

Faculty of Science and Technology

Programme-specific appendix to the programme part of the students' charter, including the education and examination regulations of the

Advanced Technology

Bachelor's Programme

(art. 7.13 and 7.59 WHW)

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Preamble

1. The rules in this appendix apply to the full-time Advanced Technology Bachelor's programme.
2. Together with the Common Part (TNW160078/vdh) this appendix forms the programme section of the student charter for the bachelor programme Advanced Technology of the faculty Science and Technology at the University of Twente.
3. The Board of Examiners has set rules for the purpose of the conduction of its tasks and prerogatives (WHW art.7.12) in the "Rules and regulations of the Board of Examiners of Advanced Technology".

Reference: TNW/160079/hh/vdh

Date: 29 August 2016

Article 1 Programme Objectives

The international bachelor's programme Advanced Technology aims to impart knowledge, skills and insight to the graduate regarding the field of Science and Technology by means of a broad-based and exploratory curriculum in such a way that the graduate is able to apply these skills in a global context to develop new technologies that are both economically and socially viable and to make a well-considered choice for one of the University of Twente master-programmes or a master-programme at another university in the Netherlands or abroad as well as use these skills to successfully finish the programme of their choice. For graduates who wish to enter the labour market after acquiring their bachelor's diploma the programme offers the opportunity of giving a more concluding character to the third and final year of the curriculum.

Article 2 Connecting master programmes

If the bachelor's final examination has been taken, admission can be obtained to one or more master's programmes of the University of Twente or another university in the Netherlands or abroad, depending on the selected course list in the second and third year of the programme. The conditions which have been stipulated for the mentioned course list are specified in article 6 of this appendix and article 10.4 of the Advanced Technology Board of Examiners' Rules.

Article 3 Language

1. The language used in the Advanced Technology bachelor-programme is English. This applies to both teaching and examination.
2. The Board of Examiners can grant permission to conduct an examination in a different language.
3. In course evaluations and student panel meetings the quality of the English language proficiency of teaching staff will be a standard subject. If necessary resulting from evaluation outcomes, the programme director will urgently appeal for the involved staff member to improve his English proficiency.

Article 4 Programme learning outcomes

Graduates of the Advanced Technology Bachelor's programme:

1. Domain knowledge & skills

Can apply basic theoretical concepts, important methods and techniques in the fields listed below and has skills to increase and develop this through study:

- a. Elements from mechanical engineering, electrical engineering, physics, chemistry (Newtonian dynamics, Thermodynamics, Material Science, Mechatronic systems, electromagnetism, System Engineering)
- b. Mathematics and programming
- c. Innovation, business administration and development/trends of technology on a local and a global level
- d. Analysis of impact of technology on a local and a global level
- e. Experimentation in the technical sciences.

2. Research & Design

- a. is able to apply the most important scientific research methods
- b. is able to apply the most important scientific design methods and is able to divide a design problem in different sub problems.

3. Organize

Is able to organize work both independently and as a member of an international project group. In project work able to define separate problems for team members, to assure the interconnection between these entities and to implement a timeline.

4. Report & Presentation

is capable of communicating on technical-scientific issues both in writing and orally in a clear, concise and professional manner.

5. Problem solving

Is capable of analysing, modelling, interpreting and solving technical-scientific problems with an academic approach, i.e., formulating a problem definition, selecting scientific information and processing it, conducting research and critically evaluating the subsequent results, and of formulating conclusions.

6. Personal Development

is able to recognize personal strengths and weaknesses as well as personal interests that are necessary to opt for either a follow-on studies, in particular an academic master's program which requires a high level of autonomy or a job in the labour market

Article 5 The bachelor exam

The bachelor exam of the programme contains programmes of the first, second and third course year (B1, B2 and B3). The core programme consists of the B1-, B2-programme plus two modules of the B3 programme (total 150 EC) of the AT curriculum.

Typical educational forms are lectures, tutorials, lab work, assignments, projects and problem based learning. Tests of the subjects are in the form of written exams, oral exams, reports, presentations and posters. In the B1- and B2-programme the curriculum consist of 15 EC modules. Each module has a project in which the students learn to solve a problem using and integrating the available knowledge and skills where needed to extend the knowledge and skills.

In the B1-programme guidance will be scheduled during part of the self-study time.

More information on the contents of the modules and subjects is available in the Osiris Course Catalogue.

The B1-programme has a study-load of 60 EC and consists of 4 modules of 15 EC each:

Course code / Name	Content	EC
201500197 Mechanics	- Mathematics A +B1 - Introduction to Engineering - Laboratory Practice 1 - Project Engineering	15
201300147 Thermodynamics	- Mathematics B2 - Thermodynamics - Laboratory Practice 2 - Project Thermodynamics	15
201500370 Fundamentals of Materials	- Mathematics C1 - Quantum matter - Structure and Properties of Material - Organic Chemistry - Analysis of Technology in Societal Context - Project Materials for Energy	15
201600181 Dynamics	- Mathematics D1 - Advanced Engineering - Instrumentation - Project Accelerometer	15
Total B1		60

For students of cohort 2014 and before transitional arrangements are in effect.

The B2-programme has a study-load of 60 EC. The modules of the B2-programme are:

Code / Name	Content	EC
201600129 Signals, Models and Systems	- Signals and Models - System Analysis - Project	15
201600176 Materials Science and Engineering	- Advanced Materials - Chemistry and Technology of Inorganic Materials - Probability and Statistics choice 1 of 2 - Semiconductor Physics - Interfaces and Catalysis	15
201600177 Fields and Waves	- Electrodynamics - Project Antennas - Finite Element Method - Excursion	15
201400160 System Engineering, Entrepreneurship and Knowledge Production	- System Engineering - Entrepreneurship and Innovation Management - Knowledge Production in Innovation	15
Total B2		60

For students of cohort 2013 and before transitional arrangements are in effect.

The B3-programme consists of 4 modules of 15 EC each and has a study-load of 60 EC. One of these modules is the Bachelor assignment. The modules of the B3-programme should be chosen in such a way that admission to one of the master programmes referred to in article 2 of this appendix is obtained. The admission requirements for a selection of master programmes is available on the AT website. The selected subjects in the third year curriculum requires the approval of the Board of Examiners.

The B3 programme consists of 4 modules of 15 EC each and has a study-load of 60 EC:

Code	Name	EC
	Optional modules (of which typically two are needed for admission to the master of choice)	45
201600140	Bachelor Assignment	15
Total B3		60

For students of cohort 2012 and earlier transitional arrangements are in effect.

Article 5a Period of validity of test results

1. The following rules apply to the modules of the B1 and B2 programme and the modules (201600048) Science, (201500406) Nano Mechanics and (201500064) Materials for the Design of the Future.
 - a. A test result is a pass (or sufficient) if the mark is 5.5 or higher or a "sufficient" qualification (denoted by the letter "V") is obtained.
 - b. When a module has not been successfully completed and only one of the test results is a fail, the validity of the other test results is extended to the next academic year.
 - c. When a module has not been successfully completed and more than one test result was insufficient then:
 - i. in case the test result for the lab course in module 1, 2, 4, and 5 is sufficient, its validity is extended to the next academic year.
 - ii. in case the test result for the project is sufficient, its validity is extended to the next academic year.
2. In all other situations the board of examiners may grant an extension of the validity of test results, at the request of the student, on an individual basis and depending on the circumstances.

Article 5b Plus programme

AT students can take additional courses as part of the 30 EC "Plus Programme" under the following conditions:

1. At the start of the plus programme the student must have passed all previous modules.
2. Suitable candidates for participation in the plus programme will be invited by the programme director. More information about the selection criteria will be published on the Advanced Technology programme's website. One of the criteria will be the module grades.
3. In case a participant of the plus programme fails a module of the regular programme, participation in the plus programme will be suspended till the moment the student has passed all previous modules again.
4. Courses can be taken from the selected plus programmes that are offered.
5. The plus programme will be registered on the diploma supplement as "Plus Programme courses" when 30 EC of plus programme courses have been passed. When less than 30 EC of the plus programme has been obtained the courses will be registered under "Additional courses" without reference to the plus programme.
6. In special circumstances the programme director can deviate from the rules in clauses 1-5 of this article.

Article 6 Transitional arrangements

1. If the study programme in article 5 of this appendix is changed, or if one of the articles included in the common part or programme appendix change, the programme director will stipulate and publish transitional arrangements.
2. The transitional arrangements have to comply to the conditions set in article 8.4 of the common part.
3. The transitional arrangements are valid for the year of publication and are updated every year.
4. The transitional arrangements are published on the Advanced Technology programme's website.

Article 7 Safety

There are safety requirements for working in a laboratory. Students are required to inform themselves about these rules¹ and to adhere to them.

Article 8 Sequence of study units (courses)

1. Before starting a study unit, students must meet the prior knowledge requirements of that study unit.
2. Students may only participate in minor modules (see article 3.2.2.e of the common part of the OER) after having obtained at least 75 EC and passed modules 1, 2, 5 and 6.
3. Students may only start the bachelor assignment after completion of the core programme (the core programme consists of the B1-, B2-programme plus two modules of the B3 programme, total 150 EC).
4. The board of examiners is authorised to deviate from the requirements set in clauses 1 to 3 of this article, in the event that strict adherence would result in an unreasonable delay in study progress. Students can submit a request for this to the board of examiners.

Article 9 Student counselling

1. The study advisor has the task of individually advising the students on all aspects of their studies and informing the programme director on the study progress of the students.
2. The study advisor actively communicates with the students with a progress rate less than 75% of the nominal rate of 60 EC/year.
3. After the first year the study advisor has at least once a year a progress meeting with the students.

Article 10 Change

In case of changes to the programme specific appendix articles 8.3 and 8.4 of the common part apply.

Article 11 Effectuation

These regulations will come into effect on 1 September 2016 and replace the regulations dated 1 September 2015.

Established by the Dean of the Faculty, after advice from the Faculty Council and the programme committee.

Enschede, 29 August 2016.

¹ See the 'Health & Safety and Environmental Regulations' on <http://www.tnw.utwente.nl/intra/diensten/amh/> and the information of the Science and Technology Laboratory Practice Group, on http://www.tnw.utwente.nl/onderwijs_overig/practica/