EDUCATION AND EXAMINATION REGULATIONS

BACHELOR OF SCIENCE APPLIED MATHEMATICS

Section A. GENERAL SECTION
Section B. PROGRAMME-SPECIFIC APPENDIX

Academic year 2022-2023

Introduction to the Education and Examination Regulations for Bachelor's degree programmes at the Faculty of Electrical Engineering, Mathematics and Computer Science.

General

The Dutch Higher Education and Research Act (*Wet op het hoger onderwijs en wetenschappelijk onderzoek*, WHW) of 1993 requires a broad outline of the teaching programme and examining for each degree programme to be recorded in the Education and Examination Regulations (EER (Dutch: OER)).

In accordance with Section 7.13, Paragraph 1, of the WHW, the EER must contain sufficient and clear information about the degree programme or group of programmes to which they apply. Section 7.13, Paragraph 2, of the WHW lists those issues that must, as a minimum, be stipulated in the EER with respect to procedures, rights and responsibilities relating to the education and examinations that are part of each degree programme or group of programmes. The WHW also includes a number of separate obligations relating to the inclusion of rules within the EER.

The EER is subdivided into two sections (Section A and Section B), which together form the EER. Section A, which can be seen as the general section, includes provisions that apply to all Bachelor's degree programmes. Section B contains the provisions that are specific to the particular Bachelor's degree programme.

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SECTION A: GENERAL SECTION

A1. General provisions

Article 1.1 Applicability of these regulations

1. This general section of the education and examination regulations applies to all students enrolled in the bachelor's programmes Applied Mathematics, Business Information Technology, Creative Technology, Electrical Engineering and Technical Computer Science.
2. Students attending courses that are not part of the student's core programme (see Article 1.2) are subject to the assessment rules laid down in the assessment schedule of the relevant study unit. The decision on special facilities in accordance with Article 5.2 may only be taken by the examination board of the programme for which the student is enrolled.
3. Each programme has its own programme-specific appendix.
4. For each programme, this general section and the programme-specific appendix together form the education and examination regulations for the bachelor's programme concerned.
5. The general section and the programme-specific appendix of the education and examination regulations are determined by the faculty board.
6. The institute section of the student charter includes a definition of what the University of Twente considers to be academic misconduct (fraud). The rules and regulations of the examination board for the bachelor's programme in question include additional rules about academic misconduct (fraud), such as which measures the examination board may take if it establishes misconduct (fraud).
7. The rules and regulations of the examination board of the bachelor's programme in question include provisions about the rules of order during tests and rules in case of emergencies.
8. The following applies in respect of the language used in the education and examination regulations and the rules and regulations of the examination board:
   a) In case of uncertainty or discrepancy, the Dutch version of this general section is binding[1].
   b) English versions of the programme-specific appendix of the education and examination regulations and the examination board's rules and regulations should be available for English-taught bachelor's programmes.
   c) Where the programme-specific appendix of the EER and the rules and regulations of the examination board of the bachelor's programme concerned are available in both Dutch and English, each version must, for the sake of clarity, state which version is binding.
9. Requests for exemptions in respect of provisions laid down in the education and examination regulations should be submitted to the examination board or the programme director of the student's own bachelor's programme, as laid down in the relevant articles of these Regulations.

[1] The Dutch version of Section A can be found here: https://www.utwente.nl/en/eemcs/education/rules-guidelines/eer-b/eer-b2022/eemcs-bachelor-oer-2022-nl.pdf

Article 1.2 Definitions

The terms used in these Regulations should be interpreted as follows:

Academic year: The period beginning on 1 September and ending on 31 August of the following year.

Assessment schedule: A schedule showing the method of assessment for a module.

(Binding) recommendation on continuation of studies (Bindend studieadvies, BSA): A recommendation on continuation of studies as referred to in Article 7.8b, paragraph 1 and 2 WHW involving expulsion from the programme in accordance with Article 7.8b, paragraph 3 WHW, issued by the programme director on behalf of the institutional administration.

Canvas: University of Twente's digital learning environment.

Core programme: The same study units from the curriculum that apply to all the students following a programme.

Credit: a unit of 28 study workload hours, in accordance with the European Credit Transfer System. A full-time academic year consists of 60 credits, equal to 1680 hours of study (Article 7.4 WHW).

Curriculum: The aggregate of required and elective study units constituting a degree programme as laid down in the programme-specific appendix.

Degree programme: Bachelor's degree programme as referred to in the programme-specific appendix to these education and examination regulations.

Examination: An evaluation, performed to conclude a study unit, of the student's knowledge, understanding and skills as well as an assessment of the outcomes of that evaluation (Article 7.10 WHW); an examination may consist of a number of tests.

Examination Board: The body that objectively and professionally assesses whether a student meets the conditions laid down in the education and examination regulations regarding the knowledge, understanding and skills required to obtain a degree (Article 7.12 WHW).

Examiner: The individual appointed by the examination board to administer examinations and tests and to determine the results, in accordance with Article 7.12 paragraph c WHW.

Exemption: The decision of the examination board that the student has knowledge and skills which are comparable in terms of content, scope and level with one or more study units or components of study units. An exemption is granted on the basis of acquired competencies, i.e. previously passed examinations in higher education or in view of knowledge and skills attained outside higher education.

Faculty Board: Head of the faculty (Article 9.12, paragraph 2 WHW).

Final examination: A degree programme is concluded with a final examination. If the study units in the degree programme have been completed successfully, then the final examination will be deemed to have been completed (Article 7.10 WHW).

Higher Education and Research Act (abbreviated to 'WHW'): The Higher Education and Research Act, Bulletin of Acts and Decrees 1992, 593, and its subsequent amendments.

Honours Programme: Institution-wide bachelor's Honours programme.

Institution: University of Twente (Universiteit Twente).

Institutional administration: The Executive Board of the University of Twente (Article 1.1 WHW).

Minor profile: Elective space conferring 30 credits that the student can also fill with offer outside the programme.

Module: A total of 15 credits of one or more study units, in which the student's programme-specific knowledge, skills and attitude are developed and assessed as far as possible in an integrated and/or coherent manner.

Study unit: A programme component as defined in Article 7.3, paragraph 2 and 3 WHW. Each study unit is concluded with an examination.

Osiris: System designated by the institutional administration for registration and for providing information on all relevant data related to the students and the degree programme, as referred to in the WHW.

Practical exercise: A practical exercise as referred to in Article 7.13, paragraph 2d WHW is a study unit or a study unit component emphasising an activity that the student engages in, as described in the programme-specific appendix.

Programme Committee (OLC): Committee referred to in Article 9.18 WHW.

Programme Director: The person appointed by the faculty board to administer the programme (Article 9.17 WHW).

Student: Anyone enrolled in a programme in accordance with Article 7.34 and 7.37 WHW.

Study advisor: Person appointed by the faculty board who acts as contact between the student and the university, and in this role represents the interests of the student, as well as fulfilling an advisory role.

Study workload: The time an average student needs to learn the course material. The study workload comprises project work, independent study, lectures and writing assignments, for example. The study workload is expressed in ECTS credits according to the European Credit Transfer System.

Teaching period: The period in which a study unit is offered. This period starts in the first week in which an educational activity takes place for the study unit concerned and ends in the final week in which an educational activity takes place and/or a test is administered for the study unit concerned. Resits are not part of the teaching period. This period may sometimes not be the same as a quarter (a quarter of an academic year).

Test: An evaluation of the student's knowledge, understanding and skills as well as an assessment of the outcomes of that evaluation. A test is part of an examination. If the examination for a study unit consists of a single test then the result of that test will count as the result of the examination.

UT: University of Twente.

Working day: Any day from Monday to Friday with the exception of official holidays and the prearranged compulsory holidays ('brugdagen') on which the staff are free.

The definition of all other terms used in these Regulations is in accordance with the definition accorded by the main text of this document, the programme-specific section of the EER, the student charter or the WHW.

A2. Contents and structure of the programme

Article 2.1 Final attainment levels and structure of the programme

Explanatory note: Article 7.13 WHW

1. The qualities relating to the knowledge, understanding and skills that the student should have acquired upon completing the programme (aims and learning outcomes) are set out in the programme-specific appendix.
2. The programme consists of 180 credits.
   a) The programme consists of a core programme of 120 credits, a minor of 30 credits and a graduation phase totalling at least 15 credits.

      Exceptions are the Advanced Technology and Technical Medicine programmes, which have electives instead of minors, or have no minors, but do have a core programme of more than 120 credits.
   b) The core programme of the educational programme is specified in the programme-specific appendix.
   c) The core programme consists of modules.

   d) Before the start of a study unit, the student must meet the prior knowledge prerequisites for that study unit, as described in the Osiris Course Catalogue.
   e) Students generally complete their minor courses in the first semester of their third year of study.
   f) The programme for which the student is enrolled may set conditions for the number of credits required to be eligible for admission to the minor course. These conditions are specified in the relevant programme-specific appendix.
   g) Students are limited in their choice of minor by the provisions of paragraph d and f. The choice of minors available can be viewed on the minor website
   h) In principle, the second semester of the third year of studies is devoted to the graduation phase, which comprises a minimum of 15 credits.
   i) The student must at a minimum have completed the core of the bachelor's programme to be admitted to the graduation phase.
   j) The examination board[2] is authorised in individual cases to deviate from paragraph d, f, h and i, if strict adherence to those provisions would result in an unacceptable delay in study progress. In consultation with the study adviser, the student may submit a proposal to the examination board for this.
3. The programme-specific appendix describes the degree programme in accordance with Article 7.13, paragraph 2, a to e, i, l, s, t and v WHW.

Article 2.2 The programme's language of tuition

1. The official language of tuition is the language in which education is given, in which teaching material is provided and in which tests and examinations are held. Bachelor's programmes taught in Dutch will generally use study materials in English or Dutch.

[2] It is important that the student is still able to achieve the final attainment levels of the programme. In light of this consideration, this authorisation has been formally conferred to the examination board, as they are the ones to ensure that a student who achieves the final attainment levels is able to graduate.

2. The choice of the official language for an educational programme or components of an educational programme lies with the programme director, subject to the right of consent of the programme committee. The educational programme's language of tuition is specified in the programme-specific appendix.
3. If programme components deviate from the language of tuition, then this is to take place in accordance with the Code of Conduct for Languages of the University of Twente and Article 7.2 WHW.
4. For bachelor's programmes taught in Dutch, components of study units may be taught and assessed in English, if:
   a) a lecturer or tutor in the unit of study is not a native speaker of Dutch, or
   b) students from the relevant bachelor's programme take the module together with students from an English-taught bachelor's programme, or
   c) the programme director considers it necessary in order to fulfil one of the attainment targets or objectives of the educational programme in question in the area of English language communication skills.

Article 2.3 Exemption

1. The examination board may grant an exemption to students at their request for one or more examinations or tests. To this end, the student should demonstrate having sufficient knowledge and skills in relation to the examination concerned or the test in question.
2. An exemption granted by the examination board will be registered in Osiris under the study unit or study units, or components thereof, by means of an EX (exemption).
3. Students cannot be compelled to take additional study units or components of study units in their curriculum instead of an exemption that has been granted.
4. Students may also be exempted from practical exercises if they can demonstrate that a required practical exercise will likely give rise to a personal moral dilemma. In such cases, the examination board will determine whether the component can be completed in another manner and in what way.

Article 2.4 Elective programme

The examination board decides on requests for permission to take an elective programme as referred to in Article 7.3h WHW. The examination board assesses whether an elective programme is appropriate and consistent within the domain of the educational programme and whether the level is high enough in light of the attainment targets of the programme.

A3. Teaching and Assessment

Article 3.1 General

1. Each study unit concludes with an examination.
2. The examination consists of one or more tests.
3. A test or examination may take several forms, e.g. a written test, an assignment, an oral test, practical exercises or a combination of the aforementioned. Tests and examinations can be administered online.
4. The programme director publishes at least the following details of the study units in Osiris not less than four (4) weeks in advance: scope, learning objectives and content, language of tuition and assessment, prerequisites, required and recommended study materials, design of teaching methods and assessment.
5. The possibility of unconditional access to at least one resit[3] must be offered for each study unit in the same academic year. An exception may be made for practical exercises (such as practical classes and projects).

Article 3.2 Online assessment

1. If an examination or test is administered using *online surveillance*[4] or *online proctoring*[5], the examination board may set further rules and conditions for online (proctored) assessment.
2. Further information and detailed rules on online assessment can be found on the university's website.

Article 3.3 Results

1. Results of examinations, tests or components of tests must be announced to students. Osiris is used for the registration of grades for examinations and in some cases also for tests.
2. The student has the right to inspect recent model test questions, model tests or past tests as well as their keys and the norm for assessment.
3. The time allotted to administering a test may not exceed three hours. Exceptions in this regard are listed in section 7.2.
   If the examiner wishes to use a form of assessment that requires more than three hours, the examiner must, with due regard for article 3.1.4, ask the examination board for approval to deviate from the above.
4. Test results are expressed in a grade from 1 to 10 with a single decimal, or as 'pass' / 'fail'.
5. The examination result of a study unit, as determined by the examiner, is expressed in half grades from 1.0 to 5.0 and from 6.0 to 10.0[6], with grades only being rounded in the final phase[7] of the assessment of a study unit and in accordance with the schedule below:

[3] This means resits of all the tests within a study unit.

[4] Camera surveillance of the student or students during an unrecorded test, using for example Canvas, Teams, etc.

[5] Surveillance of the student or students using special *proctoring* software, such as Proctorio.

[6] In Osiris, a comma is used, based on the Dutch grading system (e.g. 7,0).

[7] Final phase: when all grades are known.

If figure before the decimal (n) ≠ 5	
Figure ≥n,00 en <n,25	⇨ n,0
Figure ≥n,25 en <n,75	⇨ n,5
Figure ≥n,75 en <(n+1),00	⇨ (n+1),0
If figure before the decimal = 5:	
Figure ≥5,00 en <5,50	⇨ 5,0
Figure ≥5,50 en <6,00	⇨ 6,0

6. Examination results of 6.0 or higher are a pass.
7. Examination results, if a pass, obtained at foreign universities will be registered as a P (pass). Examination results obtained at Dutch universities will be adopted one-to-one, with due regard for the provisions in paragraph 5.
8. Credits may only be issued for a study unit if the study unit has been completed with a pass mark.
9. If more than one examination or test result has been recorded in Osiris for one and the same unit of study, the highest grade will apply.

Article 3.4 Modules

1. Each module has a module coordinator, appointed by the programme director.
2. If a module comprises a single study unit then the examiner of that study unit will also be the module examiner.

Article 3.5 Registration

1. Registration in Osiris is required prior to participating in a module or study unit[8].
2. Upon registering for the module or study unit, the student will automatically be registered for the assessments associated with the teaching period of the module/study unit[9].

Article 3.6 Description of modules and assessment schedule

1. The programme-specific appendix contains a description of each module.
2. The module description must include:
   a) the study units comprising the module and the number of related credits;
   b) if applicable[10], the number of tests and their relative weighting;
   c) the language of tuition and assessment (Dutch-language programmes only);
   d) the manner in which the examinations and/or tests are sat (oral, written or an alternative manner).
3. The assessment schedule of a module is drawn up by the examiner or examiners and is determined by the programme director. The examination board provides advice on the assessment schedule.
4. The assessment schedule must be published in Canvas at least two weeks before the start of the module.

[8] The applicable registration deadlines are mentioned on the webpage www.utwente.nl/en/education/student-services/education/courses-and-modules/

[9] The applicable registration deadlines are mentioned on the webpage www.utwente.nl/en/education/student-services/education/courses-and-modules/

[10] As with integrated modules or larger study units.

5. The assessment schedule of a module must include:
   a) how the learning objectives of the module or the study units of the module are assessed and when they are attained;
   b) the period of validity of the result of the test or tests;
   c) in which weeks examimations, tests and resits are held (the precise times and dates will be announced via my-timetable);
   d) any required minimum grade per test; a minimum grade for a test may not be set higher than 5.5;
   e) if applicable: information on resits (such as conditions, compensation options and grading periods).
6. The programme director may modify the assessment schedule during the module or study unit:
   a) The assessment schedule may only be changed in consultation with the module coordinator and the examiner of the study unit.
   b) The programme director will consult the examination board before any changes to the form or manner of administering an examination or one or more tests. If the change only involves moving tests to a timeslot other than as shown in the timetable, the programme director will inform the examination board of the decision as soon as possible.
   c) Students are to be informed immediately of the change.
7. Changes to the assessment schedule may not put students at an unreasonable disadvantage. The examination board may take special measures in individual cases.

Article 3.7 Oral examinations

1. If the student or the examiner wishes a third party to be present when administering an oral examination, then a request to this end must be submitted to the programme director at least fifteen working days prior to the oral examination. The student and the examiner will be notified of the programme director's decision not less than five working days in advance. The programme director must inform the examination board of the decision. Public graduation symposia, public presentations and group tests are excluded from this provision.
2. If the examination board has decided that members of the examination board or an observer on behalf of the examination board is to be present during the administration of an oral examination, then the examination board is to make this known to the examiner and the student at least one working day before the oral examination.

Article 3.8 Assessment deadline, examination and test date

1. The examiner is to inform the student of the result of an oral examination within one working day, unless, for the examiner, the oral examination is part of a series of oral examinations of the same study unit which are administered on more than one working day. In that case, the examiner is to determine and announce the result within one working day following the conclusion of the series of oral examinations.
2. The result of a test is to be disclosed to the student within ten working days after the test date, with due regard for paragraph 8 below.
3. The examination result of a study unit is to be disclosed to the student within ten working days after the conclusion of the teaching period during which the study unit is offered.

4. The examination date is the date on which the test is taken with which the student definitively passes the study unit.
5. The test date is the date on which a written or oral test is taken.
6. If a test assessment is (among other things) dependent on completing one or more assignments or writing a paper or thesis, then the test date will be the deadline of submission of the final component (or the date of the last written or oral test).
7. If a test resit is planned shortly after the first test, the results of the first test will be published at least five working days before the resit to give the student time to prepare.
8. Should the examiner not be able to meet the deadline referred to in paragraphs 1, 2, 3, 4 and 7 due to exceptional circumstances, then the examiner is to notify the examination board, providing reasons for the delay. The student concerned is to be informed of the delay immediately, and a new deadline for publication of the results will be set and notified to them. If the examination board is of the opinion that the examiner has not met the obligations, it may appoint another examiner to ascertain the result of the exam and determine the grade.

Article 3.9 Period of validity

1. The results of an examination that has been passed remain valid indefinitely. The period of validity of an examination that was passed may only be limited if the tested knowledge or understanding is demonstrably outdated or the tested skills are demonstrably outdated.
2. Results of tests of a study unit that was failed expire after the academic year. The study unit must be repeated in its entirety in the next academic year. Any exceptions are listed in the assessment schedule.

Article 3.10 Right of inspection and discussion

1. Student are entitled to discuss and review their test together with the examiner, and the examiner is to explain the assessment.
2. If the examiner holds a group discussion of the assessment, the student must use that opportunity to exercise the right to discussion referred to in paragraph 1. If a student cannot attend the group discussion or if the student is not given the opportunity at the group discussion to discuss the reasons for the examiner's assessment of the test with the examiner, the student may submit a request for individual discussion with the examiner within five working days after the group discussion. The individual discussion is to take place no later than three working days prior to the next test opportunity.
3. If there is no group discussion of the test, then a student may submit a request to the examiner for an individual discussion within ten days after publication of the results. The individual discussion is to take place no later than three working days prior to the next test opportunity.
4. Individual and group discussions must take place no later than five weeks after the publication of the test results, but at least three working days prior to the next test opportunity, in the presence of the examiner or a substitute designated for that purpose.
5. Students are to be given the opportunity to inspect their assessed work for a period of two years following the assessment.

Article 3.11 Retention period for tests

1. The retention period for test assignments, keys, papers and the assessments of written tests is two years.
2. The retention period for final bachelor's projects is a minimum of seven years.

Article 3.12 Teaching evaluation

1. The programme director is responsible for monitoring the quality of the educational programme.
2. The programme director is responsible for evaluating the programme.
3. The programme-specific appendix details how the tuition in the programme is evaluated.

A4. Examinations

Article 4.1 Examination Board

1. In line with Articles 7.12a and 7.12b WHW:
   a) the faculty board appoints an examination board for each educational programme or group of programmes;
   b) examination boards determine the rules and regulations for the examiners, examinations and final examinations without further consultation.

Article 4.2 Final examination and degree

Explanatory notes: Article 7.10, paragraph 2 and Article 7.11 WHW

1. The bachelor's final examination is considered to be complete when the student has passed all study unit exams in the bachelor's programme.
2. The date of the final examination is the date on which the student completes the final study unit of the degree programme.
3. A student may submit a written request, giving reasons, to the examination board to postpone the final examination, and thus to postpone the awarding of the diploma. The maximum duration of any postponement that can be granted is twelve months, in principle. In exceptional cases[11], the student may have valid reasons for requesting that the awarding of the diploma be postponed for more than twelve months.

4. If the student has requested postponement based on the provisions of paragraph 3, then the date of the examination will be the date on which the examination board decides that the student has passed the final examination subsequent to the postponement.
5. Students who have successfully met all requirements for the bachelor's final examination will be awarded a Bachelor of Science (BSc) degree.
6. The degree conferred is stated on the diploma.

Article 4.3 Diploma

Explanatory note: Article 7.11 WHW

1. The examination board will award a diploma as proof that the student has satisfied all the requirements of the exam once the institutional administration has confirmed that the procedural requirements for awarding the diploma have been met. The date indicated on the diploma (i.e. the date of the final examination) is the date on which the student completed the final study unit of the degree programme.
2. The diploma will be signed by the chair of the examination board. If the Chair is absent, one of the members of the examination board may also sign the diploma.
3. The following information is to be stated on the diploma:
   a) the student's name and date of birth;
   b) the name of the institution and the degree programme as stated in the register referred to in Article 6.3 WHW;

[11] Some examples (by way of illustration, not to exclude other situations): the student follows a double bachelor's programme, the student needs more time for a pre-Master's programme, an extensive extra-curricular activity requires more than twelve months.

c) the date of the final examination;
d) the study unit components of the final examination;
e) the degree conferred (in accordance with Article 7.10a WHW);
f) where appropriate, the specific qualifications associated with the degree (with due consideration for Article 7.6, paragraph 1 WHW);
g) the date on which the programme was last accredited or the date on which the programme passed the new programme assessment (Article 5a.11 WHW).

4. An International Diploma Supplement is to be appended to the diploma. This supplement is intended to provide insight into the nature and content of the degree programme to promote the international recognition of the programme, among other aspects. The diploma supplement is to include the following information at a minimum:
   a) the name of the programme and the name of the university;
   b) that the programme was offered at an institution for academic education;
   c) a description of the programme content; an indication of any specialisation and/or minor, if applicable;
   d) the study workload of the programme;
   e) the final examination components and results, based on the registration of grades in Osiris;
   f) examinations passed by the student that are not part of the final examination;
   g) if the student has successfully completed an honours programme while on the bachelor's programme, then this fact will be stated on the diploma supplement as an extracurricular programme;
   h) the student's average grade, weighted by credits (Grade Point Average, GPA). The diploma supplement indicates how the average grade is calculated.
5. If the examination board has awarded a specific distinction (e.g. cum laude) to the student, then this is to be mentioned on the diploma.
6. Students who have successfully completed more than one examination but cannot be awarded a diploma as referred to in paragraph 1, will receive, at their own request, from the Student Services Desk a statement prepared by or on behalf of the examination board which in any case will state the results of the examinations the student in question has passed.

A5. Study guidance

Explanatory notes: Article 7.13 paragraph 2b and Article 7.59 WHW

Article 5.1 Student guidance

1. The faculty board is responsible for student guidance.
2. Student support and guidance includes 'decentralized' guidance, as provided within study programmes, and 'central' guidance, as provided by the Centre for Educational Support.
3. Student guidance includes guidance with questions or problems with regard to career orientation and career choices and guidance with problems that affect study progress. Students are offered personal and professional student (career) guidance for optimal study progress. Where possible, needs for specific guidance are met.
4. Each student is assigned a study adviser.
5. The study adviser supervises students and advises them on all aspects of the studies, also on personal circumstances that may be affecting the student's studies.
6. The opportunity for an introductory interview will be offered to each student before 1 November of the first year of enrolment in the programme.
7. A systematic method on how students are monitored and obstruction in study progress is signalled is documented by the programme (for example in a policy plan or an annual cycle).
8. Information about the guidance facilities of the study programme is in any case available on the website of the study programme.

Article 5.2 Special facilities

1. If students wish to exercise their right to specific supervision or special facilities, they should contact the study adviser. The study adviser will record the agreements made with the student in Osiris.
2. A student is entitled to special facilities in case of demonstrable circumstances beyond the student's control or extenuating personal circumstances. The facility may provide for dispensation from or an additional opportunity to sit examinations or tests to be granted and/or for specific facilities to be made available. Such dispensation and additional resits may only be granted by the examination board.

A6. (Binding) recommendation on continuation of studies

Explanatory note: Article 7.8b WHW

Article 6.1 Preliminary recommendation on continuation of studies

1. Students will receive a preliminary recommendation on continuation of studies by calendar week 52 at the latest of their first year of enrolment in the programme and a second recommendation on continuation of studies by calendar week 10 at the latest. These recommendations can be positive, negative or neutral and are not binding. Students with a postponed recommendation on continuation of studies receive a warning in their second year of enrolment in the degree programme when their study progress is jeopardized.
2. Students who receive a negative recommendation on continuation of studies will be invited for an interview with the study adviser to discuss their study methods and review their choice of specialisation. A negative preliminary recommendation on continuation of studies is considered as a warning (Article 6.2, paragraph 4).

Article 6.2 (Binding) recommendation on continuation of studies

1. Students receive a written recommendation on continuation of studies, at the latest by the end of the first year of enrolment in the programme, about continuing their studies. This recommendation is based on the student's results: the student may be allowed to continue on the programme, or may be required to leave the programme, with due regard for Articles 6.3 and 6.4. The institutional administration mandates the programme director to issue recommendations on continuation of studies.
2. The recommendation on continuation of studies includes:
   a) the results of examinations and tests from the first year of the programme that remain valid the following academic year;
   b) the exemptions for examinations and tests in the first year that were granted to the student.

   The programme director may set programme-specific requirements which must be met. These requirements are specified in the programme-specific appendix. Programme-specific requirements may not state that all study units of a certain curricular course must be attained[12].
3. The programme director may decide that a recommendation on continuation of studies should involve expulsion. A recommendation on continuation of studies that involves expulsion is referred to as a binding recommendation on continuation of studies (bindend studieadvies, BSA). The programme director will take the student's personal circumstances of which the university is aware into consideration when making a decision. The recommendation on continuation of studies may only involve expulsion if the programme director considers the student as not suited to the educational programme, or the student's results do not meet the required standard, i.e. if:
   a) the student has obtained fewer than 45 credits of the first year, or
   b) the student has obtained 45 or more credits of the first year, but does not meet the programme-specific requirements (as referred to in paragraph 2 of this article).

[12] For example: 'The student must pass all mathematics study units from the B1 programme' is not permitted, whereas 'The student must pass three of the four mathematics study units from the B1 programme' is permitted

The decision notification relating to a binding recommendation on continuation of studies must inform the students of their right to file an objection and appeal via the Complaints Desk.

4. Before issuing a binding recommendation on continuation of studies, the programme director must first issue a warning to the student giving him/her a reasonable term in which to improve the course results, to the programme director's satisfaction (Article 6.1 paragraph 2), and the programme director will give the student the opportunity to be heard.
5. Students may file a request (supported by documentary evidence) for assessment of their personal circumstances to the Personal Circumstances Committee (CPO). This request is to be filed in consultation with the study adviser. The CPO will assess the validity, nature, severity and duration of the personal circumstances and will issue an advisory opinion on these matters. The CPO's advisory opinion, issued to the programme director and the study adviser concerned, will be taken into account in the programme director's decision-making referred to in paragraph 3.
6. Personal circumstances include illness, physical, sensory or other functional disability or pregnancy of the student involved, extenuating family circumstances, participation in top-level sports or arts and membership of the university council, faculty council, programme committee or a Category 3 or 4 board in accordance with the FOBOS Regulations.
7. Students who have received a binding recommendation on continuation of studies (BSA) may not enrol in the same degree programme for a period of three consecutive academic years. If a student re-enrols in the relevant bachelor's programme after this period, this enrolment is designated as a first-year enrolment and the relevant provisions of this section apply in full.

Article 6.3 Discontinuation of the programme

1. The programme is considered to be discontinued if the student stops taking courses or any form of tests for the programme, and where the student:
   a) submits a request to the University of Twente to terminate the enrolment, or
   b) submits a request to terminate the enrolment for one programme at the University of Twente and enrols in another programme at the University of Twente, thus switching to another programme at the University of Twente, or
   c) continues the studies at another institute of higher education with a proof of tuition fees paid (bewijs betaald collegegeld, BBC).
2. A recommendation on continuation of studies will not be issued if the request to terminate enrolment is received through Studielink by 31 January in the first year of enrolment for the degree programme and the student does not re-enrol for the same programme in that same academic year. If the student re-enrols in the same bachelor's programme in a following academic year, this enrolment is designated as the first-year enrolment.
3. Students who de-enrol after 1 February for a degree programme at the University of Twente will receive a recommendation on continuation of studies, as referred to in Article 6.2 paragraph 1, from the programme they discontinued.

Article 6.4 Postponement of recommendation on continuation of studies

1. The recommendation on continuation of studies as referred to in Article 6.2 paragraph 1 may be postponed if:

a) the student has enrolled in the degree programme on or after 1 October of the relevant academic year and on 31 August at the latest has not met the norm, or
b) if personal circumstances preclude an assessment of the student's suitability at the end of the first year of enrolment in the degree programme.
In the event of postponement pursuant to the provisions under a), the recommendation on continuation of studies will be issued by the degree programme in which the student is newly enrolled.

In the event of postponement pursuant to the provisions under a), the recommendation on continuation of studies will be issued by the degree programme in which the student is newly enrolled.

2. If the student whose recommendation has been postponed re-enrols in a subsequent academic year in the same programme, the end of the second year of enrolment in the relevant programme at the latest will be the deadline for issuing the recommendation on continuation of studies. The student will in any event be notified in writing within six weeks of the date of enrolment before which date the programme will issue the final recommendation. The same norm as set out in Article 6.2 paragraph 3 applies to this recommendation.
3. If a student transfers to another UT degree programme prior to 1 October, then the recommendation on continuation of studies will not be postponed based on transfer and the norm will not therefore be adjusted as referred to in Article 6.2, paragraph 3.

A7. Studying with a functional impairment

Explanatory notes: Article 7.13 paragraph 2m WHW and Article 2 of the Equal Treatment of Disabled and Chronically Ill People Act (WGBH/CZ)

Article 7.1 Studying with a functional impairment

1. A functional impairment is defined as having an illness, condition, impairment or handicap that might impede or otherwise constitute a barrier to the student's academic progress.
2. Facilities are to be aimed at removing individual barriers in the teaching programme and/or when it comes to taking examinations and tests. These facilities may be related to access to infrastructure (buildings, classrooms and teaching facilities) and study materials, adjustments to the form of assessment, alternative learning pathways or a customised study plan.

Article 7.2 Request for facilities

1. The study adviser and the student concerned will discuss the most effective facilities that can be provided for the student.
2. Based on the discussion referred to in paragraph 1, the student is to submit a request for facilities. This request should be submitted to the study adviser, who has been mandated by the faculty board, preferably three months before the student is to participate in classes, exams and tests for which the facilities are required.
3. The request should be supported by documents that are needed to enable an assessment to be made.
4. The study adviser will decide on the admissibility of the request and will inform the student of the decision within twenty working days after receipt of the request, or sooner if the urgency of the request dictates.
    a) Should the request be granted, the period of validity will also be indicated.
    b) If the request is not granted, or only partly granted, the study adviser will inform the student of the justification for not granting the request as well as the possibilities for filing an objection and an appeal with the Complaints Desk.
    c) Students who are dyslexic, will be granted a maximum of 15 extra minutes for each hour that a test or exam is officially scheduled.
5. The study adviser shall inform the relevant parties in good time about the facilities that have been granted.
6. The applicant and the study adviser will evaluate the facilities before the end of the period for which they have been granted. During this evaluation, the parties discuss the effectiveness of the facilities provided and whether they should be continued. No evaluation takes place of facilities granted to students because of the functional impairment dyslexia.

A8. Amendments, transitional arrangements, appeals and objections

Article 8.1 Conflicts with the regulations

If other additional regulations and/or provisions pertaining to education and/or examinations conflict with these education and examination regulations, the provisions in these education and examination regulations will prevail.

Article 8.2 Administrative errors

If, following the publication of a result, a marks sheet, or a student's progress report a manifest error is discovered, the discoverer, be it the university or the student, is required to make this known to the other party immediately upon finding the error and to cooperate in rectifying the error.

Article 8.3 Amendments to the Regulations

1. Substantive amendments to these Regulations are enacted by the faculty board in a separate decision.
2. In principle, substantive amendments to these Regulations do not apply to the current academic year. Amendments to these Regulations may apply to the current academic year if the interests of the students are not prejudiced within reasonable bounds, or in situations of force majeure.
3. Amendments to these Regulations have no effect on earlier decisions by the examination board.

Article 8.4 Transitional arrangements

1. In the case of amendment of these education and examination regulations, the faculty board will adopt a transitional arrangement, as necessary.
2. The transitional arrangement is to be published on the degree programme's website.
3. Changes to the curriculum are to be announced prior to the academic year in which the changes take effect. No guarantee can be made that all programme study units that were part of the curriculum when students enrolled in a programme will continue to be part of the curriculum. The final bachelor's examination is to be based on the curriculum most recently adopted by the faculty board.
4. The transitional arrangement will always include:
    a) the study units, which have been dropped, that are equivalent to study units from the current curriculum as indicated in the programme-specific appendix;
    b) an indication that if a study unit that does not involve a practical is dropped from the curriculum, then students are to have at least two opportunities in the following academic year to take a written or oral exam or to undergo another form of assessment;
    c) an indication that if a study unit with practical exercises is dropped from the curriculum and there is no opportunity in the subsequent academic year to complete the practical exercises concerned, then at least one study unit will be designated that may be completed as a substitute for the study unit that has been dropped;
    d) the period of validity of the transitional arrangement.
5. The transitional arrangement must be approved by the examination board.

6. In exceptional cases and to the student's benefit, the examination board may deviate from the prescribed number of opportunities to sit exams and/or tests related to study units that have been dropped from the curriculum.

Article 8.5 Assessment of the education and examination regulations

1. The faculty board is responsible for the regular assessment of the education and examination regulations, with specific emphasis on the study workload.
2. Based on Article 9.18 WHW, the programme committee has a partial right of consent of and a partial right to be consulted on parts of the education and examination regulations.
3. The programme committee is responsible for the annual assessment of the manner in which the education and examination regulations are implemented.

Article 8.6 Appeal and objections

An appeal and objections must be submitted in writing to the University of Twente Complaints Desk within six weeks after notification of a decision to the student.

Article 8.7 Hardship clause

In cases of demonstrable unreasonableness and unfairness of a predominant nature, the examination board or the programme director may allow the provisions in these Regulations to be deviated from. This depends on which body is authorised or has the duty according to these Regulations to take a decision on or make an exception to a provision in these Regulations.

Article 8.8 Publication

The education and examination regulations and the examination board's rules and regulations are to be published on the degree programme's website.

Article 8.9 Entry into force

These Regulations enter into force on 1 September 2022 and replace the Regulations dated 1 September 2021.

Adopted on 19 July 2022 by the faculty board, having regard to Article 9.5, 9.15 paragraph 1a, 7.13 paragraph 1 and 2, 9.38b, 9.18 paragraph 1a and 7.59 WHW, and after approval by the faculty council.

SECTION B: PROGRAMME-SPECIFIC APPENDIX

APPLIED MATHEMATICS (B-AM)

About this Section

The Education and Examination Regulations (EER) are subdivided into two sections (Section A and Section B), which together form the EER. Section A, which can be seen as the university section, includes provisions that apply for all EEMCS Bachelor's degree programmes. Section B contains the provisions that are specific to the particular degree programme, in this case the Bachelor's programme in Applied Mathematics.

SECTION B PROGRAMME-SPECIFIC APPENDIX APPLIED MATHEMATICS

B9. General properties of the programme

Article 9.1 General objectives of the programme

The objective of the bachelor's programme in Applied Mathematics is to train and educate its students to become academics who practice mathematics in the perspective of applications, in a societal and multidisciplinary context.

Most graduates will continue their education in a master's programme.

Article 9.2 Content of the programme and the associated examinations

The study units comprising the bachelor's programme in Applied Mathematics are given in Table 1, Table 2 and Table 3 in Article 12.1. The rules regarding the Final Examination are given in Article 10.4.

Section 13 contains a curriculum that has been adjusted for the combined final degree audit for Applied Mathematics and Applied Physics.

Section 14 contains a curriculum that has been adjusted for the combined final degree audit for Applied Mathematics and Technical Computer Science.

Article 9.3 Programme Intended Learning Outcomes

The programme covers four fields of competence:

a. domain expertise;
b. research and modelling skills;
c. professional skills;
d. academic reflection.

These fields of competence are specified further in ten PILOs:

1. The graduate has thorough knowledge of mathematical theories in the areas of algebra, analysis, statistics, stochastics, and discrete mathematics, and an understanding of the application of these theories in technology, health care and business administration (associated with domain expertise).
2. The graduate can deal with abstraction, is capable of formal reasoning and can construct mathematical proofs (associated with domain expertise).
3. The graduate can use various research methods to answer research questions (associated with research and modelling skills).
4. The graduate can design and analyse mathematical models for problems of a multidisciplinary nature and assess their usefulness in practical situations (associated with research and modelling skills).

5. The graduate is proficient in using a computer to address the increasing size and complexity of mathematical problems. Programming, numerical methods and simulations are key applications in this regard (associated with research and modelling skills).
6. The graduate is information literate. The graduate is adept at making the most of the library's resources, including advanced search methods in modern library networks (associated with research and modelling skills and professional skills).
7. The graduate is proficient in oral and written communication, and is able to work effectively in a team. The graduate is capable of continuously developing collaborative skills.
8. The graduate has insight into the position of the field of applied mathematics in society and has acquired a basic understanding of the philosophy of science (associated with academic reflection).
9. The graduate can shape their learning process, his/her competencies and develop their professional identity, by consciously choosing, motivating and completing study units that match personal capacities, skills, and motivation.
10. The graduate is interculturally competent.

Article 9.4 Specific rules regarding Binding Recommendation (BSA)

A student of the bachelor's degree programme in Applied Mathematics will receive a positive BSA upon satisfying the following conditions (Article 6.2):

1. Successful completion of at least 45 credits
2. Successful completion of at least six of the following study units: Linear Structures 1, Linear Structures 2, Analysis 1, Analysis 2, Probability Theory, Signals and Transforms, Numerical Mathematics and Differential Equations.

Students pursuing a double degree in Applied Mathematics and Applied Physics are subject to different BSA provisions, as given in Article 13.8.

Students pursuing a double degree in Applied Mathematics and Technical Computer Science are subject to different BSA provisions, as given in Article 14.8.

B10. Specific characteristics of the programme

Article 10.1 Language of tuition

English is the language of tuition - the examinations are administered in English. Exam and test questions have to be answered in English. Answers in any other language will be ignored and therefore not marked.

Article 10.2 Educational prerequisites

The following additional provisions apply with regard to the educational prerequisites in Article 2.1 of the general section of these Education and Examination Regulations.

Students with a first-year certificate from a technology programme at a university of applied sciences may be admitted to the Bachelor's programme in Applied Mathematics if they satisfy the following conditions:

- Colloquium doctum examinations for both Mathematics B and English
- Taking part in an Applied Mathematics matching activity. The programme's recommendation following the matching activity is binding.

Article 10.3 Registration of results

In addition to Article 3.3,

- Exemptions for examinations are indicated with the code 'EX', and they are assigned a numeric value of 6.0 for weighting purposes.

  The student has the option of not requesting an exemption but taking the exam and possibly earn a higher mark.
- The exam results Pass (P) and Fail (F) have no numeric values.

Article 10.4 Pass/Fail regulation

Students who meet the following requirements will pass the Final Examination of the Bachelor's programme in Applied Mathematics:

a. The student has received an assessment for all study units of the Bachelor's curriculum;
b. All study units have been completed with a grade of 5.0 or higher or pass;
c. No more than one grade of 5.0 for the study units of the first year of the Bachelor's curriculum and no more than one grade of 5.0 for the study units of the second and third years combined.
d. The grade for the Bachelor's Assignment is 6.0 or higher;
e. The average of all numeric grades is 6.0 or higher. This is a weighted average based on the corresponding number of ECs per study unit.

In all other cases, the student will not pass the final examination.

Article 10.5 Cum Laude (with distinction)

A student may pass the Bachelor's final examination with distinction (cum laude). As a guideline for determining whether to award a degree with distinction, all of the following conditions should be met:

a. The student passes the Bachelor's final examination within four years of initial enrolment (performance requirement);

b. All study units are completed with a passing grade.

c. The average of all numeric grades (including EX) is 8.0 or higher. This is a weighted average based on the corresponding number of ECs per study unit. Results for study units outside the examination programme are not taken into account.

d. No more than one study unit (including EX) may have a grade lower than 7.0;

e. The grade of Bachelor's Assignment is an 8.5 or higher.

In exceptional cases and at the student's request, the Examination Board may award the distinction of cum laude if the student has met all requirements with the exception of the performance requirement, due to extenuating circumstances. These circumstances may involve delays recognised and provided for by the institution. It should be noted that the distinction of cum laude is never awarded automatically.

Article 10.6 BSA procedure

The BSA rules are mentioned in Article 9.4. The programme uses the BSA module in Osiris.

- At the conclusion of Module 1 and Module 2, interim recommendations will be given. It can be positive, neutral or negative;
- The final and binding recommendations (BSA) are issued based on the results of the study units of the first year.
- These official recommendations are issued by the Programme Board.
- The letters containing the binding recommendations are sent and signed digitally.

Article 10.7 Electives and Minor

Students of the bachelor's programme in Applied Mathematics may choose elective courses as given in Module 11 of Table 3.

Minor profiles of Modules 9 and 10 (Table 3) can be chosen from the approved minors listed on the minor's website: https://www.utwente.nl/en/education/electives/minor/

Students may propose an alternative minor composition to the Examination Board for approval. The proposal for the minor must meet the following conditions:

- The minor's academic level must be assured (to be assessed by the Examination Board).
- The minor's components are to be cohesive.

Article 10.8 Secondary school teaching certificate

Students who pass the 30-EC minor *Leren Lesgeven*[13] receive, alongside a Bachelor's degree in Applied Mathematics, a mathematics teaching qualification for the initial years of senior general secondary education (HAVO), pre-university education (VWO), and the theoretical learning pathway of pre-vocational secondary education (VMBO) in the Netherlands.

Article 10.9 Bachelor's Assignment

1. The assessment committee:
    a) The committee consists of the student's supervisor(s) and an additional examiner, to be appointed by the coordinator of the bachelor's assignment.
    b) The additional examiners must belong to a research group different from the supervisor's research group.
2. Reports of Bachelor's Assignments are in principle public documents. The Programme Board may deem a report to be confidential for a specific period based on a detailed request:
    a) The first supervisor must submit a request to the Programme Board prior to the start of the final assignment.
    b) The confidential report must be accessible/available to the committee responsible for assessing the Bachelor's Assignment, the Programme Board, and representatives of bodies that have a statutory duty of overseeing the quality of the assessment or the programme as a whole.
    c) The parties mentioned above are required to respect confidentiality with regard to the report.

[13] The minor *Leren Lesgeven* is only available in Dutch

Article 10.10 Double Degree programmes

The programme offers two double degrees: Applied Mathematics combined with Applied Physics, and Applied Mathematics combined with Technical Computer Science. A tailored curriculum applies to students pursuing such a double degree.

All additional rules concerning the double degree AM-AP and AM-TCS are stipulated in Section 13 and Section 14, respectively.

Article 10.11 Evaluation of education

To monitor and to improve the quality of teaching, the AM BSc programme uses information about the students' learning and teachers' experiences. This information is obtained from:

a. Internal evaluations
   - □ SEQ (Student Experience Questionnaire)
   - □ Panel discussions with students and teachers
   - □ Reflections by the module team or teacher

b. External sources
   - □ National Student Survey (NSE)
   - □ National Alumni Survey
   - □ International Student Barometer

The outcome of these evaluations is shared and discussed with the programme committee. If improvement steps are recommended, these are documented and shared with the teacher so that the particular course will be improved next year.

B11. Transitional arrangements

Notwithstanding the current Education and Examination Regulations, the following transitional provisions apply for students who started the programme under a previous set of Education and Examination Regulations. Other necessary provisions are published on the BSc AM website.

Article 11.1 Students of Cohort 2017 and earlier

A student of cohort 2017 and earlier who completed the former module 4 Fields & Electromagnetism (consisting of the parts Vector Calculus, Electromagnetism, and Project of 5 EC each), and completed Presentation Skills separately, may skip the course Prooflab Revisited: Diversity in Cultures (202001351).

Article 11.2 Students of Cohort 2018

A student of cohort 2018, who has completed the 3-EC Presentation Skills within former module 3 Fields and Electromagnetism may skip the course Introduction to Programming (202001336).

Article 11.3 Students of Cohort 2021 and earlier

In 2022-2023 a new curriculum for year 1 has started for Cohort 2022. For students from Cohort 2021 and earlier there will still be assessment for all courses of the previous curriculum for year 1. Student will be properly supported to pass those examinations. For students who, given their specific circumstances, want to follow courses from the new curriculum as replacement for course of their original curriculum, transitional provisions will be published on the BSc AM website.

Article 11.4 Already completed modules

Modules as 15 EC study-units are no longer offered. For students from cohort 2013 through 2019, the following provisions apply.

M1 Students who passed the study-unit Structures and Models with code 201800135, 201700118 or 201300056 may use this course to replace all the study units of Module-01 of Table 4.

M2 Students who passed the study-unit Mathematical Proof Techniques with code 201800136 or 201700140, or the study-unit Techniques for Mathematical Proofs (201300057) may use this course to replace all the study units of Module-02 of Table 4.

M3 Students who passed the study-unit Fields and Electromagnetism with code 201800137, 201400535 or 201300183 may use this course to replace all the study units of Module-03 of Table 4.

M4 Students who passed the study-unit Signals and Uncertainty with code 201800138 or 201300182 may use this course to replace all the study units of Module-04 of Table 4.

M5 Students who passed the study-unit Statistics and Analysis with code 201800139 or 201400218 may use this course to replace all the study units of Module-05 of Table 5.

M6 Students who passed the study-unit Dynamical Systems with code 201500103 or 201400222 may use this course to replace all the study units of Module-06 of Table 5.

M7 Students who passed the study-unit Discrete Structures and Efficient Algorithms with code 201800141, 201700304, 201600270 or 201400433 may use this course to replace all the study units of Module-07 of Table 5.

M8 Students who passed the study-unit Modelling and Analysis of Stochastic Processes for Math (201400434) may use this course to replace all the study units of Module-08 of Table 5.

M11 Students who passed the study-unit with course-code 201500379 and name either Bachelor's Assignment prep or Bachelor's Assignment & Electives may use this course to replace all the study units of Module-11 of Table 6.

M12 Students who passed the study-unit with course-code 201500380 and name either Bachelor's Assignment or Finalising Thesis - Bachelor's Assignment may use this course to replace all the study units of Module-12 of Table 6.

B12. Bachelor's programme AM

The following abbreviations are used to describe the teaching format:

Lec Lecture,
Tu Tutorial,
PR Practical,
COL Colstruction
SS Self Study.

For the examination format, the following abbreviations are used:

W Written examination,
O One or more assignments: the student submits work (assignments, reports, essays, other documents) and the examiner assesses it without the student being present,
P Practical assignment: the student creates and submits a product that can be activated and subsequently, assessed on behaviour and/or function and/or usability (e.g. a working program or a functioning prototype),
Pj Project: the student participates in a number of group activities. The student will be assessed both on his individual contribution to the activities and the group's products (report, presentation, program),
Ps Presentation: the student gives a presentation to the examiner and a group ofinterested people, generally fellow students.

Article 12.1 Curriculum AM for cohort 2022

Table 1: The first academic year cohort 2022

Study Units		Study	Teaching	Form of
Quartile	Name	load (EC)	method	assessment
Q1	Linear Structures 1	5 EC	Lec+Tu+SS	W
Q1	Analysis 1	5 EC	Lec+Tu+SS	W
Q1	Modelling+Programming 1	5 EC	PR+SS	O+P+Pj
Q2	Linear Structures 2	4 EC	Lec+Tu+SS	W
Q2	Analysis 2	6 EC	Lec+Tu+SS	W
Q2	Systems Theory	5 EC	Lec+Tu+SS+PR	W+P
Q3	Probability Theory	5 EC	Lec+Tu+SS	W
Q3	Signals and Transforms	5 EC	Lec+Tu+SS	W
Q3	Modelling+Programming 2	5 EC	PR+SS	O+P+Pj
Q4	Differential Equations	5 EC	Lec+Tu+SS	W
Q4	Numerical Mathematics	5 EC	Lec+Tu+PR+SS	W+P
Q4	Modelling+Programming 3	5 EC	PR+SS	O+P+Pj
	Entire academic year	60 EC		

Table 2: The second academic year cohort 2022

Study Units		Study	Teaching	Form of
Quartile	Name	load (EC)	method	assessment
Q1	Mathematical Statistics 1	7 EC	Lec+Tu+SS	W
Q1	Analysis 3	5 EC	Lec+Tu+SS	W
Q1	Reflection 1	3 EC	PR+SS	O+P+Pj
Q2	Mathematical Statistics 2	5 EC	Lec+Tu+SS	W
Q2	Optimization	5 EC	Lec+Tu+SS	W
Q2	Optimization methods and neural networks	5 EC	Lec+Tu+SS+PR	W+P
Q3	Algorithmic Discrete Mathematics	5 EC	Lec + Tu	W
Q3	Languages & Machines	3.5 EC	Lec + Tu	W
Q3	Algebra	3.5 EC	Lec + Tu	W
Q3	Implementation Project on Graph Isomorphism	3 EC	PR	Pj
Q4	Stochastic Models	5 EC	Lec + Tu	W
Q4	Project Stochastic Models	1.5 EC	PR	Pj
Q4	Markov Chains	2.5 EC	Lec + Tu	W
Q4	Project Stochastic Simulation	4 EC	PR	Pj + P
Q4	Multidisciplinary Project	2 EC	PR	Pj
	Entire academic year	**60 EC**		

Table 3: The third academic year cohort 2022

Study Units		Study	Teaching	Form of
Quartile	Name	load (EC)	method	assessment
Q1+Q2	Minor profile[a]	30 EC		
Q3	Graph Theory	4 EC	Lec + Tu	W
Q3	Introduction to PDE	4 EC	Lec + Tu	W
Q3	Reflection 2[b]	3 EC	Lec	O
Q3	Master Orientation Elective	4 EC		
Q4	Complex Function Theory	3 EC	Lec + Tu	W
Q4	Reflection 3[c]	2 EC	Lec	O
Q4	Bachelor's Assignment[c]	10 EC	PR	P + Ps
	Entire academic year	**60 EC**		

[a] Sequence requirement 1: students may only participate in these study units once they have gained at least 75 EC.

[b] Sequence requirement 2: students may only participate in this study unit once they have passed all the study units of the first two years except possibly at most 5 EC from Q3 in the second year and at most 5 EC from Q4 in the second year.

[c] Sequence requirement 3: students may only participate in these study units once they have passed the study unit *Reflection 2*.

Article 12.2 Curriculum AM for cohort 2021 and before

Table 4: The first academic year cohort 2021 and before

Study Units		Study	Teaching	Form of
Code	Name	load (EC)	method	assessment
	Module-01: Structures and Models			
202001214	Calculus I & Prooflab I	4 EC	Lec + Tu	W + O
202001325	Linear Structures I	6 EC	Lec + Tu	W
202001326	Project Programming, Modelling and Cultural Differences	5 EC	Lec + P	Pj + P
	Module-02: Mathematical Proof Techniques			
202001223	Calculus II	4 EC	Lec + Tu	W
202001329	Analysis I	3 EC	Lec + Tu	W
202001330	Linear Structures II	3 EC	Lec + Tu	W
202001331	Linear Optimization	3 EC	Lec + Tu	W
202001332	Project Prooflab II	2 EC	SS + Tu	O
	Module-03: Fields and Electromagnetism			
202001229	Vector Calculus	2 EC	Lec + Tu	W
202001335	Electromagnetics	5 EC	Lec + Tu	W
202001336	Introduction to Programming	1 EC	PR	P
202001337	Analytical Programming	1 EC	PR	P
202001338	Prooflab III	1 EC	Lec + Tu	O
202001339	Presenting a Mathematical Subject	2 EC	PR	Ps
202001340	Project Fields and Electromagnetism	3 EC	Pj	P
	Module-04: Signals and Uncertainty			
202001343	Signals & Transforms	5 EC	Lec + Tu	W
202001344	Probability Theory	5 EC	Lec + Tu	W
202001345	Project Signals and Uncertainty	5 EC	Lec + PR	Pj + P
	Entire academic year	**60 EC**		

Table 5: The second academic year cohort 2021 and before

Study Units Code	Name	Study load (EC)	Teaching method	Form of assessment
Module-05: Statistics and Analysis				
202001348	Mathematical Statistics	6 EC	Lec + Tu	W
202001349	Project Statistics	2 EC	Lec + PR	Pr
202001350	Analysis II	5 EC	Lec + Tu	W
202001351	Prooflab Revisited: Diversity in Cultures	2 EC	Lec	Pj + Ps
Module-06: Dynamical Systems				
202001354	Ordinary Differential Equations	4 EC	Lec + Tu	W
202001355	Systems Theory	4 EC	Lec + Tu	W
202001356	Numerical Mathematics	4 EC	Lec + PR	W + P
202001357	Project Dynamical Systems	3 EC	PR	Pj
Module-07: Discrete Structures & Efficient Algorithms				
202001360	Algorithmic Discrete Mathematics	5 EC	Lec + Tu	W
202001361	Languages & Machines	3.5 EC	Lec + Tu	W
202001362	Algebra	3.5 EC	Lec + Tu	W
202001363	Implementation Project on Graph Isomorphism	3 EC	PR	Pj
Module-08: Modelling & Analysis of Stochastic Processes for Math				
202001366	Stochastic Models	5 EC	Lec + Tu	W
202001367	Project Stochastic Models	1.5 EC	PR	Pj
202001368	Markov Chains	2.5 EC	Lec + Tu	W
202001369	Project Stochastic Simulation	4 EC	PR	Pj + P
202001370	Multidisciplinary Project	2 EC	PR	Pj
	Entire academic year	**60 EC**		

Table 6: The third academic year cohort 2021 and before

Study Units Code	Name	Study load (EC)	Teaching method	Form of assessment
Minor profile M9 + M10 [a]		30 EC		
Module-11: Electives & Preparation Bachelor's Thesis				
202001373	Reflection on Mathematical Research I [b]	5 EC	Lec	O
Electives: *Two of the following four courses must be included in the students' exam programme:*				
191520751	Graph Theory	5 EC	Lec + Tu	W
201500372	Mathematical optimization	5 EC	Lec + Tu	W
201700034	Introduction to PDE	5 EC	Lec + Tu	W
202001377	Simultaneous Statistical Inference	5 EC	Lec + Tu	W
Module-12: Finalising Bachelor's Thesis				
201500405	Complex Function Theory	3 EC	Lec + Tu	W
202001380	Reflection on Mathematical Research II [c]	2 EC	Lec	O
202001379	Bachelor's Assignment [c]	10 EC	PR	P + Ps
	Entire academic year	**60 EC**		

[a] Sequence requirement 1: students may only participate in these study units once they have gained at least 75 EC.

[b] Sequence requirement 2: students may only participate in this study unit once they have passed all the study units of the first eight modules except possibly at most 5 EC in Module-07 and at most 5 EC in Module-08.

[c] Sequence requirement 3: students may only participate in these study units once they have passed the study unit *Reflection on Mathematical Research I (202001373)*.

B13. Annex to the education and examination regulations for the double degree programme Applied Mathematics and Applied Physics

This annex describes the rules regarding the double degree programme Bachelor's in Applied Mathematics and Bachelor's in Applied Physics. The studying requirements are based on the Rules of the Examination Board AM and the AP Examination Board[14].

Article 13.1 Study programme AM-AP for cohort 2022

The tailored programme for the double degree Bachelor's in Applied Mathematics and Bachelor's in Applied Physics is summarised in Tables 7, 8 and 9 below:

Table 7: The first academic year for the double degree AM-AP, cohort 2022

Quartile	Applied Mathematics components		Applied Physics components	
Q1	Linear Structures 1	5 EC	Dynamics & Relativity	4.5 EC
(21 EC)	Analysis 1	5 EC	Laboratory 1	2 EC
	Workshop Intercultural Awareness		Error 1	2 EC
			Project Dynamics & Relativity	2.5 EC
Q2	Linear structures 2	4 EC	Thermodynamics	4 EC
(21 EC)	Analysis 2	6 EC	Project thermodynamics	4 EC
			Laboratory 2	2 EC
			Error 2	1 EC
Q3	Probability theory	5 EC	Instrumentation	4 EC
(19 EC)	Signals and Transforms	5 EC		
	Modelling 2 +Project AP	5 EC		
Q4	Numerical mathematics	5 EC	Quantum Matter	5 EC
(19 EC)	Differential equations	5 EC	Geometric optics	2.5 EC
			Project ES	1.5 EC
Entire academic year:		**80 EC**		

Table 8: The second academic year for the double degree AM-AP, cohort 2022

Quartile	Applied Mathematics components		Applied Physics components	
Q5	Mathematical Statistics 1	7 EC	Models	4 EC
(20 EC)	Analysis 3	5 EC	Classical Mechanics	4 EC
Q6	Optimization	5 EC	Optics	7 EC
(20 EC)			Quantum Mechanics	5 EC
			Hilbert space	3 EC
Q7	Algebra	3.5 EC	Solid State Physics	7 EC
(19.5 EC)			Statistical Physics	6 EC
			Intro Electrodynamics	3 EC
Q8	Markov Chains	2.5 EC	Physics of Fluids	7 EC
(20.5 EC)	Stochastic models	5 EC	Electrodynamics	6 EC
Entire academic year:		**80 EC**		

[14] In the event of a change to the double degree programme as stated in Article 13.1 of this annex, individual agreements will be made with the students by the examination committees of both programmes.

Table 9: The third academic year for the double degree AM-AP, cohort 2022

Quartile	Applied Mathematics components		Applied Physics components	
Q9 *(20 EC)*	**Minor + 5 EC Elective**			
Q10 *(20 EC)*	**Minor + 5 EC Elective**			
Q11 *(18 EC)*	Introduction to PDE Master orientation elective	4 EC 4 EC	Prepartion BO Master orientation elective	5 EC 5 EC
Q12 *(20 EC)*	Complex Function Theory Reflection 3 Bachelor's Assignment	3 EC 2 EC		15 EC
Entire academic year:		**78 EC**		

Article 13.2 Study programme AM-AP for cohort 2021 and earlier

The tailored programme for the double degree Bachelor's in Applied Mathematics and Bachelor's in Applied Physics is summarised in Tables 10, 11 and 12 below:

Table 10: The first academic year for the double degree AM-AP, cohort 2021 and before

Quartile	Applied Mathematics components		Applied Physics components	
Q1 *(21 EC)*	Linear Structures I Calculus I + Prooflab I Workshop Intercultural Awareness	6 EC 4 EC	Dynamics & Relativity Experimentation 1 Programming & Data processing 1 Project Dynamics & Relativity	4.5 EC 2 EC 2 EC 2.5 EC
Q2 *(20 EC)*	Calculus II Linear Structures II Analysis I Linear Optimization Project Prooflab II	4 EC 3 EC 3 EC 3 EC 2 EC	Thermodynamics Programming & Data processing 2	4 EC 1 EC
Q3 *(18 EC)*	Vector Calculus Presenting a Mathematical Subject Prooflab III	2 EC 2 EC 1 EC	Electromagnetism Instrumentation Project Electromagnetism and Measurements Analytical programming	5 EC 4 EC 3 EC 1 EC
Q4 *(20 EC)*	Probability Theory Signals and Transforms Project Signals and Uncertainty	5 EC 5 EC 5 EC	Quantum Matter	5 EC
Entire academic year:		**79 EC**		

Table 11: The second academic year for the double degree AM-AP, cohort 2021 and before

Quartile	Applied Mathematics components		Applied Physics components	
Q5 *(20.5 EC)*	Mathematical Statistics	6 EC	Models	4.5 EC
	Analysis II	5 EC	Project Signals, Models and Systems	3 EC
	Prooflab Revisited	2 EC		
Q6 *(21 EC)*	Ordinary Differential Equations	4 EC	Quantum Mechanics	6 EC
	Systems Theory	4 EC		
	Numerical Mathematics	4 EC		
	Project Dynamical Systems	3 EC		
Q7 *(21 EC)*	Discrete Mathematics & Algebra	6 EC	Solid State Physics	7 EC
			Statistical Physics	6 EC
			PDE	2 EC
Q8 *(19 EC)*	Markov Chains	4 EC	Physics of Fluids	7 EC
			Electrodynamics	6 EC
			Numerical Methods for PDE	2 EC
Entire academic year:			**81.5 EC**	

Table 12: The third academic year for the double degree AM-AP, cohort 2021 and before

Quartile	Applied Mathematics components		Applied Physics components	
Q9 *(15 EC)*	Minor https://www.utwente.nl/en/education/electives/minor/			
Q10 *(17 EC)*	Electives selection (10 EC)			
			Optics	7 EC
Q11 *(15 EC)*	Reflection on Mathematical Research I (5 EC)			
	10 EC of Electives:			
	Graph Theory	5 EC	Computational Physics	2.5/5 EC
	Simultaneous Statistical Inference	5 EC	Physical Materials Science	5 EC
	Mathematical Optimization	5 EC	Machine Learning	3/5 EC
			Remote Control of Experiments	2.5/5 EC
			Soft Matter Physics	5 EC
			Technical Optics	5 EC
Q12 *(20 EC)*	Complex Function Theory			3 EC
	Reflection on Mathematical Research II			2 EC
	Bachelor's Assignment			15 EC
Entire academic year:	**67 EC**			

Article 13.3 Transitional arrangements

In 2022-2023 a new curriculum for year 1 has started for Cohort 2022. For students from Cohort 2021 and earlier there will still be assessment for all courses of the previous curriculum for year 1. Students will be properly supported to pass those examinations. For students who, given their specific circumstances, want to follow courses from the new curriculum as replacement for course of their original curriculum, transitional provisions will be published on the BSc AM website.

For students who started the programme earlier than September 1st 2020, many study units, or parts thereof, as they existed at the time the student's enrolment, may no longer be offered. The curriculum, as given in Article 13.1 of this annex, serves as the basis for establishing the results of the bachelor's final examination.

Curricula of previous years and accompanying transitional arrangements are published on the Applied Mathematics website.

Whenever required, the programme coordinator BSc AM will set up an alternative curriculum, in consultation with the examination board.

Article 13.4 Safety

Safety requirements are compulsory while working in a laboratory. The student is obliged to follow these rules.

Article 13.5 Minor and Bachelor's Assignment

a. The minor consists of 15 EC (a quartile); The permitted minor offer is stated on the minor website: https://www.utwente.nl/en/education/electives/minor/
b. Before starting a minor, the student is expected to meet the prior knowledge requirements, as described in the minor's course catalogue.
c. Before starting a minor, the student must have obtained at least 100 EC from the first two years of the Bachelor's programme.
d. The student can only register for the Bachelor's Assignment examination component if he has fully passed the first year programme and if he obtained a minimum of 60 EC from the second and third year programme excluding the minor.
e. After the advice of the Examination Board, at the request of the student, the Programme Board may grant exemption from the condition referred in Paragraph a., Paragraph b., Paragraph c. and Paragraph d. of this article. This may cause a delay in the study progress.

Article 13.6 Pass/fail regulations

1. Students will pass the Bachelor's final degree audit for the AM and the AP programme if all study units have a passing grade.
2. Otherwise, the student will not pass the final degree audit for AM and AP and will not receive the Bachelor's degrees.

Article 13.7 Cum Laude

1. A student may pass the Bachelor's final degree audit for AP and AM with distinction (cum laude) for AM upon meeting the following requirements:
    a. The student passes the Bachelor's final degree audit for AP and AM within four years of initial enrolment (performance requirement).
    b. All study units are completed with a passing grade.
    c. The average of all numeric grades (including EX) is 8.0 or higher. This is a weighted average based on the corresponding number of ECs per study unit. Results for study units outside the examination programme are not taken into account.
    d. No more than one study unit may have a grade lower than 7.0.
    e. The grade for the Bachelor's Assignment is 8.5 or higher.
2. In exceptional cases and at the student's request, the Examination Board may award the distinction of cum laude if the student has met all requirements with the exception of the performance requirement, due to extenuating circumstances. These circumstances may involve delays recognised and provided for by the institution.
3. Cum laude for one programme does not automatically imply cum laude for another programme of a double degree.

Article 13.8 Binding Recommendation (BSA)

A student pursuing the double degree programme, as stipulated in Article 13.1 of this annex, will receive a positive recommendation on continuation of the study programme in Applied Matematics upon satisfying the following conditions (Article 6.2):

1. Successful completion of at least 45 credits from the first year's study units.
2. Successful completion of at least six of the following study units: Linear Structures 1, Linear Structures 2, Analysis 1, Analysis 2, Probability Theory, Signals and Transforms, Numerical Mathematics and Differential Equations.
3. A maximum of 15 EC incomplete from the total ECs associated with the first year's AM-study units of the double degree programme. See Article 13.1 for the AM-study units.

B14 Annex to the education and examination regulations for the double degree programme Applied Mathematics and Technical Computer Science

This annex describes the rules regarding the double degree programme Bachelor's in Applied Mathematics and Bachelor's in Technical Computer Science. The studying requirements are based on the Rules of the Examination Board AM and the TCS Examination Board[15].

Article 14.1 Study programme AM-TCS for cohort 2022

The tailored programme for the double degree Bachelor's in Applied Mathematics and Bachelor's in Technical Computer Science is summarised in Tables 13, 14 and 15 below, where the column Division indicates the programme a course belongs to, which is relevant for Article 14.6.b.

Table 13: The first academic year for the double degree AM-TCS, cohort 2022

Course name	Q	EC	Division
Linear Structures 1	1A	5	AM
Analysis 1	1A	5	AM
Pearls of Computer Science Core	1A	11	TCS
Linear Structures 2	1B	4	AM
Analysis 2	1B	6	AM
Programming Theory & Project	1B	8	TCS
Signals and Transforms	2A	5	AM
Probability Theory AM	2A	5	AM
Network Systems Core	2A	12	TCS
Numerical Mathematics	2B	5	AM
Differential Equations	2B	5	AM
Data & Information Core	2B	10	TCS
Entire academic year:		81 EC	

[15] In the event of a change to the double degree programme as stated in Section B14 of this annex, individual agreements will be made with the students by the examination committees of both programmes

Table 14: The second academic year for the double degree AM-TCS, cohort 2022

Course name	Q	EC	Division
Mathematical Statistics 1	1A	7	AM
Computer Systems Core	1A	12	TCS
Mathematical Statistics 2	1B	5	AM
Optimization	1B	5	AM
Intelligent Interaction Design Core	1B	12	TCS
Algorithmic Discrete Mathematics	2A	5	AM/TCS
Languages & Machines	2A	3.5	AM/TCS
Algebra	2A	3.5	AM/TCS
Implementation Project on Graph Isomorphism	2A	3	AM/TCS
Modelling 2	2A	4	AM
Stochastic Models	2B	5	AM
Project: Stochastic Models	2B	1.5	AM
Markov Chains	2B	2.5	AM
Project: Stochastic Simulation	2B	4	AM
Multidisciplinary Project	2B	2	AM
Modelling 3	2B	4	AM
Entire academic year:		**79 EC**	

Table 15: The third academic year for the double degree AM-TCS, cohort 2022

Course name	Q	EC	Division
Analysis 3	1A	5	AM
Discrete Mathematics (M5)	1A	3	TCS
Reflection 2	1A	3	AM
Master orientation elective	1A	5	AM/TCS
Minor selection	1B	15	AM/TCS
Graph theory	2A	4	AM
Design Project Core	2A	15	TCS
Bachelor's Assignment Double Degree	2B	15	AM/TCS
Reflection 3	2B	2	AM
Complex Function Theory	2B	3	AM
Entire academic year:		**70 EC**	

Students have the option to do Reflection 3 and the Bachelor's Assignment Double Degree in quartile 1B and move the Minor to quartile 2B.

Article 14.2 Study programme AM-TCS for cohort 2021 and earlier

The tailored programme for the double degree Bachelor's in Applied Mathematics and Bachelor's in Technical Computer Science is summarised in Tables 16, 17 and 18 below, where the column Division indicates the programme a course belongs to, which is relevant for Article 14.6.b.

Table 16: The first academic year for the double degree AM-TCS, cohort 2021 and before

Course code	Course name	Q	EC	Division	Prerequisites
202001325	Linear Structures I	1A	6	AM	
202001190	Introduction to Mathematics + Calculus 1A	1A	4	AM/TCS	
202001022	Pearls of Computer Science Core	1A	11	TCS	
201500112	Programming Theory & Project	1B	8	TCS	
202001197	Calculus 1B for CS	1B	3	AM/TCS	
202001329	Analysis I	1B	3	AM	
202001332	Project: Prooflab II	1B	2	AM	
202001330	Linear Structures II	1B	3	AM	202001325
202001026	Network Systems Core	2A	12	TCS	
202001231	Vector Calculus EE	2A	3	AM	
202001339	Presenting a Mathematical Subject	2A	2	AM	
202001343	Signals & Transforms	2B	5	AM	
202001344	Probability Theory AM	2B	5	AM/TCS	
202001028	Data & Information Core	2B	12	TCS	201500112
	Entire academic year:		**79 EC**		

Table 17: The second academic year for the double degree AM-TCS, cohort 2021 and before

Course code	Course name	Q	EC	Division	Prerequisites
202001348	Mathematical Statistics	1A	6	AM/TCS	202001344
202001349	Project Statistics	1A	2	AM	
202001030	Computer Systems Core for CS	1A	12	TCS	
202001355	Systems Theory	1B	4	AM	
202001354	Ordinary Differential Equations	1B	4	AM	202001197
202001032	Intelligent Interaction Design Core for CS/BIT	1B	12	TCS	
201600061	Introduction Mathematical Modelling	2A	1	AM	
202001360	Algorithmic Discrete Mathematics	2A	5	AM/TCS	
202001361	Languages & Machines	2A	3.5	AM/TCS	
202001362	Algebra	2A	3.5	AM/TCS	
202001363	Implementation Project on Graph Isomorphism	2A	3	AM/TCS	202001030
202001366	Stochastic Models	2B	5	AM	
202001367	Project: Stochastic Models	2B	1.5	AM	
202001368	Markov Chains	2B	2.5	AM	
202001369	Project: Stochastic Simulation	2B	4	AM	
202001370	Multidisciplinary Project	2B	2	AM	
202001345	Project Signals & Uncertainty	2B	5	AM	
	Entire academic year:		**76 EC**		

Table 18: The third academic year for the double degree AM-TCS, cohort 2021 and before

Course code	Course name	Q	EC	Division	Prerequisites
202001350	Analysis II	1A	5	AM	
201400365	Discrete Mathematics (M5)	1A	3	TCS	
202001373	Reflection on Mathematical Research I	1A	5	AM	
	Minor selection	1B	15	AM/TCS	Entire first year
202001049	Design Project Core	2A	15	TCS	All components of 8 quartiles, including all first year components
	Elective AM selection	2A	5	AM	
202001384	Bachelor's Assignment Double Degree	2B	15	AM/TCS	
202001380	Reflection on Mathematical Research II	2B	2	AM	
201500405	Complex Function Theory	2B	3	AM	
Entire academic year:			**68 EC**		

Article 14.3 Minor and Bachelor's Assignment

a. The minor consists of 15 EC (a quartile); The permitted minor offer is stated on the minor website: https://www.utwente.nl/en/education/electives/minor/
b. Before starting a minor, the student is expected to meet the prior knowledge requirements, as described in the minor's course catalogue.
c. A student may enrol in the minor through the Minor Bureau once he/she has completed all first year study units upon registration in Osiris;
d. The student can only register for the Bachelor's Assignment examination component if he has fully passed at least eight quartiles of the complete programme.
e. After the advice of the Examination Board, at the request of the student, the Programme Board may grant exemption from the condition referred in Paragraph a., Paragraph b., Paragraph c. and Paragraph d. of this article. This may cause a delay in the study progress.

Article 14.4 Teaching evaluation

1. All study units of the programme are parts of some modules. The online Student Experience Questionnaire (SEQ) is used for evaluation purposes at the conclusion of modules;
2. At least once a year there will be a panel of discussion with students participating in the double degree;
3. Additionally, there will be an extra panel discussion after the first semester of the first year.

Article 14.5 Extra requirements for double degree AM-TCS

The prospective student enrolled to the double degree programme AM-TCS must attend an extra intake/conversation to determine whether the student is motivated, ambitious and possesses the skills needed to succeed in the double degree programme.

Article 14.6 Pass/fail regulations

1. Students who meet the following requirements will pass the Bachelor's final degree audit for the AM and the TCS programme:
    a. The student has received an assessment for all study units of the double degree programme;
    b. There is no more than one grade of 5.0 for the AM or AM/TCS study units of the first year of the AM-TCS curriculum. The grades are 6.0 or higher or pass for all other study units.
    c. The grade for the Bachelor's Assignment is 6.0 or higher.
    d. The average of all grades is 6.0 or higher without taking into account the pass/fail grades.
    e. This is a weighted average based on the corresponding number of ECs per study unit.
2. In all other cases not specified under paragraph 1, the student will not pass the final degree audit for AM and TCS and will not receive the Bachelor's degrees.

Article 14.7 Cum Laude

1. A student may pass the Bachelor's final degree audit for TCS and AM with distinction (cum laude) for AM upon meeting the following requirements:
    a. The student passes the Bachelor's final degree audit for TCS and AM within four years of initial enrolment (performance requirement).
    b. All study units are completed with a passing grade.
    c. The average of all numeric grades (including EX) is 8.0 or higher. This is a weighted average based on the corresponding number of ECs per study unit. Results for study units outside the examination programme are not taken into account.
    d. No more than one study unit may have a grade lower than 7.0.
    e. The grade for the Bachelor's Assignment is 8.5 or higher.
2. In exceptional cases and at the student's request, the Examination Board may award the distinction of cum laude if the student has met all requirements with the exception of the performance requirement, due to extenuating circumstances. These circumstances may involve delays recognised and provided for by the institution.
3. Cum laude for one programme does not automatically imply cum laude for another programme of a double degree.

Article 14.8 Binding Recommendation (BSA)

A student pursuing the double degree programme, as stipulated in Article 13.1 of this annex, will receive a positive recommendation on continuation of the study programme in Applied Mathematics upon satisfying the following conditions (Article 6.2):

1. Successful completion of at least 45 credits from the first year's study units.
2. Successful completion of at least six of the following study units: Linear Structures 1, Linear Structures 2, Analysis 1, Analysis 2, Probability Theory, Signals and Transforms, Numerical Mathematics and Differential Equations.
3. A maximum of 15 EC incomplete from the total ECs associated with the first year's AM-study units of the double degree programme. See Article Article 13.1 for the AM-study units.

Article 14.9 Transitional arrangements

In 2022-2023 a new curriculum for year 1 has started for Cohort 2022. For students from Cohort 2021 and earlier there will still be assessment for all courses of the previous curriculum for year 1. Students will be properly supported to pass those examinations. For students who, given their specific circumstances, want to follow courses from the new curriculum as replacement for course of their original curriculum, transitional provisions will be published on the BSc AM website.

For students who started the programme earlier than September 1st 2020, many study units, or parts thereof, as they existed at the time the student's enrolment, may no longer be offered. The curriculum, as given in Article 14.1 of this annex, serves as the basis for establishing the results of the bachelor's final examination.

Curricula of previous years and accompanying transitional arrangements are published on the Applied Mathematics website.

Whenever required, the programme coordinator BSc AM will set up an alternative curriculum, in consultation with the examination board.