

Regulation Selection Criteria and Procedure BSc TCS

Academic Year 2022–2023

version 2022-01-24

Preamble and References

Programme management of the Bachelor of Science programme of Technical Software Engineering, establishes the following Regulation Selection Criteria and Procedure for the academic year 2022–2023, in accordance with the general rules and regulations and after having received advice of the Faculty Council of the faculty of Electrical Engineering, Mathematics and Computer Science, on 17 June 2021, advice from the University Council of University of Twente, on 18 June 2021 (reference UC 21 148), and consent from the Programme Committee of (Technical) Computer Science on 18 January 2022.

The following sources were regarded as normative:

- [Regeling aanmelding en toelating hoger onderwijs](#), last updated 11 September 2021
- [Regeling Selectie en Plaatsing UT instroom 2021-2022](#).
- [Numerus Fixus Computer Science UT](#), finalised 4 June 2021
- [Letter 2021-06-17 UC numerus fixus B-CS](#), issued 17 June 2021
- [UC 21 148 UC letter on Capacity and Selection BSc TCS](#), last updated 23 June 2021

The following sources were consulted as referential:

- [Regulation Matching & Selection and Procedure BSc Computer Science and Engineering](#), TUDelft, v.1.2
- [Departmental Regulations Selection Criteria and Procedure for the Bachelor Program Computer Science and Engineering in Academic Year 2021/2022](#), TU/e
- [Regulations for Selection and Placement](#), University of Groningen
- [REGELING SELECTIE EN PLAATSING Universiteit Twente ten behoeve van de studenteninstroom 2021 - 2022](#), Technical Medicine
- [Selection & placement bachelor's programme Psychology for academic year 2022-2023](#), Applied Psychology

Regulations

1. General regulations
 - 1.1. The execution of this regulation is appointed to the programme management of Technical Computer Science, hereinafter referred to as the Programme.
 - 1.2. The Programme sets the maximum number of student places for the academic year 2022–2023 at **400**. The limit may change in subsequent years.
 - 1.3. The Programme will, in accordance with the GDPR, only communicate about the participation of a candidate with that particular candidate.

2. Language and communication
 - 2.1. All dates in §16 and elsewhere in this document and in communication with students, are listed as day/month/year (e.g., 15/01/2022) or Day Month Year (e.g., 15 January 2022). All times in this regulation are in Central European Time ([CET](#)), Dutch local time.
 - 2.2. The entire selection procedure and communication about this procedure is in English. This concerns both all the information provided by the Programme to the candidates, and all answers given by the candidates to the Programme. The BSc TCS curriculum is fully taught in English as well.
 - 2.3. The candidate is responsible to ensure that the email address used in the selection procedure by the candidate is equivalent to the email address used for Studielink.
 - 2.4. The candidate is responsible for checking messages in their inbox and spam folder during the entire selection procedure.
 - 2.5. Students who have comments or questions regarding the selection procedure can contact the Programme via numerus-fixus-tcs@utwente.nl.

3. Participating in the selection procedure
 - 3.1. A candidate can only participate in the selection procedure with a valid and fully completed registration request for the programme Technical Computer Science, via the Dutch national enrolment system for higher education called [Studielink](#), before the deadline (§16.4).

- 3.2. Candidates who wish to participate in the selection procedure but did not manage to enrol before the deadline (§16.4), must submit a request to the head of [Student Affairs and Services](#) at studentservices@utwente.nl. Such a request must be supported by appropriate evidence of the inability of the candidate to comply with the deadline.
- 3.3. Candidates who by the day after the deadline in §16.4 do not provide enough personal data to verify their identity, are excluded from the participation in the next steps of the selection process.
- 3.4. Participating in the selection procedure or receiving a ranking number, does **not** automatically mean that a candidate meets the stated educational prerequisites for admission. Verifying entry requirements, such as prior education, is outside the scope of the Regulation Selection Criteria and Procedure, as well as the selection procedure. Information about the entry requirements can be found on the admissions pages of the UTwente website.
- 3.5. A candidate can only participate once per academic year. The results of the selection procedure are only valid for that particular selection procedure which selects candidates for the upcoming academic year.
- 3.6. A candidate may participate up to **three** times in the selection procedure of the BSc programme Technical Computer Science. An active request for enrolment in Studielink after the §16.4 deadline counts as a selection opportunity, even if a candidate neither participates nor completes the selection procedure.
- 3.7. Candidates who have previously been enrolled in the Technical Computer Science programme, but who have discontinued their studies due to a negative BSA are only allowed to re-apply for this programme after **three** academic years. These candidates have to participate again in the selection procedure, before being able to be readmitted.
- 3.8. Candidates who are successfully enrolled in the Technical Computer Science programme, but de-enrol in the time period stated in §16.19, can reapply for this programme in the next year and keep their place in the admission procedure.
- 3.9. The selection process starts in full on the day after the §16.4 deadline, if there are more candidates than the previously announced maximum number of available places. If the number of candidates is fewer or equal to the maximum number of places, then the selection procedure is replaced with lightweight matching, and a request to reopen applications can be made.

4. Selection criteria
 - 4.1. On the basis of the end terms of the programme the following three criteria have been distilled that form the basis for the selection for the Bachelor Technical Computer Science:
 - 4.1.1. Logical Thinking (§10)
 - 4.1.2. Algorithmic Thinking (§11)
 - 4.1.3. Mathematical Thinking (§12)
 - 4.2. It is assumed that at the time of the selection procedure candidates will (almost) meet all admissions requirements. The skills and knowledge inherent from the admission requirements have been used as a starting point for the development of the tests.

Procedure

5. Selection procedure
 - 5.1. The selection procedure consists of two steps: the Questionnaire and the Entrance Examination.
 - 5.2. Only candidates who have completed both steps of the selection procedure within the stated timeframes and before the deadlines in a meaningful way, will receive a ranking number.
 - 5.3. Those who fail to complete all steps in a meaningful way within stated timeframes and before the deadline will be excluded from the selection procedure. Such candidates will not receive a ranking number and will have used a selection opportunity. Excluded candidates will be informed by email within six weeks after the test period has ended.

6. Questionnaire
 - 6.1. The candidate receives an invitation to fill in a Questionnaire on the date stated in §16.5.
 - 6.2. Candidates who fail to complete the Questionnaire within the given time (§16.6) in a meaningful way, are excluded from the selection procedure.
 - 6.3. All candidates who have completed the Questionnaire in a meaningful way, are invited to the next steps of the selection procedure.
 - 6.4. The assessment of the Questionnaire does not result in a score that affects the ranking of the candidate.

7. Entrance Examination

- 7.1. Candidates will be informed about exact steps to follow in order to participate in the Entrance Examination, in a timely fashion (§§16.7–16.11).
- 7.2. The Entrance Examination consists of the following three tests (see §4.1):
 - 7.2.1. Logical Thinking (20%)
 - 7.2.2. Algorithmic Thinking (40%)
 - 7.2.3. Mathematical Thinking (40%)
- 7.3. Candidates can go forward and backward within a test, but the order of the three tests has been set in §7.2. Once a test is completed, a candidate progresses to the next test and cannot go back to the previous test.
- 7.4. Candidates who have been diagnosed with a learning disability and/or are experiencing extenuating circumstances can request extra time for the Entrance Examination, by contacting numerus-fixus-tcs@utwente.nl. Requests need to be supported with documentation (e.g. a medical or psychological statement) and should be submitted before the deadline (§16.7). Handling privileged information in these requests may be delegated to study advisers who consult the Programme as necessary.
- 7.5. For the calculation of the score of each test, a correctly answered question is worth 1 point and an incorrectly answered question 0 points.
- 7.6. Candidates who fail to complete any of the three tests on time in a meaningful way, are excluded from the selection procedure.
- 7.7. The email address of the candidate as registered in Studielink, is used to validate the completion of the tests of the Entrance Examination.
- 7.8. All the assessments and tests have to be started and completed within the specified time frame.
- 7.9. The candidate is responsible for taking the tests individually and without relying on external sources of information, as it is usual for regular Dutch examinations.
- 7.10. The following items are allowed to be used during the tests:
 - 7.10.1. a dictionary in book form
 - 7.10.2. identification card and/or passport
 - 7.10.3. blank paper in single sheets
 - 7.10.4. pencil(s) and/or pen(s)
- 7.11. The Entrance Examination takes place on campus for Dutch residents and subsequently online for non-Dutch residents.

8. On campus Entrance Examination
 - 8.1. The university will provide candidates with the functioning laptop to complete the tests.
 - 8.2. No additional computing device (calculator, laptop, phone, etc) is allowed in any form.
 - 8.3. Candidates are required to report any issues encountered that might affect the outcome of their score, immediately to the examination inspectors.

9. Online Entrance Examination
 - 9.1. The online Entrance Examination can only be taken once. All three tests must be completed within one session.
 - 9.2. The candidate is responsible for assuring a well-functioning internet connection.
 - 9.3. Candidates are required to report any issues encountered that might affect the outcome of their score and cannot be solved during the Entrance Examination, within 48 hours after they have occurred. They will be processed as an objection after publication of the ranking numbers.
 - 9.4. Online Entrance Examinations may be proctored, which means that candidates are “followed” online to check whether the test is completed under the correct conditions.
 - 9.5. In case of proctoring, by taking the online tests, candidates agree upon making and monitoring video recordings, keystrokes and screenshots. An examiner will have access to this data to judge if the tests were completed according to the regulations. Collected data will only be used for this purpose, and will be destroyed after it is clear whether the candidate is admitted or not, and the objection period has ended.

10. Logical Thinking
 - 10.1. The Logical Thinking test takes 30 minutes to complete and accounts for 20% of the final selection score.
 - 10.2. The Logical Thinking test assesses the candidate’s ability to reason in a systematic way and apply logic to solve problems.
 - 10.3. The Logical Thinking test may include questions about propositions, propositional logic, connectives such as conjunction and disjunction, and simple manipulations like modus ponens.
 - 10.4. The Logical Thinking test may include questions about predicates, predicate logic, quantifiers, logical variables and relations.

- 10.5. The Logical Thinking test may include questions about Boolean algebra, truth tables, laws and properties such as commutativity, associativity, distributivity.
 - 10.6. The Logical Thinking test may include questions about basic deductive reasoning with syllogisms, validity and soundness.
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- 11. Algorithmic Thinking
 - 11.1. The Algorithmic Thinking test takes 45 minutes to complete and accounts for 40% of the final selection score.
 - 11.2. The Algorithmic Thinking test assesses the candidate's ability to solve puzzles, apply process-oriented thinking skills and in general to come up with efficient solutions to computational problems.
 - 11.3. The Algorithmic Thinking test may include tasks that rely on using abstraction to (re)formulate a problem, focusing on the important information.
 - 11.4. The Algorithmic Thinking test may include tasks that rely on using algorithms to express a solution as a stepwise recipe or a set of rules. Such tasks will not rely on any programming knowledge.
 - 11.5. The Algorithmic Thinking test may include tasks that rely on breaking down a complex problem, solution or system into smaller parts.
 - 11.6. The Algorithmic Thinking test may include tasks that rely on recognising similarities among and within problems, and analysing and (re)organising available data.
 - 11.7. The Algorithmic Thinking test may include tasks that rely on identifying, analysing and implementing possible solutions as effective combinations of steps and resources.
 - 11.8. The Algorithmic Thinking test may include tasks that rely on generalising the problem solving process to a wider class of problems
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- 12. Mathematical Thinking
 - 12.1. The Mathematical Thinking test takes 45 minutes to complete and accounts for 40% of the final selection score.
 - 12.2. The Mathematical Thinking test assesses the candidate's ability to apply school-level mathematics without using a calculator.
 - 12.3. The Mathematical Thinking test may include problems about functions (polynomial, root, power, logarithmic, exponential, trigonometric, absolute).

- 12.4. The Mathematical Thinking test may include problems about properties of functions and their plots (domain, range, limits, asymptotes, symmetry).
- 12.5. The Mathematical Thinking test may include problems about rewriting of algebraic expressions, equations and inequalities.
- 12.6. The Mathematical Thinking test may include problems about factorisation techniques and the quadratic formula.
- 12.7. The Mathematical Thinking test may include problems about systems of linear equations.
- 12.8. The Mathematical Thinking test may include problems about differential calculus (first and second derivatives, solving optimisation problems).
- 12.9. The Mathematical Thinking test may include problems about integral calculus (limits, definite and indefinite integrals, antiderivatives, applications).
- 12.10. The Mathematical Thinking test may include problems about trigonometric functions, including amplitude, phase, period and frequency.
- 12.11. The Mathematical Thinking test may include problems about solving trigonometric equations and inequalities.
- 12.12. The Mathematical Thinking test may include problems about 2D/3D geometric shapes, their surface, perimeter and volume.
- 12.13. The Mathematical Thinking test may include problems about Pythagorean theorem, laws of sines and cosines.
- 12.14. The Mathematical Thinking test may include problems about calculations of angles, lengths and intersections of basic 2D shapes.
- 12.15. The Mathematical Thinking test may include problems about vectors, their norm and direction, orthogonality, multiplication (dot product and scalar).

13. Fraud

- 13.1. The Programme will ask the candidate to cooperate in collecting evidence, if a candidate is flagged with suspicious behaviour or is caught performing fraudulent behaviour. The suspected candidate will be interviewed and given the chance to respond in writing to the report of the Programme.
- 13.2. A candidate under investigation of a fraud case, is allowed to complete the selection procedure, pending the final decision.
- 13.3. Fraud cases will be investigated by a committee set up by the Programme, which must include at least one member of the examination board of TCS and the programme director of TCS. It is up to this committee to conclude whether fraud has been committed.
- 13.4. Candidates who have committed fraud will be penalised, with the sanction varying from being awarded zero points on a specific section of the test to

exclusion from the entire selection procedure, depending on the severity of the fraud.

- 13.5. A candidate who has been convicted of fraud, will be excluded from the selection procedure of that particular year only. Such a candidate does not receive a ranking number and is considered to have used up a participation opportunity. A candidate can object to this decision.
- 13.6. Fraud accusations and penalties do not transfer to the next years' selection procedure.

14. Outcome and ranking

- 14.1. Each candidate must take part in all components of the selection procedure in a meaningful way in order to qualify for the ranking number. If the candidate fails to take part in one or more components, the candidate will be excluded from the procedure and will not receive a ranking number.
- 14.2. The obtained ranking number is only valid during the selection and admission procedure preceding that specific academic year. Candidates cannot use their ranking number for later academic years even if they de-enrol before the start of the study year (§16.18), unless severe personal circumstances occur, in which case a substantiated request for an exemption needs to be sent to [Numerus-fixus-tcs@utwente.nl](mailto: Numerus-fixus-tcs@utwente.nl) to be evaluated by the Programme.
- 14.3. The score of each element of the Entrance Examination is determined by the number of correct answers. These individual scores will be converted to standardised z-scores before they are combined into a final score. The precision of scores will be up to two decimal places.
- 14.4. The ranking number of a candidate is determined by their final Entrance Examination score, which is based on the three tests, as stated in §7. Their final Entrance Examination scores are compared to other candidates, so-called z-scores.
- 14.5. The score calculation does not result in a fixed pass or fail outcome, and is only used to determine the ranking. Higher final scores result in better (=lower) ranking numbers. The candidate with the highest final score receives the lowest ranking number (#1), the candidate with the second highest final score receives the next ranking number (#2), etc.
- 14.6. If two or more candidates qualify for the same ranking number, the score on the Mathematical Thinking test determines the ranking between these candidates. If this is not sufficient to obtain a unique ranking, the ranking number will be assigned by drawing lots.
- 14.7. The ranking number will be ascertained by the Programme.

15. Announcement of ranking number and further procedure
 - 15.1. Candidates who have completed the selection procedure in a meaningful way, will receive their ranking number timely (§16.12) through Studielink.
 - 15.2. Candidates will receive an overview of their scores as converted into standardized z-scores, after they have received their ranking number. No further feedback on the scores will be provided. For reasons of confidentiality and objectivity, the method and evaluation will not be elaborated further, nor will it be possible to review the tests or individual answers given. Candidates who would like more information regarding the compilation of their test scores can contact numerus-fixus-tcs@utwente.nl
 - 15.3. When a candidate is offered a place for the Bachelor programme Technical Computer Science, the candidate has 14 days to accept this offer in Studielink (§16.13). In case this offer is not accepted in Studielink within that time frame, the reservation expires, and the place will be made available for the next candidate with a ranking number who is waiting in line and has not received an offer yet.
 - 15.4. Candidates who did not accept the offer within 14 days (§16.13) and still want to participate in the programme, must submit a request to the head of Student Affairs and Services at studentservices@utwente.nl. Such a request must be supported by appropriate evidence of the inability of the candidate to comply with the deadline.
 - 15.5. International candidates that need a visa and/or a residence permit in order to enter the Netherlands, can only be supported in their application procedure by the [Student Services Visa Office](#), when they are offered a place before the deadline in §16.16, as it is too late to successfully complete all required steps in the registration process after this date.
 - 15.6. In case situations occur in which this Regulation does not provide a decisive outcome, the Programme will decide which actions and/or measures to take.

Timeline

16. Timeline

- 16.1. All deadlines in this section are counted in Dutch local time, equivalent to [Central European Time](#) (CET), at 23:59:59 of the announced day.
- 16.2. The deadline for the Programme to provide the necessary information for the students through their website, and to enable registration at Bachelor of Science programme of Technical Computer Science of the University of Twente is **1 October 2021**.
- 16.3. The website of the Programme may be updated later for technical reasons and for the sake of updating the FAQ section.
- 16.4. The deadline for students to register for the TCS programme on Studielink is **15 January 2022**.
- 16.5. The invitation to fill in an online questionnaire about the application will be sent by the Programme to each registered student after **2 February 2022**.
- 16.6. The deadline for each student to complete the questionnaire is **14 February 2022**.
- 16.7. The deadline for candidates submitting documents meriting additional time allotted, as well as other special circumstances for the Entrance Examination, is **15 February 2022**.
- 16.8. The day of the physical on campus Entrance Examination for all candidates who are Dutch residents at the time of their registration, is **5 March 2022**.
- 16.9. All online Entrance Examinations will take place on **7–9 March 2022**.
- 16.10. The day of the online Entrance Examination for candidates who were not Dutch residents at the time of their registration, will be announced to them before **1 March 2022**.
- 16.11. The exact time of the online Entrance Examination for candidates who were not Dutch residents at the time of their registration, will be announced to them **two calendar days before** their examination date at the latest.
- 16.12. The ranking of all candidates who participated in the Entrance Examination, will be announced through Studielink on **15 April 2022**.
- 16.13. Each candidate will have to accept or reject their place offer **within 14 calendar days** after receiving it. Not reacting to a place offer equals rejecting it.
- 16.14. Lower ranked candidates will be invited until all the **400** places are filled or until **1 August 2022**, whatever happens first.
- 16.15. The deadline for uploading all additional enrolment documents for proving expertise in mathematics and English, is **15 May 2022**.

- 16.16. The deadline for international candidates to get the university to initiate the visa request procedure, is **15 June 2022**.
- 16.17. The deadline for uploading the proof of sufficient education such as a secondary school diploma and grade lists, is **15 July 2022**.
- 16.18. The academic study year starts on **5 September 2022**.
- 16.19. The time period to discontinue one's education at TCS without the loss of the place in the admission procedure, is **between 1 October 2022 and 31 January 2023**.