability to assess research on its scientific value within the field of Computer Science.

3. Competence in designing

The graduate is able to design software solutions that address real-world challenges. This consists of:

a. the ability to design software that meets relevant requirements resulting from real-world challenges using advanced Computer Science methods and techniques.
b. the ability to apply Computer Science theory to a Computer Science solution and assess the quality and limitations of the solution via testing and validation techniques.

4. Scientific approach

The graduate has a systematic approach and critical attitude to Computer Science. This includes:

a. the ability to critically examine theories, techniques and concepts within the field of Computer Science.
b. the ability to distinguish and discuss ways to act with integrity and responsibility in a Computer Science setting.

5. Intellectual skills

The graduate is competent in reasoning, reflecting, and forming a judgement. This includes:

a. the ability to critically reflect on their own thinking, decision making, and acting.
b. the ability to reason logically and to recognise fallacies within the field of Computer Science.

6. Competence in co-operating and communicating

The graduate can work with and for others and can easily communicate in English, both in writing and orally. This includes:

a. the ability to effectively explain and communicate research methods and outcomes coherently to audiences while being aware of the background and interest of the audience.
b. the ability and insight to deal with the perspectives of multiple stakeholders.

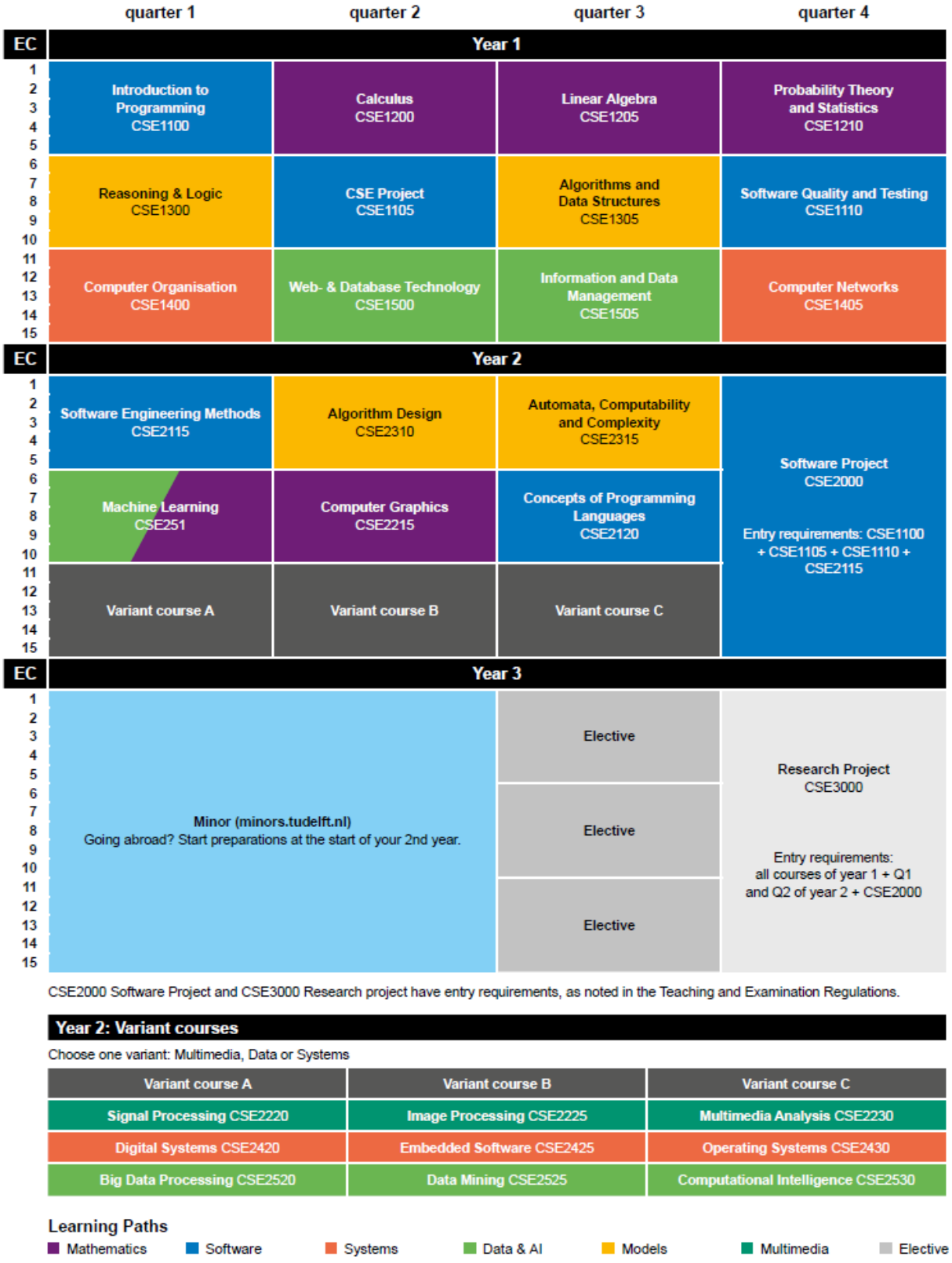
7. Awareness of temporal and societal context

The graduate is aware of the consequences of their activities on society and the impact of society on their work. This includes:

a. the ability to analyse the possibilities and limitations of Computer Science to contribute to the solution of real-world challenges.
a. the ability to formulate a responsible opinion related to the application of trustworthy Computer Science and integrate these ethical and normative aspects in scientific work.

Appendix 2. Programme curriculum

Bachelor Computer Science and Engineering



Master Computer Science

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Software Architecture	Core course	Responsible Computer Science	Research course	Broadening/ deepening electives	Thesis project		
Core course	Theme 1	Theme 1	Theme 1				
Core course	Theme 2	Theme 2	Theme 2				

Appendix 3. Programme of the site visit

Monday November 17, 2025

Time	Activity
11:30 – 11:45	Welcome of the panel in the hall
11:45 – 12:30	Panel lunch and review of documents (closed session)
12:30 – 13:30	Programme team & management CSE and CS
13:30 – 13:45	Break
13:45 – 14:30	Students bachelor's programme CSE
14:30 – 14:45	Break
14:45 – 15:30	Lecturers bachelor's programme CSE
15:30 – 16:00	Break
16:00 – 17:00	Alumni / Industry Advisory Board
17:00 – 18:00	Internal panel session (closed session)

Tuesday November 18, 2025

Time	Activity
08:45 – 09:00	Panel preparation (closed session)
09:00 – 09:45	Board of Examiners
09:45 – 10:00	Break
10:00 – 10:45	Students master's programme CS
10:45 – 11:00	Break
11:00 – 11:45	Lecturers master's programme CS
11:45 – 12:00	Break
12:00 – 12:30	Final discussion with management
12:30 – 14:00	Lunch and final deliberations (closed session)
14:00 – 15:00	Development dialogue
15:00 – 15:30	Internal panel session (closed session)
15:30 – 16:00	Oral feedback + drinks

Appendix 4. Materials

Prior to the site visit, the panel reviewed the final work of a representative sample of fifteen students per programme. For the bachelor's programme, this included each student's Research Project report and second-year Software Project report. For the master's programme, the selection comprised the master's theses. Information on these theses is available from Academion upon request.

The panel also reviewed additional materials, which for the bachelor's programme included the following:

1. TU Delft Vision on Education 2024-2030
2. EEMCS BSc CSE Teaching and Examination Regulations 2024-2025
3. Intended Learning Outcomes BSc CSE and ILOs mapped to BSc CSE Curriculum
4. Joint Task Force on Computer Science Curricula, "Computer Science Curricula 2023," (2024)
5. A. Meijers, V. Borghuis, E. Mutsaers, et al., "Criteria for academic bachelor's and master's curricula," Delft University of Technology, Eindhoven University of Technology, University of Twente (2005)
6. Joint Qualitative Initiative informal group, "Shared 'Dublin' descriptors for Short Cycle, First Cycle, Second Cycle and Third Cycle Awards," (2004)
7. Dashboard NSE BSc CSE TU Delft (2025)
8. CSE vision for Curriculum Committee (2024)
9. EEMCS Teaching Assistant Policy & Procedures 2023-2024
10. Brochure Matching and Selection Procedure BSc CSE 2025-2026
11. More information on: Binding recommendation on continuation of studies (BSA)
12. VHTO Inclusivity Scan TU Delft CSE (2023)
13. TU Delft Duty of Care (2023)
14. Assessment Framework TU Delft 2023-2028
15. Biggs, J.B., & Tang, C., "Teaching for quality learning at university: What the student does (3rd ed.)," New York: McGraw-Hill Education (UK) (2011)
16. BSc CSE Teaching and Assessment Programme 2024-2025
17. Rules and Regulations of the Board of Examiners 2024-2025
18. Instructor guidelines on instructing students on the use of generative AI tools in unsupervised graded assignments (2024)
19. Annual reports
    - Board of Studies (2022-2023 and 2023-2024)
    - Board of Examiners (2022-2023 and 2023-2024)
    - BSc annual report (2022-2023 and 2023-2024)
20. Study materials for four bachelor courses (study guides, exams, assignments) available via Brightspace

The additional materials for the master's programme include the following:

1. Intended learning outcomes 2024
2. Frame of reference: relation between themes and core courses of the Computer Science Master's programme and the knowledge areas of the ACM/IEEE/AAAI Computer Science Curricula 2023
3. New course proposal form for M-CS 2026-2027
4. Addendum to master graduation procedure 2025-2026
5. Policy on late enrollment M-CS 2025-2026
6. Review guidelines for Individual Exam Programme (IEP) 2025-2026
7. EEMCS Teaching Assistants Policy and Procedures
8. Joint Task Force on Computer Science Curricula, "Computer Science Curricula 2023," (2024)
9. TU Delft Vision on Education 2024-2030

10. Ertmer, P.A., & Newby, T.J., “Behaviorism, cognitivism, constructivism: Comparing critical features from an instructional design perspective,” (2013), Performance improvement quarterly, 26, 43-71.
11. Biggs, J.B., & Tang, C., “Teaching for quality learning at university: What the student does (3rd ed.),” New York: McGraw-Hill Education (UK) (2011)
12. Framework for future master education 2020-2030
13. Overview of the full Computer Science curriculum
14. Admission criteria
15. Information on the TU Delft Code of Conduct
16. Information about academic counsellors
17. Information about Landelijke Vereniging Studieadviseurs
18. Assessment Framework TU Delft 2023-2028
19. Computer Science Assessment Programme
20. Course assessment plans of courses CS4500 Responsible Computer Science, CS4150 Systems Security and CS4205 Evolutionary Algorithms
21. The digital study guide
22. Rules and Regulations of the Board of Examiners 2024-2025
23. Thesis Project framework and assessment rubrics 2025-2026
24. EEMCS Teaching and Examination Regulations 2024-2025
25. Instructor guidelines on instructing students on the use of generative AI tools in unsupervised graded assignments (2024)
26. Study materials for four bachelor courses (study guides, exams, assignments) available via Brightspace
27. Annual reports:
    a. Board of Studies (2022-2023 and 2023-2024)
    b. Board of Examiners (2022-2023 and 2023-2024)
    c. MSc annual report (2022-2023 and 2023-2024)