

Study programme section of the Students' Charter with the 2021-2022 Teaching and Examination Regulations of the Bachelor's programme

Study programme: B Automotive
Study programme code: 30018
Type of study programme: full-time
Location of the classes: year 1 & 2 in Eindhoven, year 3 & 4 in Helmond

Study programme: B Electrical & Electronic Engineering
Study programme code: 34267
Type of study programme: full-time
Location of the classes: Eindhoven

Study programme: B Mechatronics
Study programme code: 30026
Type of study programme: full-time
Location of the classes: Eindhoven

Study programme: B Mechanical Engineering
Study programme code: 34280
Type of study programme: full-time
Location of the classes: Eindhoven

The study programme's section of the Students' Charter was adopted by the institute's director on 10th of June 2021, after obtaining the IPC's consent on 10th of June 2021 and the PC consent on 16th of June 2021.

The teaching and examination regulations of the study programme expand on the general section of the teaching and examination regulations of Fontys Bachelor's programmes.

This general section for the 2021-2022 academic year was established by the Executive Board on 15 December 2020, following the consent of the students' section of the CPC, which was given on 14 January 2021.

Addendum for the TER-tables section of the 2021-2022 Teaching and Examination Regulations of the Bachelor's programmes

*Study programme: B Automotive
Study programme code: 30018
Type of study programme: full-time
Location of the classes: year 1 & 2 in Eindhoven, year 3 & 4 in Helmond*

*Study programme: B Electrical & Electronic Engineering
Study programme code: 34267
Type of study programme: full-time
Location of the classes: Eindhoven*

*Study programme: B Mechatronics
Study programme code: 30026
Type of study programme: full-time
Location of the classes: Eindhoven*

*Study programme: B Mechanical Engineering
Study programme code: 34280
Type of study programme: full-time
Location of the classes: Eindhoven*

This addendum has been determined after consent of the DPC on the *16th of May 2022* and the IMR on the *23rd of May 2022*.

In the TER-Bachelor 2021-2022 changes are made to appendix: Minor Be Creative Minor regulations 2021 – 2022

In the TER-Bachelor 2021-2022 changes are made to appendix: Registration process for assessing academic year 2021-2022 Fontys Hogeschool Engineering

Table of contents

A – Teaching and Examination Regulations.....	5
<i>Section 1 General.....</i>	<i>5</i>
Article 1 Definitions.....	5
<i>Section 2 Admission to a Bachelor's programme.....</i>	<i>8</i>
Article 2 Required prior qualifications	8
Article 2a Study choice check and study choice advice.....	9
Article 3 Requirements regarding foreign diplomas/international students	10
Article 4 Professional activity requirements	10
<i>Section 3 Intake interview, exemptions, short track and tailored study programmes.....</i>	<i>11</i>
Article 5 Intake interview	11
Article 6 Exemptions	11
Article 7 Short-track/tailored study programmes	11
<i>Section 4 Facilities with reference to student coaching, language, functional disability, administrative activities, Elite athletes scheme, student entrepreneurship.....</i>	<i>12</i>
Article 8 Student coaching	12
Article 9 Dutch as a second language – <i>Facilities for Dutch in English language programmes</i>	12
Article 10 Special facilities for students with a functional disability	12
Article 11 Students with board memberships.....	12
Article 12 Elite Athletes scheme - Student entrepreneurship.....	13
<i>Section 5 Study programme content.....</i>	<i>13</i>
Article 13 Study programme profile – main subjects/differentiations – occupational requirements	13
Article 14 Study programme layout	13
Article 15 Overview of units of study and EC.....	14
Article 16 Content of minors and other special programmes.....	14
Article 17 Education components - learning environment	15
Article 18 Evaluation of teaching	15
<i>Section 6 Tests, evidence, assessment and study progress.....</i>	<i>15</i>
Article 19 Types of tests - evidence.....	15
Article 20 Tests and assessments	16
Article 21 Content of tests, duration of the test, test aids and test timetables	16
Article 22 Registration for tests.....	16
Article 23 Proof of identity during tests	16
Article 24 Test marking system	16
Article 25 Test results	16
Article 26 Inability to sit tests	17
Article 27 Request for a review	17
Article 28 Resits	17
Article 29 Period of validity of results - evidence.....	18
Article 30 Final paper - Knowledge bank.....	18
Article 31 Study progress	18
Article 32 Advice regarding the continuation of studies	19
Article 33 Additional provisions concerning binding negative advice regarding the continuation of studies	20
<i>Section 7 Graduation.....</i>	<i>17</i>
Article 34 Examinations - certificates - diploma supplement.....	20
Article 35 Statement on departure	21
Article 36 Transfer	21
<i>Section 8 Irregularities and fraud.....</i>	<i>Fout! Bladwijzer niet gedefinieerd.</i>
Article 37 Irregularities and fraud	21
<i>Section 9 Examination Board, appeal</i>	<i>21</i>
Article 38 Examination Board.....	21
Article 39 Appeals	22
<i>Section 10 Retention and hardship clause</i>	<i>22</i>

Article 40 Retention of documentation	22
Article 41 Hardship clause.....	22
<i>Section 11 Final provisions and implementation</i>	<i>23</i>
Article 42 Entry into force, amendments, publication and official title	23
Article 43 Transitional provisions	23
Article 44 Unforeseen cases.....	23
B - Set-up of the study programme and support facilities	24
C - Internal complaints procedure.....	24

A – Teaching and Examination Regulations

Section 1 General

Article 1 Definitions

Academic year	The period from 1 September up to and including 31 August of the following year.
Advice regarding the continuation of studies	Advice given to students at the end of the first year of the foundation phase of a Bachelor's programme regarding the continuation of their studies either with the programme or elsewhere. This advice may entail a binding rejection (binding negative study advice).
Assessment	Generic term for tests aimed at assessing a student's competencies in a professional situation that is as authentic and realistic as possible.
Assessor	An examiner that grades the student's progress in acquiring the required competencies.
CAA	Centre for Administrative Activities. The CAA is the internal partner within Fontys of the representative and participatory bodies and their discussion partners with respect to optimising how these bodies function.
Certificate	The certificate as referred to in Section 7.11 of the Dutch Higher Education and Research Act (<i>Wet op het Hoger Onderwijs en Wetenschappelijk Onderwijs</i> , WHW).
CPC	Central Participation Council
Cohort	The group of students who are enrolled for the first time in the foundation year of a study programme on the same reference date to which the prevailing Teaching and Examination Regulations (TER) apply. For students who enrol in a higher year, cohort membership is determined on an individual basis.
Competency	A cluster of related knowledge, skills and attitudes that influences a substantial part of a person's job, is related to the performance of the job, can be measured and tested against accepted standards and can be improved through training and development.
Component test	If an interim examination consists of several tests, each of those tests is referred to as a component test.
Coordinating institute	The coordinating institute is the Fontys Institute which bears final responsibility for the development, implementation, assessment and improvement of a minor programme.
Credit	One credit equals 28 standard study-load hours. Students are awarded EC on passing the interim examination of a unit of study. The international term for EC is ECTS EC (EC's).
Education components	The courses offered to students to help their learning process.
CROHO	Central Register of Higher Education Study Programmes, which is a register of all study programmes. Students that pass the interim examinations of a study programme registered in CROHO are entitled to an official higher professional education certificate with the associated degree (Associate degree, Bachelor or Master).
Deficiency	Any required prior qualification(s) a student lacks.
Diploma supplement	Document drawn up in accordance with a European format that is added to the certificate and states the nature, level, context, content and status of the study programme.
Dual-study programme	A dual-study programme is organised in such a way that education is alternated with one or more periods of professional practice related to the study programme. The study programme therefore consists of an educational segment and a practical segment, both of which are integral parts of the study programme.
DUO	Short for Dienst Uitvoering Onderwijs, a government agency charged with implementing education legislation and regulations.
Diploma with subject combination	Former senior general secondary education (<i>HAVO</i>) or pre-university education (<i>VWO</i>) diploma based on subject combinations. These diplomas were issued before the <i>HAVO</i> and <i>VWO</i> profiles were introduced (from 1998).
ECTS	European Credit Transfer System. The system that is used to express EC in order to facilitate international comparison. See also: EC.

EVC (RPL)	<i>Erkenning van eerder Verworven Competenties</i> (Recognition of Prior Learning).
Examination	Assessment administered by the Examination Board to determine whether students have successfully completed the educational components of a study programme or the foundation-year phase. The final examination may also include a supplementary assessment conducted by the Examination Board.
Examination Appeals Board	The Board as referred to in Sections 7.60 up to and including 7.63 of the WHW and Articles 45 and 46 of the Students' Charter. The organisation, duties and powers of the Board are laid down in the Rules of Procedure adopted by the Examination Appeals Board and approved by the Executive Board.
Examination Board Examiner	The board of persons referred to in Section 7.12 of the WHW. Member of staff or external expert not employed by the institution who has been designated by the Examination Board to administer examinations and assess the results thereof.
Executive Board	The administrative body of Fontys University of Applied Sciences, as described in the articles of association and the WHW.
Executive institute	A Fontys institute responsible for the execution of a minor.
Exemption	Full or partial exemption from meeting enrolment and/or admission conditions and/or sitting interim examinations.
Exit qualifications	Qualifications students must have on completing the study programme.
Fontys minor	A minor open to all Fontys students, so long as they meet any admission criteria for the minor, with a focus on overarching and distinctive themes.
Foundation year	First phase in a Bachelor's programme.
Fraud	Any act (including plagiarism) or omission that either partially or fully impairs the correct assessment of a person's knowledge, understanding, skills, competencies, professional attitude, powers of reflection, etc.
Full-time study programme	A full-time study programme is a study programme whose structure is such that students are assumed not to participate in any activities other than academic activities.
Hardship clause	A provision in a law or regulation that makes it possible to deviate from regulatory provisions in favour of the student or external student.
He/him	He/him is taken here to refer to men, women and individuals who do not identify as either of these options.
IELTS	International English Language Teaching System, a tool used to determine a student's command of the English language.
Institute	The operational unit at Fontys that is, in particular, responsible for organising Fontys's core competencies and that executes the primary processes.
Institute Director	The staff member charged with running a Fontys institute.
Institution	The Fontys Universities of Applied Sciences.
Intake assessment	Portfolio assessment conducted at the student's request to validate previous learning experiences prior to enrolment in the study programme. A fee covering the costs is charged for an intake assessment.
Intake interview	Interview conducted at the student's request prior to the start of the study programme if the student believes that he has competencies acquired previously. An intake interview comprises a general assessment from which no rights can be derived by a student.
Interim examination	An examination of the knowledge, understanding, skills and/or competencies of a student required to conclude a unit of study, including an assessment of the results of such an examination (<i>Section 7.10(1) of the WHW</i>). An interim examination may consist of one or more component tests.
IPC	Institute Participation Council
Learning Agreement	An agreement between the student and the study program that describes the agreed learning activities for a quarter.
Learning Outcome	A learning outcome is a statement about what the learner is expected to know, understand and act at the end of a learning process and how the learner demonstrates this.
Main subject	A specific definition of the curriculum within a programme, which begins immediately from year 1 or following the foundation year. (
Major	<i>That part of the Bachelor's programme with a study load of 210 EC that contributes to the competencies associated with the programme and that is directly related to the study programme(s)'s registration in the CROHO.</i>
Minor	<i>Programme of optional subjects within a Bachelor's programme with a study</i>

Minor regulations	<p><i>load of 30 EC that contributes to generic or specific competencies.</i></p> <p>Regulations that describe the content, the education components, the testing and the completion of a minor. The regulations of all minors offered by Fontys can be found on the Fontys website (www.fontys.nl/minors). The regulations of the minors associated with a particular study programme have been included as an appendix of the study programme's TER.</p>
Nt2 diploma	Diploma of the Nt2 official state examination in Dutch as a second language, of which programme II is considered to be the guideline for admittance to higher education.
Occupational requirements	The legal requirements to which the practice of a particular profession is subject. A study programme aimed at such an occupation will prepare students to meet the relevant requirements. (<i>Section 7.6 of the WHW</i>).
Part-time study programme	A part-time study programme is a study programme whose structure is such that the student is able to participate in supplementary activities, either work-related or educational, alongside the study programme.
Portfolio	A collection of evidence, digital or otherwise, with which students can demonstrate that they master the competencies of a particular study programme.
Post-foundation year phase	Second phase of a Bachelor's programme.
Principle	All study programmes offered are based on one of the following principles: non-denominational private education (NPE), Roman Catholic (RC), Protestant Christian (PC) or a combination of general special education, Roman Catholic and Protestant Christian (NPE, RC, PC).
Profiling Fund Board	Board charged by the Executive Board with implementing the Profiling Fund scheme, formerly known as the FSS Board.
Profiling Fund Scheme	Scheme for the granting of support to students in the form of graduate funding, committee member grants or attendance fee from the profiling fund, now known as the Profiling Fund Scheme .
PC	Opleidingscommissie (Programme Committee, PC), a committee established for a particular study programme of an institute referred to in Section 10.3c of the Act (see the Regulations on the Participation Councils and Degree PC's).
Tailored programme	Special programme which differs from the standard programme.
Teaching period	Period in the academic year during which education components are organised. A teaching period is referred to as a study quarter in the Fontys annual calendar.
TER	Teaching and examination regulations. The TER consists of a general section for all study programmes offered by the Fontys Universities of Applied Sciences as well as information specific to individual study programmes. The TER forms a part of the study programme section of the Students' Charter.
Test	Activity used to assess whether a student has certain knowledge, insight, skills and/or competencies.
Elite athletes scheme	Scheme for elite athletes that specifies which students are eligible to benefit from it and the facilities that they may use under it.
Student	A person who is enrolled in the institution, as referred to in Sections 7.32 up to and including 7.34 of the WHW.
Student counsellor	Staff member appointed by the Executive Board who is responsible for looking after the students' interests, providing assistance when problems occur and providing information and advice. The student counsellor is part of the Student Facilities Service (Dienst Studentenvoorzieningen).
Study Career Centre	Service provided by the Student Facilities Service (Dienst Studentenvoorzieningen) to help students with issues involving admission, transfer to another study programme/institute or the termination of their studies.
Students' Charter	The charter containing the rights and obligations of students, divided into an institution-specific section and a study programme-specific section.
Student entrepreneur scheme	Scheme which is intended to help Fontys students who are deemed student entrepreneurs to combine entrepreneurship and study.
Student coach	Coach who provides guidance on issues relating to student progress, including those that stimulate a student to develop a personal and professional identity, focusing on a student's talents and personal leadership qualities.

Student coaching	System of guidance that focuses on the development of the individual student. It stimulates students to reflect on their own development as future practitioners of the profession and to take responsibility for their own development.
Study check advice	Advice provided to a prospective student who has participated in the study check with regard to his choice of Bachelor's.
Study check	The activity offered by Fontys whereby the prospective student is given advice with respect to his choice of study programme. The study check consists of at least two components: a digital questionnaire and a consultation to discuss the results of the questionnaire.
Study load	The standardised time investment expressed in units of 28 study load hours related to a study programme.
Study programme	A coherent totality of education components aimed at achieving the well-defined objectives in the area of knowledge, understanding and skills which the person completing the study programme should possess. Every study programme is recorded in the CROHO.
Study programme minor	A minor which can only be taken by students from a specific domain or study programme and which highlights one particular theme.
Study programme profile	The entire set of final qualifications for which the study programme provides training or, in other words, the professional competencies expected of a beginning professional.
Unit of study	Part of a study programme that is concluded with an interim examination as referred to in Section 7.3(2) of the WHW or an additional assessment carried out by the Examination Board, as referred to in Section 7.10(2) of the WHW. Units of study may relate to the assessment of one or more competencies, a component of competencies (knowledge, understanding, skills, attitude) or a combination of competencies or of a minor. Students are awarded the relevant EC on passing the interim examination for the unit of study.
WEB	Adult and Vocational Education Act (<i>Wet Educatie en Beroepsonderwijs</i> , WEB; Bulletin of Acts and Decrees 507, 1995, and later supplements and amendments).
WHW	The Dutch Higher Education and Research Act (<i>Wet op het Hoger Onderwijs en Wetenschappelijk Onderzoek</i> , WHW; Bulletin of Acts and Decrees 593, 1992, and later supplements and amendments).

Section 2 Admission to a Bachelor's programme

Article 2 Required prior qualifications

1. Only students with diplomas awarded on completing pre-university education (*VWO*) or senior general secondary education (*HAVO*), with profiles, or senior vocational education (*MBO*) in middle management as well as students that have completed specialist training or a vocational training programme designated by a ministerial regulation may be admitted to a Bachelor's programme (*Section 7.24 of the WHW*. Additional conditions for admission apply if a shortened programme is offered. Those conditions are set out in Article 7.
2. Students with a certificate awarded on completing a foundation year or passing the final examination of a higher professional education (*HBO*) or academic higher education (*WO*) study programme are also entitled to be admitted to a Bachelor's programme at a university of applied sciences. Students must, however, also meet any applicable requirements regarding their previous qualifications (paragraph 4) and any other additional requirements imposed (paragraph 5). (*Section 7.28 of the WHW*).
3. All citizens that have access to education offered by research universities or universities of applied sciences in a country that has ratified the Convention on the Recognition of Qualifications concerning Higher Education in the European Region may also be admitted to a Bachelor's programme, without prejudice to the provisions in paragraphs 4 and 5 of this article and the provisions of Article 3.
4. The previous qualifications of students seeking enrolment in a Bachelor's programme are subject to the following additional requirements in respect of *HAVO* and/or *VWO* diplomas, *MBO* diplomas and the teacher training programme for primary education.

a. The following additional educational entry requirements apply to students seeking admission on the basis of a HAVO or VWO diploma (Section 7.25(1) of the WHW). Students who do not have the required subject cluster or did not take the right subject may be admitted provided an assessment conducted before the commencement of the study programme demonstrates that, in terms of the subject matter, the student concerned meets similar requirements. (Section 7.25(5) of the WHW.)

The requirements to be met by the student are as follows:

If the further prior education requirements are not met, it is still possible to meet this by passing the deficiency tests. Further information is available in the [Enrolment Conditions](#).

	Culture and Society	Economy and Society	Nature and Health	Nature and Technic
HAVO-profile	not permissible	not permissible	Physics or Nature, life and Technology	permissible
VWO-profile	not permissible	Physics	Physics or Nature, life and Technology	permissible

- Students who are 21 or older at the start of the study programme and do not meet the requirements regarding their previous qualifications and have not been exempted from the requirements may still be eligible for exemption after taking an entrance examination. (Also see Article 3(5).) (Section 7.29 of the WHW.)

The aim of this examination is to determine the student's suitability to take part in the Bachelor's programme as well as the student's command of the Dutch language.

Making a 21+ admission test (DAT test for technical study programs, to be found via [this link](#)), followed by an intake interview. With a satisfactory result (with a satisfactory result, the candidate on all components between level 4 (low average) and 9 (very high) follows a conversation and the candidate can be admitted. The evidence (result 21+ test, interview report, intake interview, certificates / diplomas obtained, lists of marks not completed courses, certificates, etc ...) on the basis of which the student is admitted must be included in the student's file.

Part 2 consists of a Dutch language test. Students must obtain a score of 5.5 or higher.

Students are not required to take the language test if they have already obtained:

- a recognised Nt2 degree programme level II, or
- a certificate for the Dutch language at the MBO 4, HAVO or VWO level granted by a prior degree programme.

Students will be notified of the results of the entrance examination within two weeks. If the prospective student applies for enrolment on the basis of an experience certificate (issued by an acknowledged Recognition of Prior Learning (RPL) centre), this certificate will be used to determine the student's suitability to take part in the Bachelor's programme as well as their command of the Dutch language.

- The Executive Board has declared that 'old' HAVO and VWO diplomas with subject combinations chosen by the pupil are at least equivalent to the 'new' diplomas with subject cluster requirements. Consequently, prospective students holding these types of diploma may be admitted. Students must, however, meet any requirements regarding previous qualifications (paragraph 4) and any further additional requirements (paragraph 5). (Section 7.28 of the WHW.)
- Where a student applies for admission to a study programme based on a diploma other than one of the diplomas referred to above, the institute director will decide whether that diploma is equivalent and if it grants access to the study programme. Students must, however, meet any requirements regarding previous qualifications (paragraph 4) and any further additional requirements (paragraph 5). (Section 7.28 of the WHW.)
- Admission to the study programme is not subject to an admission quota in accordance with Sections 7.53, 7.54, 7.56a and 7.57a of the WHW.

Article 2a Study choice check and study choice advice

- The study choice check consists of at least the completion of a digital questionnaire and a contact moment with the study programme.

- The study choice check for international students as referred to in the Study Choice Advice Rules consists of writing a motivation letter.
2. Within 4 weeks following registration, the prospective student will receive a link to the digital questionnaire. Within 4 weeks following completion of the questionnaire, the prospective student will receive an invitation to the contact moment with the study programme. International students, as referred to in the Study Choice Check Rules, will receive further information on the study choice check within 4 weeks following registration.
 3. The digital questionnaire can be completed in the period between 1 October and 1 September. The study choice activities for international students will take place in the period between 1 October and 15 May.
 4. The contact moments with the study programmes are planned in the period between 1 October and 1 September.
 5. The contact moment will consist of an individual conversation with an employee of the education, for international students contact will take place per e-mail or by phone.
 6. The study choice advice will be sent to the prospective student by e-mail within ten working days of the contact moment.
 7. The study choice advice is non-binding for prospective students who apply by no later than 1 May. Students who apply after 1 May will not be permitted to enrol, except in the case of a situation as referred to in Article 2(2) or in the event of exceptional circumstances as set out in Article 3(3), under a through d of the [Study Choice Check Rules](#).
 8. The [Study Choice Check Rules](#) determine the categories of students for whom the study choice advice is not obligatory. *The study choice advice is likewise not binding for those groups of students.*

Article 3 Requirements regarding foreign diplomas/international students

1. Holders of a foreign diploma may not sit tests in the foundation year of a Dutch-taught study programme before having demonstrated to the Examination Board to have an adequate command of the Dutch language. (*Section 7.28 of the WHW.*)
2. The institute director may also decide that a student with a foreign diploma may be admitted after the student has demonstrated that he has an adequate command of the Dutch language. (*Section 7.28 of the WHW.*)
3. Students with a foreign diploma seeking admittance by virtue of an entrance examination as referred to in Article 2, paragraph 6, must be at least 21 years of age.
4. Foreign students from outside the EU who are 18 years of age or older on the date of their first enrolment must have a valid residence permit. (*Section 7.32 of the WHW.*)
5. Foreign students with a residence permit are required to earn at least 50% of the available EC each year. The IND will be informed if the student fails to meet this requirement, unless there are special circumstances due to which the student was unable to meet this requirement. Such a notification may be withheld once during the course of each study programme.
6. According to the Code of Conduct regarding International Students, international students¹ seeking admittance to an English-taught study programme must be able to prove that their command of the English language is at least equal to the following scores:

IELTS	6.0
TOEFL Paper	550
TOEFL Computer	213
TOEFL Internet	80
TOEIC	670

(provided the student has passed 'Speaking and writing' and 'Listening and Reading' components.)
 Cambridge ESOL FCE-C – scale 169 – 172, FCE-B – scale 173-175
 Exemption from this requirement can be awarded if the international student's preparatory education was followed in a country where English is the official language and language of instruction.

Article 4 Professional activity requirements

1. There is no dual-study programme.

¹According to the Code of Conduct regarding International Students, 'an international student' is a student with a foreign nationality.

2. There is no part-time study programme for the English stream.

Section 3 Intake interview, exemptions, short track and tailored study programmes

Article 5 Intake interview

1. Students entering a study programme may be offered an intake interview if they have competencies previously acquired elsewhere. Students can include the evidence of the competencies previously acquired elsewhere in their portfolios which are to be evaluated in an assessment or may use this evidence to substantiate a request for exemption before the Examination Board.
2. Students who re-enrol after an interruption in a study programme in which they were previously enrolled will be required to take an intake interview to determine which part of the study programme still has to be completed. No intake interview is needed if agreements regarding re-enrolment in the study programme were already made with the Executive Board at the time that the student interrupted his study. If a student enters a study programme during the foundation year, agreements will be made on the period of time the student will be granted before he receives advice regarding the continuation of studies.
3. A study programme will be drawn up based on the assessment of the competencies previously acquired and will be submitted to the Examination Board for approval.

Article 6 Exemptions

1. The institute director can exempt a student from the foundation year examination if the student holds a diploma, Dutch or foreign, which is at least equivalent. (*Section 7.30 of the WHW.*)
2. Students who believe they are eligible for an exemption must submit an application to that end to the Examination Board. The Examination Board may grant an exemption from one or more interim examinations on the grounds of a review of an assessment or the holding of a diploma, certificate, accreditation of prior learning or similar document, such as proof of results achieved in a study programme taken at a research university or university of applied sciences and/or proof of administrative activities, with which the student can show that he has already met the requirements of the test in question. Exemptions are recorded in the study progress system. The period of validity of the exemption is stated in the exemption decision. The validity is 10 years. If knowledge, insight and skills are demonstrably outdated earlier, this term can be shortened. See article 29.
3. The Examination Board can grant an exemption from a minor based on the certificate of an accredited Associate degree, Bachelor's or Master's programme or on a document proving that the student completed a minor in an accredited Bachelor's or Master's programme, so long as this minor does not overlap substantially with the student's current Bachelor's programme. Exemptions based on study results from an accredited Associate degree, Bachelor's or Master's programme can only be granted if the student has documented proof of obtaining at least 30 EC in this study programme (for a Bachelor's programme, this requirement refers to the second and third year, or second year if it concerns an Associate Degree programme) and if these results do not overlap substantially with the student's current Bachelor's programme.
A student who has taken part in the Fontys Empower programme and has successfully completed all components of that programme may, on that basis, be granted an exemption for a minor provided the student submits a request to that effect and this possibility has been set out in Article 16(5).

Article 7 Short-track/tailored study programmes

1. Students who believe they are able to proceed with and/or complete their study programmes at an accelerated pace may submit an application requesting such to the Examination Board. The student coach's advice must be enclosed with the application. The organisation of the study programme must be able to accommodate the short-track option.
2. For students who want to transit from TU/e, the intake coordinator in a conversation with the student makes a proposal for which courses the student can get an exemption based on results achieved at the TU/e. This proposal is accepted approval submitted to the examination board.
A fast-flow semester (TER table half-year foundation year) is specific to the Mechanical Engineering course available with a VWO diploma. Students can participate under the conditions below:
 1. students with a pre-university education (with a minimum of 7.0 for mathematics and physics) or transferring from a technical university4 degree (with a minimum of 15 EC) are eligible for this semester;
 2. the fast-flow semester consists of 30 ec and is followed instead of the 2 semesters from the regular foundation course;

3. on the basis of proof of the results achieved in the fast-flow semester (30 EC), the examination committee to grant exemption for the remaining 30 EC from the propaedeutic year; These programmes are explained in Article 15.

Section 4 Facilities with reference to student coaching, language, functional disability, administrative activities, Elite athletes scheme, student entrepreneurship

Article 8 Student coaching

1. Every student is coached by a student coach.
2. In consultation with the student coach, the student decides how best to work on his development and how to shape the learning process.
3. The student consults with the student coach on the progress of the learning process.
4. The student coach conducts support and orientation interviews with the student in the foundation year.
Reports are drawn up of these interviews, copies of which are given to the student. The student must sign these reports to indicate his agreement or, if applicable, with the note 'reviewed but not approved'.
5. Students may submit a request to the institute director to be assigned a different student coach if they can give arguments for this.
6. The student is obliged to immediately notify the student coach in writing of any circumstances that could lead to a delay in study progress. In addition, the student always has the option to report these circumstances to a student counselor. In that case, it is sufficient to report that there are special circumstances, without going into detail to the student coach.

Article 9 Dutch as a second language

1. Students enrolled in their foundation year whose mother tongue is not Dutch can apply to the Examination Board to be allowed extra time when they sit tests in the first year of the foundation phase. Extra time to sit tests will only be granted to students who can prove that they use facilities to improve their command of the Dutch language.

Article 10 Special facilities for students with a functional disability

1. Students with a functional disability are legally entitled to effective adjustments, unless such adjustments would burden the institution disproportionately. (*Section 7.13 of the WHW.*)
2. These adjusted facilities must be aimed at the removal or restriction of any obstacles and encourage the independence and full participation of the student as much as possible. The adjusted facilities may relate to the study programme (including internships), the timetables, and type of study programme, the tests and educational tools.
3. A student who seeks to have adjusted facilities must submit a written and substantiated application in good time to the Examination Board. If necessary, the Examination Board will seek an expert's advice (such as a student counsellor) before taking a decision. If the Examination Board deems it necessary before taking a decision, it may confidentially inspect the medical certificate that may be available with the student counsellor, unless the student objects.
The Examination Board must decide within four work weeks after receipt of the application, unless it requires further inquiry, in which case the student will be informed as to when more clarity can be given with respect to his application.
4. In the case of a protracted or chronic disability, such an application will only have to be made once for the entire study programme; in all other cases once per testing period or academic year. In its decision to grant the facilities, the Examination Board may also rule that these will apply for the entire duration of the student's study or that the student is to consult with his student coach annually to discuss whether the facilities are still adequate.
5. At the beginning of the academic year the institute will inform students regarding the possibilities for special facilities. Students will be informed of their right to consult a student counsellor.

Article 11 Students with board memberships

1. Student can include any board memberships as part of their portfolios. In order to do so, they must describe, in consultation with their student coach, how the board membership can contribute to the acquisition of one or more competencies of their Bachelor's programme.

2. Board memberships for the DPC, IPC, CPC, or for study associations, student associations and as members of committees at Fontys can be listed on the diploma supplement. The student must request the listing at least 3 working weeks prior to the graduation ceremony via the study programme administration.
At the request of the student's study programme, the Centre for Administrative Activities (CAA) can confirm that the student has been an active board member of a CPC. In the case of board memberships of a PC or IPC, the study programme can request confirmation from the relevant IPC or PC.
3. Students who believe that their board memberships demonstrate that they have the knowledge, understanding and/or skills, etc. that are assessed in particular tests may apply for an exemption from such tests from the Examination Board.
4. A student may apply to be included under the Profiling Fund Scheme on the basis of his administrative activities and submit a request for a board membership scholarship from the Profiling Fund Board.
See also Article 14 of the Fontys Regulations on the Participation councils and degree programme committees.
5. The student member of the participation council or PC is given the opportunity to perform the tasks of the participation council or PC, whereby the adverse consequences for the course of study are limited as much as possible. If requirements are set for educational activities relating to compulsory attendance, a student can request to be allowed to meet this obligation in a parallel group or request an exemption from this obligation. The request for exemption from this obligation can be submitted to the Examination Board of the study program.

Article 12 Elite Athletes scheme - Student entrepreneurship

1. Students who have been granted an Elite Athletes or Talent status are entitled to facilities from [the Elite Athletes Scheme](#). Facilities regarding the adjustment of tests or test timetables, an adjusted arrangement regarding compulsory attendance, working in groups and an adjusted internship must be sought from the examination board of the study program.
Advice regarding the continuation of studies may be deferred for students with an Elite Athlete status (see Article 32).
2. Students who are eligible for the Student Entrepreneurship Scheme may apply to the Examination Board, among others, for facilities regarding the adjustment of tests or test timetables, an adjusted arrangement regarding compulsory attendance for education components, working in groups and an adjusted internship. These facilities should be sought from the examination board of the study program.
Advice regarding the continuation of studies may be deferred for students with entrepreneur status (see Article 32).

Section 5 Study programme content

Article 13 Study programme profile – main subjects/differentiations – occupational requirements

1. The study programme is based on a study programme profile. The exit qualifications of the study programme are described in the study programme profile. The study programme profile can be found in Program profile Bachelor of Science of the bachelor courses Electrical Engineering, Automotive, Mechatronics and Mechanical Engineering via [this link](#).
At the end of the study programme, the student will be expected to command the competencies expected of a newly qualified professional in the field. During the course of the study programme, the student will be taught the required competencies and the student's command of them will be assessed.
2. The study programme has no main subjects.
3. The study programme is based on the following principle: AB
4. The study programme does not impose any specific occupational requirements.

Article 14 Study programme layout

1. Each Bachelor's programme has a foundation year phase with a study load of 60 EC, which is concluded with the foundation year examination. The function of the foundation year is to orientate the student, allowing him or her to make suitable choices.

2. A Bachelor's programme has a study load of 240 EC with a nominal study load of 60 EC per academic year and consists of a major and a minor. The major has a study load of 210 EC. The minor has a study load of 30 EC.

Article 15 Overview of units of study and EC

1. Every study programme consists of a coherent set of units of study, which are components of a study programme concluded with an interim examination. Units of study cannot exceed 30 EC.
2. Only whole EC are awarded for units of study. In the overview included in Appendix TER Table you will find a distribution of the EC.
4. For the Electrical and Electronic Engineering as of cohort February 2021 applies:
The Electrical and Electronic Engineering study program comprises a collection of learning outcomes. Each learning outcome contains a number of indicators that describe the minimum standard that the student must achieve.
5. For the Electrical and Electronic Engineering as of cohort February 2021 applies: At the beginning of an academic period (a quarter), the student presents a collection of evidence that meets or exceeds the minimum standard. If the examiner agrees that the evidence meets the criteria indicated by the indicator, a learning agreement containing the proposal is signed. If the examiner does not agree, the student and the examiner adjust the proposed evidence until it meets the standard described in the description of the learning outcomes in the Appendix Overview Electrical Engineering full-time and the semester guide. If agreement has been reached, the learning agreement will be signed.
6. For the Electrical and Electronic Engineering as of cohort February 2021 applies: During the period, the student will receive feedback and feedforward from a mentor and a project coach (this may be the same person) on a weekly basis. Feedback and feedforward are used as a form of indicative assessment that the student can use to evaluate his / her progress with regard to the learning outcome.
7. For the Electrical and Electronic Engineering as of cohort February 2021 applies: A completed learning outcome will be assessed at the end of an academic period based on a portfolio. The assessment is based on the learning agreement and the learning outcome including the learning outcome indicators.
8. For the Electrical and Electronic Engineering as of cohort February 2021 applies: The TER table, learning outcomes, indicators and guidelines for evidence are available in the Appendix Overview Electrical Engineering full-time.
9. For the Electrical and Electronic Engineering as of cohort February 2021 applies: The new program is still being developed and will be supplemented every year.

Article 16 Content of minors and other special programmes

1. Students are not restricted in their choice of a minor, whether the minor is a minor specific to a study programme or one offered across Fontys, or an external minor, provided there is no overlap with the major programme (see also paragraph 2).
The study programme offers the following minors.
Engineering minor
Minor Be Creative
Minor Adaptive Robotics
Minor Smart Product Development with Additive Manufacturing (SPDwAM)
Minor Motorsport Engineering
Minor Electric Driving
HBO Top program
See Appendix F for minor schemes
2. Students who want to take a minor abroad or an external minor must seek the Examination Board's permission regarding their personal choices with respect to the minor prior to its start. Participation in a minor requires students to have passed the foundation year examination, unless the Examination Board grants them permission to take the minor without fulfilling this requirement. The minor must be taken in the third year of study.
3. The minors can be offered both in English and Dutch.
4. Enrolment in a minor must be done before the start date as stated on the [Fontys minor portal](#) or in the Minor Regulations.
5. High-achieving students can take a minor on top of the regular study programme of 240 EC. This is subject to the following conditions:
The student must request permission from the Examination Board in advance.

The Electrical Engineering, Mechatronics and Mechanical Engineering courses offer the opportunity to participate in the special excellence program PROUD. Criteria for participation can be found in the Appendix PROUD description. The appendix is an integral part of the OER 2021-2022. To participate in PROUD, permission is required from the Examination Board of the study program. A minor that has been passed will be mentioned on the diploma supplement.

6. The Fontys Empower reorientation programme is open to students who have hit a roadblock in their studies. The programme has a study load of 30 ECTS EC. The regulations for this reorientation programme can be found on the [Pulsed](#) portal.
A student who has taken part in the Fontys Empower programme and has successfully completed all components of that programme may, on that basis, be granted an exemption for a minor, provided the student requests an exemption from the Examination Board of the programme in which they are enrolled, unless that programme does not offer a minor.
7. Students who go through the program at an accelerated pace or have serious delays make a tailor-made study program together with their student coach. This program must be submitted to the examination committee for approval. The program has no alternative pathways for long-term students.

Article 17 Education components - learning environment

1. Below is an overview of the education components that are part of the study programme. See Digital Learning Environment.
2. The education components of the minors are described in the minor regulations. The regulations governing the minors offered across Fontys can be found at www.fontys.nl/minors. The regulations governing minors specific to study programmes are included as an appendix to this TER.
3. Any entry requirements a student must meet before participating in an education component are stated in the overview as referred to in paragraph 1.
4. Participation in education components in the post-foundation year phase is allowed after passing the foundation year examination. The Examination Board may grant permission to a student who has not passed the foundation year examination to participate in education components in the post-foundation year phase. (*Section 7.30 of the WHW.*)
5. Enrolment in the education components is not required.
6. The timetable is announced by way of Digital Learning Environment no later than 3 weeks prior to the start of classes.
7. Students who have registered for an education component must ensure that they meet the entry requirements of that component. The overview in Article 17, paragraph 1, indicates the education components to which requirements apply for participation as well as the nature of these requirements. If the requirements concern compulsory attendance, students who are eligible for the Elite athletes scheme or the [Student entrepreneur scheme](#) can apply to meet this requirement in a parallel group or for exemption from this obligation (see also Article 12).
For practical assignments and parts in which use is made of peer assessment or other parts where attendance is necessary (for example for projects and workshops), an attendance requirement may be required. This is clearly stated in the study guide of the study program on the portal.

Article 18 - Evaluation of teaching

The teaching provided during the study programme is evaluated in the following way. The education is evaluated as described in the quality manual of the institute Engineering. The quality manual is available [this link](#)

Section 6 Tests, evidence, assessment and study progress

Article 19 Types of tests - evidence

1. A test consists of/may consist of:
 - a. one or more mandatory tests or mandatory partial tests;
 - b. freely-chosen evidence evaluated as an assessment, such as a portfolio;
 - c. a combination of a) and b).
2. Tests are conducted in writing or orally or in a fashion that combines both writing and oral delivery (e.g. product and presentation/interview).

3. An oral examination, including an assessment, is conducted by at least two examiners. A report must always be drawn up of an oral test on a specially designed evaluation form to enable an assessment of the quality of the evaluation afterwards. A test may be conducted by a single examiner only following the approval of the Examination Board and provided the student does not object.
An oral test is held in public. Interested parties who wish to attend an oral test must submit a request to that effect to the examiner(s) at least two weeks before the test is held. The examiner must inform the student who is taking the test. If the student objects, the request to attend the oral test will in any event be rejected. Any rejection by the examiner will be substantiated.
When the Examination Board offers students the possibility to sit an additional oral test by way of replacement of a regular test, it will always be conducted and assessed by two examiners.
4. If a test consists of an assessment of freely-chosen evidence, the programme should allow the student to collect such evidence and receive feedback from the examiners, external experts and/or peers. The requirements that the evidence must meet are given in the Digital Learning Environment.

Article 20 Tests and assessments

1. The Examination Board will designate one or more examiners for each test. An examiner can also be an external expert.
2. The assessment of minors is described in the minor regulations. The examiner of the minor determines whether a student has passed the tests. The Examination Board of the coordinating institute that offers the minor must determine whether the student has passed the minor and ensure that the student receives a certificate. The result achieved for the minor is forwarded to the programme administration of the study programme in which the student concerned is enrolled.

Article 21 Content of tests, duration of the test, test aids and test timetables

1. The content of the test, including the learning objectives, is described in the Digital Learning Environment and is made available to students at least 3 working weeks before the test.
2. The examiner determines the period of time allowed to students to take the test as well as any aids that students may use during the test, subject to the guidelines and instructions provided by the Examination Board. This information must be stated on the examination paper.
3. The test timetable will be published through the Digital Learning Environment no later than 3 working weeks before the start of the test period in question.

Article 22 Registration for tests

1. Students must register for every test in accordance with the procedure as described in Appendix registration examination. Students of the February 2021 cohort are registered for the test at the start of an academic period. The student must schedule this test with the examiner.
2. Students who have failed to act in accordance with the registration procedure cannot sit the test.
3. Students may cancel a registration for a test in accordance with the procedure described in the appendix registration examination.

Article 23 Proof of identity during tests

Students must prove their identity at every test by showing a legally valid form of ID other than a student ID card.

Article 24 Test marking system

1. The assignments, questions, assessment norms and criteria are determined by the examiners with due regard for the guidelines and instructions provided by the Examination Board. The examiner conducts the test and determines the result on the basis of the determined assessment standards and assessment criteria.
2. If one and the same test is conducted and assessed by more than one examiner, the Examination Board will ensure that the examiners adhere to the same standards and criteria.

Article 25 Test results

1. The test results must be announced in writing to the student within ten days of the date of the test apart from the exceptions laid down in the Teaching and Examination Regulations. The study programme administration is responsible for announcing the test results. The privacy of students

- will be respected when test results are announced. Results of papers, reports or portfolios must be announced within 3 weeks. The teacher must notify the students if this term is not met.
2. Students are entitled to inspect all assessed tests and the accompanying assessment criteria and to be given feedback on the results.
 3. Inspection takes place according to the following procedure. A student can contact the examiner within 2 weeks of the announcement of the result of the test contacting the examiner (teacher) for inspection of the work made.
 4. Feedback is given according to the following procedure.
A student can contact the examiner within 2 weeks of the announcement of the result of the test contact the examiner (teacher) for feedback on the work done.
 5. Students can request a proof from the Education Office of the state of affairs regarding their results. The student can derive rights from this overview if the list of marks has a valid stamp and is signed by examination board.

Article 26 Inability to sit tests

1. Students who have acted in accordance with the registration procedure described in Article 22 but who are unable to sit the test for reasons beyond their control, the legitimacy of which reasons is subject to assessment by the Examination Board, may apply to the Examination Board to sit the test within a period of time to be set by the Board.
2. The application referred to in the previous paragraph must be submitted in writing to the chairman of the Examination Board and include the necessary evidence (*see Article 38 (3)*). The Examination Board will then take a decision and inform the student concerned. If the request is granted, the Examination Board also includes the term within which the test must be taken in consultation with the education management. Any rejection of the request will be substantiated and the student will be informed of his right to appeal. In assessing the request, the Examination Board's primary criteria are the obstruction of the study progress and the student's personal circumstances.
3. If such a request relates to a test of a minor offered across Fontys, the student must direct the request to the coordinating institute responsible for the minor, as described in regulations governing the minor

Article 27 Request for a review

1. Students who do not agree with an assessment can submit a request for a review of the assessment to the Examination Board within 4 working weeks after the date of the assessment (see Article 38 (3) of these Teaching and Examination Regulations and Article 44 of the Students' Charter). The Examination Board must take a decision within 4 work weeks at a maximum.
2. Students may also appeal directly to the Examination Appeals Board within 6 calendar weeks after the date of the assessment via www.fontys.nl/studentenloket. (*see Article 45 and Article 46 of the Students' Charter*).

Article 28 Resits

1. Tests are conducted at least twice an academic year.
Students can resit components marked with a pass no more than once, and at least once, in which case the highest mark will count.
For the practical tests referred to below, resits only take place in the following academic year:

Practical tests: In many cases, practical tests are only offered once a year due to limited availability of rooms, equipment and supervisors. In these cases it is not possible to retake a missed practicum with accompanying test (in the form of a practical assignment). Repairing an insufficiently assessed practical tests is often possible. The module description of the relevant practical includes whether a resit is possible, how this resit is structured and which conditions apply to participation in this resit.

Projects: The didactic principle of projects is that students work together in project groups. Active participation in the project groups is therefore essential for a project assessment. It is possible for an individual or a group to resit a project, provided the condition of active participation in the project groups is met.

Retake takes place by means of a retake formulated by the examiner. Thereby the insufficiently assessed component is repaired by the group or individual student. The assignment must be completed within the current academic year.

For the practical tests below, the resit is only possible in the following academic year:

internship or graduation that was carried out for the first time in the spring semester and that must be completely retaken can only be retaken in the autumn.

For units of study that belong to the propaedeutic exam, students are given at least 2 opportunities per academic year.

A component for which a satisfactory result has been achieved may be retaken once. In that case, the highest result applies. This applies for no more than 1 year after the test moment that the student has achieved his result.

Regarding the results the examination board can decide in exceptional cases.

2. At least two opportunities to take tests that assess the material they have learned will be offered. Following these two test opportunities, the material to be studied for the test may be adapted to the material offered in the teaching block prior to the test. An up-to-date description of the material to be tested can be found via The Digital Learning Environment.
3. If a test consists of an assessment of freely-chosen evidence, then the programme should offer the student the following option of improving or supplementing the evidence. The examiner indicates how the evidence must be supplemented and / or improved.

Article 29 Period of validity of results - evidence

1. The period of validity of successfully completed component tests is 10 years, provided registration in Progress.
The validity period for evidence for partial assignments (such as practicals) is minimal 0,5 jaar. For other evidence (such as summative tests) a period of validity of 2 years applies. For graduation the validity is 7 years.
Results achieved for interim examinations can only lapse if the understanding/knowledge/skills to which these interim examinations relate can be shown to be obsolete. Understanding, knowledge and skills that were assessed more than 10 years ago can evidently be shown to be obsolete. The period of validity of successfully completed interim examinations is: 10 years.
The Examination Board may extend this term.
2. In the event of special circumstances as referred to in the [Profiling Fund Scheme](#), the period of validity of interim examinations will as a minimum be extended by the duration of the support granted on the basis of that scheme.
3. If the study programme has been substantially altered, details on how this term will be restricted can be stated below, whether in the form of a written decision issued to a student or incorporation in the Teaching and Examination Regulations, if it applies to the entire cohort.

After the last regular offer of the 'old' education and the associated test, the relevant test will be offered as a resit twice in the following academic year. After these resits, it is determined which exam from the "new" education a student must take to replace the "old" part.

Article 30 Final paper - Knowledge bank

Students who write a final paper as part of the study programme must submit the paper digitally, as one document, to enable its filing in one or more digital knowledge bank(s). On submission of the final paper, students must also attach the signed 'Permission form for the filing and making available of a final paper in a digital knowledge bank'. With this form, students give their permission for the final paper to be entered in the knowledge bank and for it to be made available to potential users at the university of applied sciences and elsewhere.

On submission of the digital final paper, the student and/or client and/or organisation offering the internship may indicate their objection to the final paper being entered in the databank.

Article 31 Study progress

The study programme is responsible for recording the test results in the programme administration.

Article 32 Advice regarding the continuation of studies

1. During the first year of enrolment in the foundation phase of a bachelor study programme and, where possible, prior to the start of the second semester, the student is given advice on his study progress. If the study progress is unsatisfactory, the student will receive a written warning and be told that if the study progress continues to be unsatisfactory, he will receive a binding negative advice regarding the continuation of his studies. A reasonable period within which the student must have improved his grade point average and the opportunities a study programme offers in that regard are stated in the warning. (*Section 7.8b of the Act.*)
A student who has not received a warning at that stage may yet receive one at a later point in the first year if he has fallen behind, and will be given a period within which to improve his grade point average.
The student will be given a warning in the following cases: less than 19 EC.
2. The study programme must give students advice regarding the continuation of studies in writing before the end of their first year of enrolment (12 months) in the foundation phase. Advice may be related not only to the continuation of the study programme, but also to the main subject the student may take. Advice regarding the continuation of studies can be negative (binding negative study advice), meaning that the student's enrolment in that particular study programme will be terminated and that he will not be allowed to re-enrol in the same study programme.
First-year students of Mechanical Engineering and Electrical Engineering have the option of submitting an application before the end of the first semester for enrolment in a refresher program of the first semester, if the study progress gives reason to do so. This is possible once and only applies to regular students in the propaedeutic year. Whether a student is eligible for this is determined by a study adviser from the study program. In that case, a separate learning agreement will be concluded with these students. The aim of this repair semester is that eligible students obtain 100% of all EC in the first semester. If this is achieved, the student will receive a postponed study advice. In the following academic year, Mechanical Engineering students move on to the semester of the abbreviated propaedeutic phase.
3. Advice regarding the continuation of studies is based on the student's results in the foundation year. The Examination Board advises the institute director on advice regarding the continuation of studies to be given. This advice must take into account the student's personal circumstances. Students must report any personal circumstances to their student coach or student counsellor the moment they occur.
If the student misses the deadline for reporting special circumstances, the Examination Board will examine whether it was excusable for the student to miss the deadline for reporting those circumstances.
Engaging in Elite Athlete sports activities by students who have been granted an Elite Athlete Sport or Talent status are entitled is regarded as a special circumstance, on the basis of which the delivery of advice regarding the continuation of studies can or will be deferred. *A minimum number of EC these students must earn in order to be eligible for such postponement has been established.*
The practice of running a business of his own by student entrepreneurs who have been awarded student entrepreneur status, as defined in the [Fontys Student entrepreneur scheme](#), is also regarded as a special circumstance, on the basis of which the delivery of advice regarding the continuation of studies is deferred. However, a minimum number of EC which must be achieved to qualify for that deferral may be specified for student entrepreneurs (see also paragraph 4 of this article).
4. The student will be given positive study advice regarding the continuation of studies in the following cases: If 45 or more EC have been obtained.
For Mechanical Engineering students in the fast-flow semester (TER table for the six-month propaedeutic phase Mechanical Engineering) the standard for binding study advice (BSA) applies: 23 EC, 12 months after the start of registration.
Students who have been granted an [Elite Athlete Sport or Talent status](#) as referred to in Article 32(3) must have earned at least 36 EC in order to be eligible for postponement of their study advice. The minimum number of EC which that must be achieved to qualify for that deferral for student entrepreneurs is 36.
5. Where there are special circumstances as defined in paragraph 3 of this article which may have had an influence on the EC the student obtained, the delivery of advice regarding the continuation of studies may be deferred until the end of the second year of enrolment or until the end of a shorter period. At the end of the second year or the shorter period, there will be a further review of whether the student has met the criteria for a positive study advice as defined in paragraph 4.
6. Students who seek the termination of their enrolment during the first year of enrolment will be given a warning from the director stating his expectation that they may not be suitable for the study programme. The director must seek the advice from the Examination Board before doing so. The number of months of enrolment students have left before being given advice regarding the

continuation of studies must also be determined in the event the student should decide to enrol in the same study programme at a later date (see also Article 35).

Article 33 Additional provisions concerning binding negative advice regarding the continuation of studies

1. An institute wishing to issue binding negative advice regarding the continuation of studies must make provisions that allow for, among other things, a student's personal circumstances and which are aimed at guaranteeing a student's good progress.
2. Binding negative advice regarding the continuation of studies is valid for a period of 2 years.
3. On request of the student, the institute director can change this term or determine that enrolment is still possible despite the previously issued binding negative advice, as referred to in art. 7.8b(5) of the WHW.
4. A binding negative advice regarding the continuation of studies refers to the full-time, part-time and dual forms of the study programme, unless otherwise stated.
5. Each binding negative advice regarding the continuation of studies must expressly state that the binding negative advice only refers to the study programme mentioned. Every binding negative study advice regarding the continuation of studies must include a referral, to either another study programme, the student counsellor or the study choice adviser.

Section 7 Graduation

Article 34 Examinations - certificates - diploma supplement

1. Students have passed the examination of the foundation year or the study programme if they have passed all units of study which form part of the foundation year or the study programme, as referred to in Article 15. (*Section 7.10 of the Act.*)
2. Certificates are given at the following occasions:
 - on passing the foundation year examination;
 - on passing the study programme's final examination.
3. The certificate will only be given after it has been established that the student is enrolled and has paid his tuition fees for all the enrolment years. (*Section 7.11 of the WHW.*)
4. After successful completion of the examination, the Examination Board awards the certificate. The certificate is dated on the date of the student's final academic activity (test or assessment). The certificate of a study programme comes with a diploma supplement. This diploma supplement may include mention of a student's board activities (see Article 11). Students who have served as members of the Examination Appeals Board may also request that activity to be included on their diploma supplement.

The Examination Board will determine whether a student has passed within a maximum of eight calendar weeks after the student's final academic activity (test or assessment).

If the student wishes for the certificate to be dated later, the student must postpone the completion of his final academic activity (test or assessment).
5. The certificate is signed on behalf of the Examination Board by the (deputy) chairman, the (deputy) secretary, the candidate and, if applicable, an external expert. (*Section 7.11 of the WHW.*) On behalf of the institute, the Examination Board also confers on the student the degree if the student has taken the study programme examination.

For the study programme's examination the Bachelor of Science degree is awarded.
6. The award ceremony takes place at a time decided by the institute.

Students who passed the study programme examination and have requested the postponement of the award of the certificate may be issued a statement that the study programme degree has been conferred on them. (*Section 7.11 of the WHW.*)
7. The certificates of students whose performance has been extraordinary will state the distinctions referred to below. The student will receive one of the judicums listed below on his certificate based on more than just performance. The "cum laude" qualification is the highest attainable. The student will receive the cum laude qualification if he has met the following requirements: If all unrounded grades for the exam subjects (these are all educational activities from the 7th semester of the degree program) are equal to or greater than 7, the average grade of all unrounded marks for all exam subjects is at least an unrounded 8 and at least a rounded 8 for it graduation work has been achieved and the student has passed or completed all the practicals from semester 7. All the results mentioned above must be obtained without a resit to be. If the student has an exemption for one of

the educational activities from the 7th semester this is considered a mark of 6 and therefore the student cannot pass "cum laude".

8. The Executive Board reports to DUO the students that have passed the final examination of the study programme.

Article 35 Statement on departure

1. Every student who seeks to terminate his enrolment without having passed the study programme's final examination will be invited for an interview.
2. At the student's request, the student may be issued a statement listing any results achieved. (*Section 7.11 of the WHW.*)
3. The statement must specify that the interim examination test results will in principle be valid for 10 years. The statement can include a reservation in the event of a substantial overhaul of the study programme. (See Article 29.)

Article 36 Transfer

1. Specific agreements have been made with one or more universities for the bachelor's program to ensure a smooth transition to a university master's program. The specific information can be found via [this link](#).

Section 8 Irregularities and fraud

Article 37 Irregularities and fraud

1. If irregularities are discovered in connection with a test, as a result of which the Examination Board cannot guarantee the test's quality and any of its results, the Examination Board may forgo having the test checked, or declare a test result void. In such cases, the Examination Board must ensure that an opportunity to resit the test in the near future is offered to the affected students.
2. If a student is guilty of an irregularity committed with respect to (a component of) an examination or fraud, the Examination Board may exclude the student from sitting one or more tests of the study programme for a period to be determined by the Examination Board but which will not exceed one year. If the test has already been assessed, the result will be declared void.
3. In the case of serious fraud, the Examination Board can propose to the Executive Board that the enrolment of the student involved be prematurely terminated (*Section 7.12b of the WHW.*)
4. If the irregularity or fraud is only discovered after the examination, the Examination Board may withhold or claim back the certificate of the study programme or decide that the certificate will not be issued unless the student sits a new test or examination in the components to be determined by the Examination Board and in a fashion to be determined by the Examination Board.
5. Before taking a decision, the Examination Board will hear the student and any other interested parties. A report will be drawn up of this hearing, of which a copy is forwarded to the student. The Examination Board must notify the student of its decision without delay, which notification can be given orally if required but must in any event also be issued in writing. Furthermore, the student is informed of his right of appeal.
6. The Examination Board makes up a report of its decision and the facts it is based on.

Section 9 Examination Board, appeal

Article 38 Examination Board

1. The institute director establishes an Examination Board for each study programme or group of study programmes.
2. The Examination Board's duties and responsibilities are laid down in the WHW. (*Sections 7.12, 7.12b and 7.12c of the WHW*). These include the following duties and responsibilities:
 - responsibility for guaranteeing the quality of testing;
 - responsibility for guaranteeing the quality of the organisation of and the procedures surrounding tests and examinations;

- to determine objectively and professionally whether a student has passed an examination;
 - to award certificates and the diploma supplement;
 - to determine alternative tracks;
 - to assess applications for exemptions and reviews and to award applications for special facilities;
 - to determine whether an examination has been conducted in a way other than that prescribed in the TER;
 - approval of the details of a foreign minor or external minor;
 - to give advice to the institute director on advice regarding the continuation of studies to be issued;
- The composition of the Examination Board can be found in the Appendix 'Composition of the Examination Board'.
3. An application to the Examination Board can be submitted to the Examination Board via ~~the link:~~ examencommissie-engineering@fontys.nl (see also Article 26(2) and Article 27). (see also Article 26(2) and Article 27).

Article 39 Appeals

Students who do not agree with a decision of the Examination Board can lodge an appeal against this decision within six calendar weeks after the date of the decision with the Examination Appeals Board via the [Student Desk](#) (see Articles 45 and 46 of the [Students' Charter](#)). (Section 7.61 of the WHW.) Students can contact the Student Counselling Office (iStudent@fontys.nl) for help on lodging an appeal.

Section 10 Retention and hardship clause

Article 40 Retention of documentation

1. The Examination Board is responsible for retaining the minutes of its meetings and its decisions for a period of seven years.
2. The Examination Board is responsible for retaining its issued statements, among others, the statement on departure of a student who terminates his enrolment without having passed the study programme's final examination, for a period of ten years.
3. The Examination Board will ensure that the following information on each student will remain in the institute's archives for 50 years:
 - information on whether each student has obtained a foundation year certificate and/or a certificate of higher professional education including the list of marks.
4. The institute director is responsible for retaining test papers/assignments, assessment criteria, marking standardisation, pass marks, test matrices and test analyses for a period of seven years.
5. The institute director is responsible for retaining the lists drawn up and signed by the examiners containing the results achieved for a period of ten years.
6. The institute director is responsible for ensuring that all final papers and other kinds of tests in which students demonstrate their command of all aspects of the final attainment level, including assessments, will be kept for a period of seven years.
7. For the purpose of the external assessment of the programme in connection with accreditation, the institute director will ensure retention of a representative set of tests, including assessments, for a period of two years after the assessment.
8. The institute director is responsible for ensuring that the work completed by the student (written and non-written, including digital work) including assessments, with the exception of the work forming part of the representative set of final papers, is either destroyed or returned to the student after the expiry of a term of at least six months following the publication of the result. This term may be extended if necessary in connection with an appeal procedure.

Article 41 Hardship clause

1. The Examination Board can make provisions for serious injustices that occur as a result of the application of these rules; it can also make decisions in cases not provided for by these rules. In order to decide whether the hardship clause must be applied, the Examination Board must weigh the interests of the student concerned and those of the study programme. Cases requiring immediate action may be heard by the chairperson of the Examination Board or his deputy after which the other members must be notified as soon as possible.

2. Students must apply in writing, stating reasons, to the Examination Board for the application of the hardship clause in accordance with Article 44 of the Students' Charter. The Examination Board decides on the student's application and communicates this decision in writing, stating reasons, to the student concerned, who is also informed of his right of appeal.

Section 11 Final provisions and implementation

Article 42 Entry into force, amendments, publication and official title

1. The TER applies to all students enrolled in the study programme in question during the 2021-2022 academic year, unless otherwise stated below.
2. The general section of these regulations and any amendments thereto will be established by the Executive Board, after having obtained the consent of the students' section of the Central Participation Council. PC's will be given an opportunity to issue advice to the CPC. That general section of the TER constitutes the basis on which the study programme-specific TER for each study programme will be drawn up before being submitted to the Examination Board for their advice and the (joint) PC and IPC for their advice/consent. The (joint) PC advises the institute director and sends its advice to the IPC for informational purposes. The IPC advises the institute director and sends its advice to the (joint) PC. The establishment of and amendments to the study programme-specific TER are effected following a proposal from the institute and require the consent of the students' section of the competent IPC and the (joint) PC. (*see Sections 10.3c, 10.20 and 7.13 of the WHW.*)
3. The text of the TER can be amended if warranted by changes to the organisation or organisational components with due observance of the provisions of paragraph 4. In the event of an interim change, the procedure as described in paragraph 2 applies.
4. If the interests of an individual student are prejudiced as a result of interim amendments of the regulations, the student may submit a written application to the Examination Board to protest against the amendment of the rules. The Examination Board examines the student's application and bases its decision on a weighing-up of the interest of the individual student on the one hand and the interest of the quality of the study programme on the other.
5. The institute director adopts the study programme-specific TER before 1 June of the academic year preceding the academic year that starts on 1 September. He ensures the publication of the study programme-specific component of these regulations and any amendments thereto by making them available for inspection with the secretariat of the study programme and placing them on the website.
6. The official title of these rules is 'General Section of the Teaching and Examination Regulations of Fontys'.
The official title of the TER of the Bachelor's programme is Engineering Bachelor TER 2021 – 2022.

Article 43 Transitional provisions

When a study programme is subject to a substantial overhaul, the following transitional provisions will apply. After the last regular activities of the 'old' programme and the related test or examination have been completed, this test or examination will be held two more times by way of resits. After that, it will be decided which test or examination that is part of the 'new' programme the student must sit to replace the 'old' one.

Article 44 Unforeseen cases

The Examination Board decides in all cases not provided for by the study programme-specific part of the TER, unless the issue is covered by the institute director's competency.

B - Set-up of the study programme and support facilities

1. Set-up, organisation and execution of the study programmes

Information on the set-up, organisation and execution of the study programmes can be found in:

- the study programme's digital prospectus
- the Teaching and Examination Regulations (see under A).
- the Digital Learning Environment

2. Facilities for students

Information on facilities for students can be found at:

- the institution-specific section of the Fontys Students' Charter (www.fontys.edu/rules)
- the website of the Students Facilities Department (<http://www.fontys.nl/studentenvoorzieningen>)
- the website of [Fontys Study Abroad](#)
- the Digital Learning Environment

3. Study support

Information on study support can be found in:

- the Teaching and Examination Regulations (see under A)
- the Digital Learning Environment

C - Internal complaints procedure

Students whose interests are directly affected by acts carried out by a staff member or a student against them, or who have a grievance regarding organisational matters, may lodge a [complaint](#) with the Executive Board, as described in Article 47 of the Students' Charter.

Attachments

Overview of attachments

TER tables Automotive
TER tables Electrical Engineering
TER tables Mechatronics
TER tables Mechanical Engineering

Engineering Minor
Minor Be Creative
Minor Adaptive Robotics
Minor SPDAM
Minor Motorsport Engineering
Minor Electric Drive

HBO Top program
Proud Program
Enrolment process exams

TER tables Automotive

cohort: 2021-2022	fulltime	Bachelor Automotive Engineering								
studyphase	Name	credits	Name exam	Testform	Assessment Individual or group	Rating scale	Weighting	Standardizat ion / compensati on	entry requirements	English
progress name 4321PAE										
Propaedeutic phase	AE21APJ1	3	AE21APJ1	project assessment	individual	1-10	1/1	5,5	n/a	yes
			AE21APS1	Skills exam	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21APJ2	3	AE21APJ2	project assessment	individual	1-10	1/1	5,5	n/a	yes
			AE21APS2	Skills exam	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21APJ3	3	AE21APJ3	project assessment	individual	1-10	1/1	5,5	n/a	yes
			AE21APS3	Skills exam	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21APJ4	3	AE21APJ4	project assessment	individual	1-10	1/1	5,5	n/a	yes
			AE21APS4	Skills exam	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21APU1	2	AE21APU1	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21APU2	2	AE21APU2	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21APU3	2	AE21APU3	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21APU4	2	AE21APU4	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ADT1	2	AE21ADT1	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ADT2	2	AE21ADT2	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ADT3	2	AE21ADT3	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ADT4	2	AE21ADT4	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21APR1	1	AE21APR1	Skills exam	individual	O-V-G	1/1	V	n/a	yes
Propaedeutic phase	AE21APR2	1	AE21APR2	Skills exam	individual	O-V-G	1/1	V	n/a	yes
Propaedeutic phase	AE21APR3	1	AE21APR3	Skills exam	individual	O-V-G	1/1	V	n/a	yes
Propaedeutic phase	AE21APR4	1	AE21APR4	Skills exam	individual	O-V-G	1/1	V	n/a	yes
Propaedeutic phase	AE21AMD1	2	AE21AMD1T	knowledge test	individual	1-10	1/1	5,5	n/a	yes
			AE21AMD1P	knowledge test	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21AMD2	1	AE21AMD2T	knowledge test	individual	1-10	1/1	5,5	n/a	yes
			AE21AMD2P	knowledge test	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21AMD3	2	AE21AMD3	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21AMD4	2	AE21AMD4	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21AMM1	1	AE21AMM1	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21AMM2	2	AE21AMM2	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21AHF3	2	AE21AHF3	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21AHF4	1	AE21AHF4	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ACE1	2	AE21ACE1	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21ACE2	2	AE21CE2T	knowledge test	individual	1-10	1/1	5,5	n/a	yes
			AE21CE2P	knowledge test	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21ACE3	1	AE21CE3T	knowledge test	individual	1-10	1/1	5,5	n/a	yes
			AE21ACE3P	knowledge test	individual	O-V-G	0/1	V	n/a	yes
Propaedeutic phase	AE21ACE4	2	AE21ACE4	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21MAT1	2	AE21MAT1	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21MAT2	2	AE21MAT2	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21MAT3	2	AE21MAT3	knowledge test	individual	1-10	1/1	5,5	n/a	yes
Propaedeutic phase	AE21MAT4	2	AE21MAT4	knowledge test	individual	1-10	1/1	5,5	n/a	yes

studyphase	Name	credits	Name exam	Testform	Assessment Individual or group	Rating scale	Weighting	Standardization / compensation	entry requirements	English
Progress name 4320HAE										
post-propaedeutic phase	AE20APJ5	4							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APJ5	project assessment	individual	1-10	1/1	5,5		yes
			AE20APS5	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20APJ6	4							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APJ6	project assessment	individual	1-10	1/1	5,5		yes
			AE20APS6	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20APJ7	4							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APJ7	project assessment	individual	1-10	1/1	5,5		yes
			AE20APS7	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20APJ8	4							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APJ8	project assessment	individual	1-10	1/1	5,5		yes
			AE20APS8	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20APR5	1							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APR5	Skills exam	individual	O-V-G	1/1	V		yes
post-propaedeutic phase	AE20APR6	1							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20APR6	Skills exam	individual	O-V-G	1/1	V		yes
	AE20AAT5	3							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
post-propaedeutic phase			AE20AAT5	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AAT6	3							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AAT6T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20AAT6P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20AVD7	3							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AVD7T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20AVD7P	knowledge test	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
	AE20AAT8	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
post-propaedeutic phase			AE20AAT8	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AMD5	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AMD5	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AMD6	1							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AMD6	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AMD7	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AMD7	Skills exam	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AMD8	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AMD8	Skills exam	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AES5	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AES5	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AES6	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AES6T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20AES6P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20AES7	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AES7T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20AES7P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20AES8	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AES8T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20AES8P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20ACE5	1							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20ACE5	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20ACE6	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20ACE6	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20ACE7	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20ACE7T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20ACE7P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20ABP8	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20ABP8T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20ABP8P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20MAT5	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20MAT5	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20MAT6	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20WIS6T	knowledge test	individual	1-10	1/1	5,5		yes
			AE20WIS6P	Skills exam	individual	O-V-G	0/1	V	minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	yes
post-propaedeutic phase	AE20AVE7	2							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AVE7	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase	AE20AVE8	3							minimum 45 credits from propaedeutic phase Fontys Automotive or permission from the Examination Board	
			AE20AVE8	knowledge test	individual	1-10	1/1	5,5		yes
post-propaedeutic phase										
post-propaedeutic phase	AE20STAGE	30	AE20STAGE	Skills exam	individual	1-10	1/1	5,5	114 credits including completed propaedeutic phase	yes
post-propaedeutic phase	Minor	30	Minor	Minor assessments	individual	O-V-G	1/1	5,5/ V	propedeuse achieved	yes

TER tables Electrical and Electronic Engineering (old curriculum)



TER
Electrical Engineering year 1
2021-2022
07 April 2021

semester	unit of study	name unit of study	credits	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE1	EEBAD1	Analog Design 1	4.00	EEBAD11P	Assignment	Duo	O-V-G	n/a	EEBAD1 = (EEBAD11T + EEBAD12T)/2 with
				EEBAD11T	Written Exam	Individual	1,0-10,0	n/a	EEBAD11T ≥ 5.5
				EEBAD12P	Assignment	Duo	O-V-G	n/a	and EEBAD12T ≥ 5.5
				EEBAD12T	Written Exam	Individual	1,0-10,0	n/a	and EEBAD11P ≥ V and EEBAD12P ≥ V
	EEBDD1	Digital Design 1	4.00	EEBDD11P	Assignment	Individual	O-V-G	n/a	EEBDD1 = (EEBDD11T +
				EEBDD11T	Written Exam	Individual	1,0-10,0	n/a	EEBDD12T)/2
				EEBDD12P	Assignment	Individual	O-V-G	n/a	with EEBDD11T ≥ 5.5 and EEBDD12T ≥ 5.5 and
				EEBDD12T	Written Exam	Individual	1,0-10,0	n/a	EEBDD11P ≥ V and EEBDD12P ≥ V
	EEBMA1	Mathematics 1	5.00	EEBMA11T	Written Exam	Individual	1,0-10,0	n/a	EEBMA1 = (EEBMA11T +
				EEBMA12T	Written Exam	Individual	1,0-10,0	n/a	EEBMA12T)/2 with EEBMA11T ≥ 5.5 and EEBMA12T ≥ 5.5
	EEBSCO1	Study and Career Orientation 1	2.00	EEBSCO11P	Assignment	Individual	O-V-G	n/a	EEBSCO1 = V if EEBSCO11P ≥ V and
				EEBSCO12P	Assignment	Individual	O-V-G	n/a	EEBSCO12P ≥ V
	EEBSD1	Software Design 1	3.00	EEBSD11P	Assignment	Individual and Duo	O-V-G	n/a	EEBSD1 = (EEBSD11T + EEBSD12T)/2 with
				EEBSD11T	Written Exam	Individual	1,0-10,0	n/a	EEBSD11T ≥ 5.5
				EEBSD12P	Assignment	Individual and Duo	O-V-G	n/a	and EEBSD12T ≥ 5.5
				EEBSD12T	Written Exam	Individual	1,0-10,0	n/a	and EEBSD11P ≥ V and EEBSD12P ≥ V
	EECDU11	Dutch	1.00	EECDU11P	Assignment	Individual and Group	O-V-G	n/a	EECDU11P ≥ V
	EECPROJ11	Project 1-1	5.00	EECPROJ11	Project	Individual and Group	1,0-10,0	n/a	EECPROJ11 ≥ 5.5
	EECPROJ12	Project 1-2	6.00	EECPROJ12	Assignment	Individual and Group	1,0-10,0	n/a	EECPROJ12 ≥ 5.5



TER
Electrical Engineering year 1
2020-2021
07 April 2020

semester	unit of study	name unit of study	credits	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE2	EEBAD2	Analog Design 2	4.00	EEBAD21P	Assignment	Duo	O-V-G	n/a	EEBAD2 = (EEBAD21T + EEBAD22T)/2 with
				EEBAD21T	Written Exam	Individual	1,0-10,0	n/a	EEBAD21T ≥ 5.5
				EEBAD22P	Assignment	Duo	O-V-G	n/a	and EEBAD22T ≥ 5.5
				EEBAD22T	Written Exam	Individual	1,0-10,0	n/a	and EEBAD21P ≥ V and EEBAD22P ≥ V
	EEBDD2	Digital Design 2	4.00	EEBDD21P	Assignment	Individual	O-V-G	n/a	EEBDD2 = (EEBDD21T +
				EEBDD21T	Written Exam	Individual	1,0-10,0	n/a	EEBDD22T)/2
				EEBDD22P	Assignment	Individual	O-V-G	n/a	with EEBDD21T ≥ 5.5 and EEBDD22T ≥ 5.5 and
				EEBDD22T	Written Exam	Individual	1,0-10,0	n/a	EEBDD21P ≥ V and EEBDD22P ≥ V
	EEBMA2	Mathematics 2	5.00	EEBMA21T	Written Exam	Individual	1,0-10,0	n/a	EEBMA2 = (EEBMA21T +
				EEBMA22T	Written Exam	Individual	1,0-10,0	n/a	EEBMA22T)/2 with EEBMA21T ≥ 5.5 and EEBMA22T ≥ 5.5
	EEBMS2	Measurements, Modelling and Simulation 2	5.00	EEBMS21P	Assignment	Duo	O-V-G	n/a	EEBMS2 = (EEBMS21T +
				EEBMS21T	Written Exam	Individual	1,0-10,0	n/a	EEBMS22P)/2
				EEBMS22P	Assignment	Individual	1,0-10,0	n/a	with EEBMS21T ≥ 5.5 and EEBMS22P ≥ 5.5 and EEBMS21P ≥ V
	EEBSCO2	Study and Career Orientation 2	1.00	EEBSCO21P	Assignment	Individual	O-V-G	n/a	EEBSCO2 = V if EEBSCO21P ≥ V and
				EEBSCO22P	Assignment	Individual	O-V-G	n/a	EEBSCO22P ≥ V
	EEBSD2	Software Design 2	3.00	EEBSD21P	Assignment	Individual and Duo	O-V-G	n/a	EEBSD2 = (EEBSD21T + EEBSD22T)/2 with
				EEBSD21T	Written Exam	Individual	1,0-10,0	n/a	EEBSD21T ≥ 5.5 and EEBSD22T ≥ 5.5
				EEBSD22P	Assignment	Individual and Duo	O-V-G	n/a	and EEBSD21P ≥ V and EEBSD22P ≥ V
				EEBSD22T	Assignment	Individual and Duo	1,0-10,0	n/a	
	EECPROJ21	Project 2-1	4.00	EECPROJ21	Project	Individual and Group	1,0-10,0	n/a	EECPROJ21 ≥ 5.5
	EECPROJ22	Project 2-2	4.00	EECPROJ22	Project	Individual and Group	1,0-10,0	n/a	EECPROJ22 ≥ 5.5



TER
Electrical Engineering year 2
2021-2022
07 April 2021

semester	unit of study	name unit of study	credits	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE3	EEAAD3	Analog Design 3	4.00	EEAAD3P	Assignment	Individual and Duo	O-V-G	n/a	EEAAD3 = EEAAD3T with EEAAD3T ≥
				EEAAD3T	Written Exam	Individual	1,0-10,0	n/a	5.5 and EEAAD3P ≥ V
	EEBCOM3	Communication 3	2.00	EEBCOM3	Assignment	Individual	O-V-G	n/a	EEBCOM3 ≥ V
	EEACSA1	Curriculum Supporting Activity 1	1.00	EEACSA1	Assignment	Individual	O-V-G	n/a	EEACSA1 ≥ V
	EEACT1	Control Theory 1	5.00	EEACT1P	Assignment	Individual	O-V-G	n/a	EEACT1 = EEAECT1T with EEAECT1T ≥
				EEACT1T	Written Exam	Individual	1,0-10,0	n/a	5.5 and EEAECT1P ≥ V
	EEAES	Embedded Systems	5.00	EEAES	Assignment	Individual and Duo	O-V-G	n/a	EEAES = EEAEST with EEAEST ≥ 5.5
				EEAEST	Written Exam	Individual	1,0-10,0	n/a	and EEAESP ≥ V
	EEAPROJ4	Project 4	3.00	EEAPROJ4	Project	Individual and Group	1,0-10,0	n/a	EEAPROJ4 ≥ 5.5
	EEAPROJ5	Project 5	3.00	EEAPROJ5	Project	Individual and Group	1,0-10,0	n/a	EEAPROJ5 ≥ 5.5
	EEASEN3	System Engineering 3	2.00	EEASEN3	Assignment	Individual and Group	1,0-10,0	n/a	EEASEN3 ≥ 5.5
	EEBFEC	Fields, Energy & Conversion	5.00	EEBFEC	Assignment	Duo	O-V-G	n/a	EEBFEC = EEBFECT with EEBFECT ≥
				EEBFECT	Written Exam	Individual	1,0-10,0	n/a	5.5 and EEBFEC ≥ V

semester	unit of study	name unit of study	credits	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE4	EEACOM4	Communication 4	3.00	EEACOM4	Assignment	Individual	O-V-G	n/a	EEACOM4 ≥ V
	EEACSA2	Curriculum Supporting Activity 2	1.00	EEACSA2	Assignment	Individual	O-V-G	n/a	EEACSA2 ≥ V
	EEADD3	Digital Design 3	5.00	EEADD3P	Assignment	Individual	O-V-G	n/a	EEADD3 = EEADD3T with EEADD3T ≥ 5.5 and EEADD3P ≥ V
	EEAEMBC	Embedded Connectivity	5.00	EEAEMBCP	Written Exam	Individual	1,0-10,0	n/a	EEAEMBC = EEAEMBCP with EEAEMBC ≥ 5.5 and EEAEMBCP ≥ V
				EEAEMBCPr	Project	Group	O-V-G	n/a	EEAEMBC = EEAEMBCP with EEAEMBC ≥ 5.5 and EEAEMBCPr ≥ V
				EEAEMBCt	Written Exam	Individual	1,0-10,0	n/a	EEAEMBC = EEAEMBCP with EEAEMBC ≥ 5.5 and EEAEMBCPr ≥ V
	EEAPROJ6	Project 6	3.00	EEAPROJ6	Project	Individual and Group	1,0-10,0	n/a	EEAPROJ6 ≥ 5.5
	EEAPROJ7	Project 7	3.00	EEAPROJ7	Project	Individual and Group	1,0-10,0	n/a	EEAPROJ7 ≥ 5.5
	EEASP1	Signal Processing 1	4.00	EEASP1P	Assignment	Individual and Duo	O-V-G	n/a	EEASP1 = EEASP1T with EEASP1T ≥ 5.5 and EEASP1P ≥ V
				EEASP1T	Written Exam	Individual	1,0-10,0	n/a	EEASP1 = EEASP1T with EEASP1T ≥ 5.5 and EEASP1P ≥ V
	EEATEL1	Telecom 1	3.00	EEATEL1P	Assignment	Individual and Duo	O-V-G	n/a	EEATEL1 = EEATEL1T with EEATEL1T ≥ 5.5 and EEATEL1P ≥ V
				EEATEL1T	Written Exam	Individual	1,0-10,0	n/a	EEATEL1 = EEATEL1T with EEATEL1T ≥ 5.5 and EEATEL1P ≥ V
	EECAD4	Analog Design 4	3.00	EECAD4P1	Assignment	Individual and Duo	O-V-G	n/a	EECAD4 = EECAD4T with EECAD4T ≥ 5.5 and EECAD4P1 ≥ V and EECAD4P2 ≥ V
				EECAD4P2	Assignment	Individual and Duo	O-V-G	n/a	EECAD4 = EECAD4T with EECAD4T ≥ 5.5 and EECAD4P1 ≥ V and EECAD4P2 ≥ V
				EECAD4T	Written Exam	Individual	1,0-10,0	n/a	EECAD4 = EECAD4T with EECAD4T ≥ 5.5 and EECAD4P1 ≥ V and EECAD4P2 ≥ V

semester	unit of study	name unit of study	credits	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE7	EAAPE	Advanced Power Electronics	4.00	EAAPE	Written Exam	Individual	1,0-10,0	n/a	EAAPE ≥ 5.5
	EACSA7	Career Supporting Activity	2.00	EACSA7	Assignment	Individual	1,0-10,0	Select EAGC7B, EACST or MAEMC7	EACSA7 ≥ 5.5
	EADSD	Digital System Design	4.00	EADSDP	Assignment	Individual	O-V-G	n/a	EADSD = EADSDT with EADSDT ≥ 5.5 and EADSDP ≥ V
				EADSDT	Written Exam	Individual	1,0-10,0	n/a	EADSD = EADSDT with EADSDT ≥ 5.5 and EADSDP ≥ V
	EAGC7A	GLOW completion A	2.00	EAGC7A	Assignment	Group	1,0-10,0	Be Creative minor (GLOW project) and select EMBSE or EAGC7A	EAGC7A ≥ 5.5
	EAGC7B	GLOW completion B	2.00	EAGC7B	Assessment	Group	1,0-10,0	Be Creative minor (GLOW project) and select EAGC7B, EACST or MAEMC7	EAGC7B ≥ 5.5
	EAPRS7	Project S7	10.00	EAPRS7	Project	Individual	1,0-10,0	n/a	EAPRS7 ≥ 5.5
	EBACS	Advanced Control Systems	4.00	EBACSP	Assignment	Individual	O-V-G	n/a	EBACS = EBACST with EBACSP ≥ V and EBACST ≥ 5.5
				EBACST	Written Exam	Individual	1,0-10,0	n/a	EBACS = EBACST with EBACSP ≥ V and EBACST ≥ 5.5
	EBAES	Advanced Embedded Systems	4.00	EBAESP	Assignment	Individual and Group	1,0-10,0	n/a	EBAES ≥ 5.5
	EBATELIoT	Advanced Telecom / IoT	4.00	EBATELIoT	Assignment	Individual	1,0-10,0	n/a	EBATELIoT ≥ 5.5
	EBMBSE	Model Based System Engineering	2.00	EBMBSE	Assignment	Individual and Group	1,0-10,0	Select EBMSE or EAGC7A	EBMBSE ≥ 5.5
	EBST	Sensor Technology	4.00	EBST	Assignment	Individual and Duo	1,0-10,0	n/a	EBST ≥ 5.5
	MAEMC7	Electromagnetic Compatibility 7	2.00	MAEMC7P1	Practical Assignment	Individual and Duo	1,0-10,0	Select EAGC7B, EACST or MAEMC7	MAEMC7 = (MAEMC7P1 + MAEMC7P2 + MAEMC7P3)3 with MAEMC7 ≥ 5.5
				MAEMC7P2	Practical Assignment	Individual and Duo	1,0-10,0	Select EAGC7B, EACST or MAEMC7	MAEMC7 = (MAEMC7P1 + MAEMC7P2 + MAEMC7P3)3 with MAEMC7 ≥ 5.5
				MAEMC7P3	Practical Assignment	Individual and Duo	1,0-10,0	Select EAGC7B, EACST or MAEMC7	MAEMC7 = (MAEMC7P1 + MAEMC7P2 + MAEMC7P3)3 with MAEMC7 ≥ 5.5
	WABI	Business Innovation	4.00	WABIP	Assignment	Group	O-V-G	n/a	WABI = WABIT with WABIT ≥ 5.5 and WABIP ≥ V
				WABIT	Written Exam	Individual	1,0-10,0	n/a	WABI = WABIT with WABIT ≥ 5.5 and WABIP ≥ V
	WAPI	Product Innovation	4.00	WAPI	Written Exam	Individual	1,0-10,0	n/a	WAPI ≥ 5.5

The S7 program offers the student freedom of choice to study the program according to his / her preference. The student chooses one of the three differentiations Electronic Systems, Embedded Systems or Innovation Engineering. For each differentiation, a number of compulsory courses and electives are available.

The following choices apply within the three differentiations:

- Electronic Systems:

- o Compulsory courses: Project S7 (EAPRS7), Sensor Technology (EAST), Advanced Power Electronics (EAAPE) and Model-Based System Engineering (EBMBSE)
- o Electives:
 - * 1x choice from the courses Advanced Embedded Systems (EBAES) or Advanced Control Systems (EBACS),
 - * 1x choice from the courses Advanced Telecommunications (EBATEL) or Digital System Design (EADSD) and
 - * 1x choice of Curriculum Supporting Activity 7 (EACSA7) or Electromagnetic Compatibility 7 (MAEMC7)

- Embedded Systems:


- o Compulsory courses: Project S7 (EAPRS7), Advanced Embedded Systems (AES), Advanced Telecommunications (ATEL) and Model-Based System Engineering (MBSE)
- o Electives:
 - * 1x choice from the courses Sensor Technology (EAST) or Advanced Control Systems (EBACS),
 - * 1x choice from the courses Advanced Power Electronics (EAAPE) or Digital System Design (EADSD) and
 - * 1x choice of Curriculum Supporting Activity 7 (EACSA7) or Electromagnetic Compatibility 7 (MAEMC7)

- Innovation Engineering:

- o Compulsory courses: Project S7 (EAPRS7), Product Innovation (WAPI), Business Innovation (WABI) and Model-Based System Engineering (EBMBSE)
- o Electives:
 - * 1x choice from the courses Advanced Embedded Systems (EBAES), Sensor Technology (EAST) or Advanced Control Systems (EBACS),
 - * 1x choice from the courses Advanced Telecommunications (EBATEL), Advanced Power Electronics (EAAPE) and Digital System Design (EADSD) and
 - * 1x choice of Curriculum Supporting Activity 7 (EACSA7) or Electromagnetic Compatibility 7 (MAEMC7)

If you participated in the BeCreative minor, you can also take GLOW completion A and B as electives. This option must always be agreed upon by your BeCreative minor coordinator.

TER tables Electrical and Electronic Engineering (new curriculum)

TER										
										
Electrical Engineering year 1 2021-2022 8 March 2021										
semester	unit of study	name of learning outcome	credits	Educational activities	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
EE1	EEAAN1	DC Analog Circuits Design	5	practical lessons, theory lessons, project activities, and self study	EEAAN1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEAAN1T ≥ 5,5
EE1 & EE2	EEAAN2	AC Analog Circuit Design	7	practical lessons, theory lessons, project activities, and self study	EEAAN2T	Portfolio assessment	Individual	1,0-10,0	n/a	EEAAN2T ≥ 5,5
EE1 & EE2	EEAAN3	Active Analog Circuit Design	4	practical lessons, theory lessons, project activities, and self study	EEAAN3T	Portfolio assessment	Individual	1,0-10,0	n/a	EEAAN3T ≥ 5,5
EE1	EEASW1	Functional Programming and Software Design	6	practical lessons, theory lessons, project activities, and self study	EEASW1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEASW1T ≥ 5,5
EE1	EEASW2	Object Oriented Programming and User Interface Design	4	practical lessons, theory lessons, project activities, and self study	EEASW2T	Portfolio assessment	Individual	1,0-10,0	n/a	EEASW2T ≥ 5,5
EE1	EEAPM1	Project Management Skills 1	4	theory lessons, practical work in projects, self study, and workshops	EEAPM1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEAPM1T ≥ 5,5
EE1	EEALO1	Learning and Orientation 1	2	theory lessons, self reflection, research, and self study	EEALO1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEALO1T ≥ 5,5
EE1	EEACS1	Communication Skills 1	4	theory lessons, practice in project and lesson contexts, and self study	EEACS1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEACS1T ≥ 5,5
EE2	EEADC1	Digital Circuit Design	6	practical lessons, theory lessons, project activities, and self study	EEADC1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEADC1T ≥ 5,5
EE2	EEADS1	Digital System Design	6	practical lessons, theory lessons, project activities, and self study	EEADS1T	Portfolio assessment	Individual	1,0-10,0	n/a	EEADS1T ≥ 5,5
EE2	EEAPM2	Project Management Skills 2	4	theory lessons, practice in project and lesson contexts, and self study	EEAPM2T	Portfolio assessment	Individual	1,0-10,0	n/a	EEAPM2T ≥ 5,5
EE2	EEALO2	Learning and Orientation 2	4	practical lessons, theory lessons, project activities, and self study	EEALO2T	Portfolio assessment	Individual	1,0-10,0	n/a	EEALO2T ≥ 5,5
EE2	EEACS2	Communication Skills 2	4	practical lessons, theory lessons, project activities, and self study	EEACS2T	Portfolio assessment	Individual	1,0-10,0	n/a	EEACS2T ≥ 5,5

TER tables Mechatronics

Semester	Educational unit	Name educational unit	EC	Name test	Test form	Individual/Group	Rating scale	Input rules	Standarisation / Compensation
Cohort 2021_2022									
M1	MCABES1	Basic Electronics 1	4	MCABES1	Written Exam	Individual	1,0-10,0	nvt	MCABES1 ≥ 5,5
	MCBBAM1	Basic Mechanics 1	3	MCBBAM1T	Assignment	Individual	1,0-10,0	nvt	MCBBAM1=MCBBAM1T ≥ 5,5 and MCBBAM1P ≥ V
	MCADIS1A	Digital and Software Engineering 1A	3	MCADIS1AT	Written Exam	Individual	1,0-10,0	nvt	MCADIS1A = MCADIS1AT ≥ 5,5 and MCADIS1AP ≥ V
	MCADIS1A	Digital and Software Engineering 1A	3	MCADIS1AP	Portfolio	Individual	O-V-G	nvt	
	MCADIS1B	Digital and Software Engineering 1B	3	MCADIS1BT	Written Exam	Individual	1,0-10,0	nvt	MCADIS1B=MCADIS1BT ≥ 5,5 and MCADIS1BP ≥ V
	MCADIS1B	Digital and Software Engineering 1B	3	MCADIS1BP	Portfolio	Individual	O-V-G	nvt	
	MCBFEE1	Fundamentals or Electrical Engineering 1	3	MCBFEE1	Written Exam	Individual	1,0-10,0	nvt	MCBFEE1 ≥ 5,5
	MCAMEG1	Mechanical Engineering 1	3	MCAMEG1T	Written Exam	Individual	1,0-10,0	nvt	MCAMEG1=MCAMEG1T ≥ 5,5 and MCAMEG1P ≥ V
	MCAMEG1	Mechanical Engineering 1	3	MCAMEG1P	Practical Assignment	Individual	O-V-G	nvt	
	MCDMAT1	Mathematics 1	3	MCDMAT1	Written Exam	Individual	1,0-10,0	nvt	MCDMAT1 ≥ 5,5
M2	MCDPRJ0	Project 0	3	MCDSIM0	Project appraisal	Group/Individual	1,0-10,0	nvt	MCDPRJ0=MCDSIM0 ≥ 5.5 and MCDPDV1A ≥ V
	MCDPRJ0	Project 0	3	MCDPDV1A	Practical Assignment	Individual	O-V-G	nvt	
	MCDPRJ0	Project 0	3	MCDSIM1	Project appraisal	Group/Individual	1,0-10,0	nvt	
	MCDPRJ1	Project 1	5	MCDCOM1	Practical Assignment	Individual	O-V-G	nvt	MCDPRJ1=MCDSIM1 ≥ 5.5 and MCDCOM1 ≥ V and MCDPDV1B ≥ V and MCDSYE1 ≥ V
	MCDPRJ1	Project 1	5	MCDPDV1B	Practical Assignment	Individual	O-V-G	nvt	
	MCDPRJ1	Project 1	5	MCDSYE1	Practical Assignment	Group/Individual	O-V-G	nvt	
	MCAACS2	AC Signals 2	3	MCAACS2	Written Exam	Individual	1,0-10,0	nvt	MCAACS2 ≥ 5,5
	MCAGIS2	Graphical Software Engineering 2	3	MCAGIS2T	Written Exam	Individual	1,0-10,0	nvt	MCAGIS2=MCAGIS2T ≥ 5,5 and MCAGIS2P ≥ V
	MCAGIS2	Graphical Software Engineering 2	3	MCAGIS2P	Portfolio	Individual	O-V-G	nvt	
	MCDMAT2A	Mathematics 2A	3	MCDMAT2A	Written Exam	Individual	1,0-10,0	nvt	MCDMAT2A ≥ 5,5
M3	MCDMAT2B	Mathematics 2B	3	MCDMAT2B	Written Exam	Individual	1,0-10,0	nvt	MCDMAT2B ≥ 5,5
	MCAMEG2	Mechanical Engineering 2	4	MCAMEG2	Written Exam	Individual	1,0-10,0	nvt	MCAMEG2 ≥ 5,5
	MCBMS2	Model Based Simulations 2	4	MCBMS2	Practical Assignment	Group/Individual	1,0-10,0	nvt	MCBMS2 ≥ 5,5
	MCDPRJ2	Project 2	5	MCDSIM2	Project appraisal	Group/Individual	1,0-10,0	nvt	MCDPRJ2=MCDSIM2 ≥ 5.5 and MCDPDV2A ≥ V and MCDSYE2A ≥ V
	MCDPRJ2	Project 2	5	MCDPDV2A	Practical Assignment	Individual	O-V-G	nvt	
	MCDPRJ2	Project 2	5	MCDSYE2A	Practical Assignment	Individual	O-V-G	nvt	
	MCDPRJ3	Project 3	5	MCDSIM3	Project appraisal	Group/Individual	1,0-10,0	nvt	MCDPRJ3=MCDSIM3 ≥ 5.5 and MCDCOM2 ≥ V and MCDPDV2B ≥ V and MCDSYE2BT ≥ 5.5
	MCDPRJ3	Project 3	5	MCDCOM2	Practical Assignment	Group/Individual	O-V-G	nvt	
	MCDPRJ3	Project 3	5	MCDPDV2B	Practical Assignment	Individual	O-V-G	nvt	
	MCDPRJ3	Project 3	5	MCDSYE2B	Written Exam	Individual	1,0-10,0	nvt	

Cohort 2020_2021									
M3	MCACSS3	Control Systems & Sensors 3	4	MCACSS3A	Assessment	Individual	O-V-G	CSS3P ≥ V	MCACSS3 = MCACSS3A ≥ V and MCACSS3P ≥ V
	MCADPB3	Design principles for optimal behaviour 3	4	MCADPB3	Written Exam	Individual	1,0-10,0	nvt	MCADPB3 ≥ 5,5
	MCAEMP3	Electric Motors & Power Electronics 3	4	MCAEMP3	Written Exam	Individual	1,0-10,0	nvt	MCAEMP3 ≥ 5,5
	MCAESC3	Embedded Systems & Connectivity 3	3	MCAESC3T	Written Exam	Individual	1,0-10,0	nvt	MCAESC3 = MCAESC3T ≥ 5,5 and MCAESC3P ≥ V
	MCAESC3	Embedded Systems & Connectivity 3	3	MCAESC3P	Portfolio	Individual	O-V-G	nvt	
	MCAISY3	Industrial Systems & Connectivity 3	3	MCAISY3T	Written Exam	Individual	1,0-10,0	nvt	MCAISY3 = MCAISY3T ≥ 5,5 and MCAISY3P ≥ V
	MCAISY3	Industrial Systems & Connectivity 3	3	MCAISY3P	Portfolio	Individual/duo	O-V-G	nvt	
	MCAIS3	Signals & Systems 3	3	MCAIS3T	Written Exam	Individual	1,0-10,0	nvt	MCAIS3 = MCAIS3T ≥ 5,5 and MCAIS3P ≥ V
	MCAIS3	Signals & Systems 3	3	MCAIS3P	Practical Assignment	Individual/duo	O-V-G	nvt	
	MCAEXP01	EXP01	3	MCAEXP01	Project appraisal	Group/Individual	1,0-10,0	nvt	MCAEXP01 ≥ 5,5
M4	MCAEXP02	EXP02	3	MCAEXP02	Project appraisal	Group/Individual	1,0-10,0	nvt	MCAEXP02 ≥ 5,5
	MCASYE3	Systems Engineering 3	1	MCASYE3	Practical Assignment	Individual	O-V-G	nvt	MCASYE3 ≥ V
	MCACOM3	Communication Skills 3	1	MCACOM3	Practical Assignment	Individual	O-V-G	nvt	MCACOM3 ≥ V
	MCAPDV3	Personal Development 3	1	MCAPDV3	Practical Assignment	Individual	O-V-G	nvt	MCAPDV3 ≥ V
	MCAALA4	Applied Linear Algebra 4	3	MCAALA4T	Assignment	Individual	O-V-G	MCAALA4 or MCAAST4 or MCAAMA4	MCAALA4 = MCAALA4T ≥ 5,5 and MCAALA4P ≥ V
	MCAALA4	Applied Linear Algebra 4	3	MCAALA4P	Assignment	Group	1,0-10,0		
	MCAAST4	Applied Statistics 4	3	MCAAST4T	Assignment	Individual	O-V-G	MCAALA4 or MCAAST4 or MCAAMA4	MCAAST4 = MCAAST4T ≥ 5,5 and MCAAST4P ≥ V
	MCAAST4	Applied Statistics 4	3	MCAAST4P	Assignment	Group	1,0-10,0		
	MCAAMA4	Applied Mathematical Algorithms 4	3	MCAAMA4T	Assignment	Individual	O-V-G	MCAALA4 or MCAAST4 or MCAAMA4	MCAAMA4 = MCAAMA4T ≥ 5,5 and MCAAMA4P ≥ V
	MCAAMA4	Applied Mathematical Algorithms 4	3	MCAAMA4P	Assignment	Group	1,0-10,0		
M5	MCADDC4	Dynamic Design Criteria 4	3	MCADDC4T	Written Exam	Individual	1,0-10,0	nvt	MCADDC4 = MCADDC4T ≥ 5,5 and MCADDC4P ≥ V
	MCADDC4	Dynamic Design Criteria 4	3	MCADDC4P	Practical Assignment	Individual/duo	O-V-G	nvt	
	MCADFC4	Dynamic Feedback Control 4	3	MCADFC4T	Written Exam	Individual	1,0-10,0	nvt	MCADFC4 = MCADFC4T ≥ 5,5 and MCADFC4P ≥ V
	MCADFC4	Dynamic Feedback Control 4	3	MCADFC4P	Practical Assignment	Individual/duo	O-V-G	nvt	
	MCAEDS4	Electrical Drive Systems 4	3	MCAEDS4	Written Exam	Individual	1,0-10,0	nvt	MCAEDS4 ≥ 5,5
	MCAMDB4	Motion design for optimal dynamic behavior	5	MCAMDB4T	Written Exam	Individual	1,0-10,0	nvt	MCAMDB4 = MCAMDB4T ≥ 5,5 and MCAMDB4P ≥ 5,5
	MCAMDB4	Motion design for optimal dynamic behavior	5	MCAMDB4P	Assignment	Group	1,0-10,0	nvt	
	MCARTS4	Real-Time Systems 4	4	MCARTS4T	Written Exam	Individual	1,0-10,0	nvt	MCARTS4 = MCARTS4T ≥ 5,5 and MCARTS4P ≥ V
	MCARTS4	Real-Time Systems 4	4	MCARTS4P	Portfolio	Individual	O-V-G	nvt	
	MCAEXP03	EXP03	3	MCAEXP03	Project appraisal	Group/Individual	1,0-10,0	nvt	MCAEXP03 ≥ 5,5
M6	MCASYE4	Systems Engineering 4	1	MCASYE4	Practical Assignment	Individual	O-V-G	nvt	MCASYE4 ≥ V
	MCAETS4	Ethics 4	1	MCAETS4	Practical Assignment	Individual/Duo	O-V-G	nvt	MCAETS4 ≥ V
	MCAEXP04	EXP04	3	MCAEXP04	Project appraisal	Group/Individual	1,0-10,0	nvt	MCAEXP04 ≥ 5,5
	MCAPDV4	Personal Development 4	1	MCAPDV4	Practical Assignment	Individual	O-V-G	nvt	MCAPDV4 ≥ V

Cohort 2019_2020									
M5	MCASTAGE	Internship	30	MCASTAGE	Assignment	Individual	1,0-10,0	SVC	≥ 5,5
M6	nvt	Minor	30	nvt	nvt	Individual	O-V-G	SVC	≥ V

Mechatronics 2021/2022	Criteria S12	Criteria S3	Crit eria S4 (Co re pha se)	Criteria S5	Criteria S6	Criteria S7
	(P-phase)	(Core phase)		(Internship)	(Minor)	(Specialization)
To S12 (P-phase)	Admission Requirements					
To S34 (Core phase)	≥ 45 EC					
To S5 (Internship)	≥ 105 EC					
To S6 (Minor)	= 60 EC					
To S7 (Specialization)	≥ 105 EC			= 30 EC or repairable		
To S8 (Graduation Internship)	= 60 EC	Option 1: = 60 EC Option 2: max. 1 subject open		= 30 EC		Option 1: = max. 2 subjects open Option 2: = max. 1 subject open

Option 2:	1 subject open in S7 and 1 subject open in S3 or S4
-----------	---

TER tables Mechanical Engineering

OER-label 2021-2022 Werktuigbouwkunde: MECHANICAL ENGINEERING

*) Passed/Failed will be indicated with Sufficient/Insufficient (S/I) in Progress

semester	unit of study	name of learning outcome	EC	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
ME1-S1	MEACAD	CAD & Drawings	3,00	MEACADP1	Practical Assignment	Individual	Passed/Failed*	n/a	MEACAD = Passed when MEACADP1 = Passed and MEACADP2 = Passed*
ME1-S1				MEACADP2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME1-S1	MEAPERSD	Personal Development	1,00	MEAPERSD	Assignment	Individual	I-S-G	n/a	MEAPERSD = S or G
ME1-S1	MEAPM1	Fundamentals of engineering materials and manufacturing	5,00	MEAPM1P	Practical Assignment	Group	Passed/Failed*	n/a	MEAPM1 = (MEAPM1T1 + MEAPM1T2) / 2 ≥ 5,5 provided that MEAPM1T1 ≥ 5,5 and MEAPM1T2 ≥ 5,5 and MEAPM1P = Passed*
ME1-S1				MEAPM1T1	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1				MEAPM1T2	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1	MEARGT	RGT support	1,00	MEARGT	Assignment	Individual and Group	Passed/Failed*	n/a	MEARGT = Passed*
ME1-S1	MEBEP1	Introduction Energy Theory	3,00	MEBEP1P	Practical Assignment	Group	Passed/Failed*	n/a	MEBEP1 = (MEBEP1T1 + MEBEP1T2) / 2 ≥ 5,5 provided that MEBEP1T1 ≥ 4,5 and MEBEP1T2 ≥ 4,5 and MEBEP1P = Passed*
ME1-S1				MEBEP1T1	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1				MEBEP1T2	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1	MEBPPR	Manufacturing Practical	2,00	MEBPPRP1	Practical Assignment	Individual	Passed/Failed*	n/a	MEBPPR = Passed when MEBPPR1 = Passed and MEBPPR2 = Passed*
ME1-S1				MEBPPRP2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME1-S1	MEBW11	Introduction Math	5,00	MEBW11T1	Written Exam	Individual	1,0-10,0	n/a	MEBW11 = (MEBW11T1 + MEBW11T2) / 2 ≥ 5,5 provided that MEBW11T1 ≥ 5,5 and MEBW11T2 ≥ 5,5
ME1-S1				MEBW11T2	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1	MECCM1	Statics	3,00	MECCM1T1	Written Exam	Individual	1,0-10,0	n/a	MECCM1 = (MECCM1T1 + MECCM1T2) / 2 ≥ 5,5 provided that MECCM1T1 ≥ 4,5 and MECCM1T2 ≥ 4,5
ME1-S1				MECCM1T2	Written Exam	Individual	1,0-10,0	n/a	
ME1-S1	MECPP2	Project & Professionalization 2	5,00	MECPP2P	Project	Individual and Group	1,0-10,0	n/a	MECPP2 = MECP2P ≥ 5,5 provided that MECP2P1 = Passed and MECP2P2 = Passed*
ME1-S1				MECP2P1	Assignment	Individual	Passed/Failed*	n/a	
ME1-S1				MECP2P2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME1-S1	MEDPP1	Intro project Mechanical Eng	2,00	MEDPP1P	Project	Group	I-S-G	n/a	MEDPP1 = S or G
ME1-S2	MEACM2	Mechanics of Materials	5,00	MEACM2T1	Written Exam	Individual	1,0-10,0	n/a	MEACM2 = (MEACM2T1 + MEACM2T2) / 2 ≥ 5,5 provided that MEACM2T1 and MEACM2T2 ≥ 4,5
ME1-S2				MEACM2T2	Written Exam	Individual	1,0-10,0	n/a	
ME1-S2	MEAP21	Fluid Mechanics	3,00	MEAP21P	Practical Assignment	Group	Passed/Failed*	n/a	MEAP21 = MEAP21T ≥ 5,5 provided that MEAP21P = Passed*
ME1-S2				MEAP21T	Written Exam	Individual	1,0-10,0	n/a	
ME1-S2	MEBMR1	Electronics, Logic & Measurement	5,00	MEBMR1P1	Practical Assignment	Individual	Passed/Failed*	n/a	MEBMR1 = (MEBMR1T1 + MEBMR1T2) / 2 ≥ 5,5 provided that MEBMR1T1 ≥ 5,5 and MEBMR1T2 ≥ 5,5 and MEBMR1P1 = Passed and MEBMR1P2 = Passed*
ME1-S2				MEBMR1P2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME1-S2				MEBMR1T1	Assignment	Individual	1,0-10,0	n/a	
ME1-S2				MEBMR1T2	Assignment	Individual	1,0-10,0	n/a	
ME1-S2	MEAMS	Modelling and Simulation	4,00	MEAMS	MEAMS	Duo	1,0-10,0	n/a	MEAMS ≥ 5,5
ME1-S2	MEBPP3	Project & Professionalization 3	8,00	MEBPP3P1	Project	Individual and Group	1,0-10,0	n/a	MEBPP3 = (MEBPP3P1 + MEBPP3P2) / 2 ≥ 5,5 provided that MEBPP3T1 = Passed and MEBPP3T2 = Passed and MEBPP3P1 ≥ 4,5 and MEBPP3P2 ≥ 4,5
ME1-S2				MEBPP3P2	Project	Individual and Group	1,0-10,0	n/a	
ME1-S2				MEBPP3T1	Assignment	Individual	Passed/Failed*	n/a	
ME1-S2				MEBPP3T2	Assignment	Individual	Passed/Failed*	n/a	
ME1-S2	MEBW12	Advanced Math	5,00	MEBW12T1	Written Exam	Individual	1,0-10,0	n/a	MEBW12 = (MEBW12T1 + MEBW12T2) / 2 ≥ 5,5 provided that MEBW12T1 ≥ 5,5 and MEBW12T2 ≥ 5,5
ME1-S2				MEBW12T2	Written Exam	Individual	1,0-10,0	n/a	

semester	unit of study	name of learning outcome	EC	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
ME2-S3	EXPO1	Expo 1	3,00	EXPO1	Project	Individual	1,0-10,0	n/a	EXPO1 ≥ 5,5
ME2-S3	EXPO2	Expo 2	3,00	EXPO2	Project	Individual	1,0-10,0	n/a	EXPO2 ≥ 5,5
ME2-S3	MEACM3	Dynamics	3,00	MEACM3P1	Practical Assignment	Individual	Passed/Failed*	n/a	MEACM3 = MEACM3T1 ≥ 5,5 provided that MEACM3P1 = Passed*
ME2-S3				MEACM3T1	Written Exam	Individual	1,0-10,0	n/a	
ME2-S3	MEAP22	Heat transfer	3,00	MEAP22P	Practical Assignment	Group	Passed/Failed*	MEBEP1	MEAP22 = MEAP22T ≥ 5,5 provided that MEAP22P = Passed*
ME2-S3				MEAP22T	Written Exam	Individual	1,0-10,0	MEBEP1	
ME2-S3	MEAPM2	Selection of engineering materials and heat treatment	5,00	MEAPM2P1	Practical Assignment	Group	Passed/Failed*	n/a	MEAPM2 = (MEAPM2T1 + MEAPM2T2) / 2 ≥ 5,5 provided that MEAPM2T1 ≥ 4,5 and MEAPM2T2 ≥ 4,5 and MEAPM2P1 = Passed and MEAPM2P2 = Passed*
ME2-S3				MEAPM2P2	Practical Assignment	Group	Passed/Failed*	n/a	
ME2-S3				MEAPM2T1	Written Exam	Individual	1,0-10,0	MEAPM1, MEACM1/MEBCM1/MECCM1	
ME2-S3				MEAPM2T2	Written Exam	Individual	1,0-10,0	n/a	
ME2-S3	MEAW14	Spatial Functions	1,00	MEAW14	Written Exam	Individual	1,0-10,0	MEAW11, MEAW12	MEAW14 ≥ 5,5
ME2-S3	MECDG1	Dynamic System Behaviour	4,00	MECDG1	Assignment	Duo	1,0-10,0	MEAMS	MECDG1 ≥ 5,5
ME2-S3	MECMR2	Measurement & Control	5,00	MECMR2P1	Practical Assignment	Duo	Passed/Failed*	n/a	MECMR2 = (MECMR2T1 + MECMR2T2) / 2 ≥ 5,5 provided that MECMR2T1 ≥ 5,5 and MEAMR2T2 ≥ 5,5 and MECMR2P1 = Passed and MECMR2P2 = Passed*
ME2-S3				MECMR2P2	Practical Assignment	Duo	Passed/Failed*	n/a	
ME2-S3				MECMR2T1	Written Exam	Individual	1,0-10,0	MEAMR1/MEBMR1, MEAW12, MEAMS	
ME2-S3				MECMR2T2	Assignment	Individual	1,0-10,0	n/a	
ME2-S3	MEBW15	Linear Algebra	1,00	MEBW15	Written Exam	Individual	1,0-10,0	MEAW11, MEAW12	MEBW15 ≥ 5,5
ME2-S3	MEDPP4	Project & professionalization 4	2,00	MEDPP4T1	Assignment	Individual	Passed/Failed*	n/a	MEDPP4 = Passed when MEDPP4T1 = Passed and MEDPP4T2 = Passed*
ME2-S3				MEDPP4T2	Assignment	Individual	Passed/Failed*	n/a	
ME2-S4	EXPO3	Expo 3	3,00	EXPO3	Project	Individual	1,0-10,0	n/a	EXPO3 ≥ 5,5
ME2-S4	EXPO4	Expo 4	3,00	EXPO4	Project	Individual	1,0-10,0	n/a	EXPO4 ≥ 5,5
ME2-S4	MEAP3	Applied Thermodynamics	5,00	MEAP3P	Practical Assignment	Individual	Passed/Failed*	MEBEP1	MEAP3 = (MEAP3T1 + MEAP3T2) / 2 ≥ 5,5 provided that MEAP3T1 ≥ 4,5 and MEAP3T2 ≥ 4,5 and MEAP3P = Passed*
ME2-S4				MEAP3T1	Written Exam	Individual	1,0-10,0	MEBEP1	
ME2-S4				MEAP3T2	Written Exam	Individual	1,0-10,0	MEBEP1	
ME2-S4	MEAPM3	Forming, DoE and AM	5,00	MEAPM3P1	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	MEAPM3 = (MEAPM3T1 + MEAPM3T2) / 2 ≥ 5,5 provided that MEAPM3T1 ≥ 5,5 and MEAPM3T2 ≥ 5,5 and MEAPM3P1 = S or G and MEAPM3P2 = S or G and MEAPM3P3 = S or G
ME2-S4				MEAPM3P2	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEAPM3P3	Practical Assignment	Duo	I-S-G	MEAW13	
ME2-S4				MEAPM3T1	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEAPM3T2	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4	MEAW13	Probability & Statistics	1,00	MEAW13	Written Exam	Individual	1,0-10,0	n/a	MEAW13 ≥ 5,5
ME2-S4	MEBCM4	Machine Elements	5,00	MEBCM4P1	Assessment	Individual	I-S-G	MEACM2	MEBCM4 = (MEBCM4T1 + MEBCM4T2) / 2 ≥ 5,5 provided that MEBCM4T1 ≥ 4,5 and MEBCM4T2 ≥ 4,5 and MEBCM4P1 = S or G and MEBCM4P2 = S or G and MEBCM4P3 = S or G
ME2-S4				MEBCM4P2	Practical Assignment	Individual	I-S-G	MEACM2	
ME2-S4				MEBCM4P3	Practical Assignment	Duo	I-S-G	MEACM2	
ME2-S4				MEBCM4T1	Written Exam	Individual	1,0-10,0	MEACM2	
ME2-S4				MEBCM4T2	Written Exam	Individual	1,0-10,0	MEACM2	
ME2-S4	MEBHE1	Research Methodologies	5,00	MEBHE1P	Assignment	Individual	I-S-G	n/a	MEBHE1 = MEBHE1T ≥ 5,5 provided that MEBHE1P = S or G
ME2-S4				MEBHE1T	Assignment	Individual and Duo	1,0-10,0	n/a	HE1P
ME2-S4	MECPP5	Project & professionalization 5	3,00	MECPP5T1	Assignment	Individual	1,0-10,0	n/a	MECPP5 = MECP5T1 ≥ 5,5 provided that MECP5T1 ≥ 5,5 and MECP5T2 = Passed*
ME2-S4				MECP5T2	Assignment	Individual	Passed/Failed*	n/a	

semester	unit of study	name of learning outcome	EC	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
ME3-S5	MEIntern	Internship	30,00	MEIntern	Execution and report	Individual	1,0-10,0	See criteria table	All partial grades \geq 5,5
ME4-S7_ET	MBSYE7	System Engineering 7	2,00	MBSYE7	Written Exam	Individual	1,0-10,0	n/a	MBSYE7 \geq 5,5
ME4-S7_ET	WAPM13 / WADG2 / WABI / WACM5 / WACM10	Selective module (period 2)	4,00	See module	See module	See module	See module	See module requirements	See module
ME4-S7_ET	WADFX	Design for Excellence	2,00	WADFX	Assignment	Group	1,0-10,0	n/a	WADFX \geq 5,5
ME4-S7_ET	WBEP12	Thermal Design	4,00	WBEP12	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WBEP12 \geq 5,5
ME4-S7_ET	WAEP13	Applied Energy Technology	4,00	WAEP13P	Assignment	Group	Passed/Failed*	n/a	WAEP13 = WAEP13T \geq 5,5 provided that WAEP13P = Passed*
ME4-S7_ET	WAEP13	Applied Energy Technology	4,00	WAEP13T	Written Exam	Individual	1,0-10,0	n/a	
ME4-S7_ET	WAPRS7	Project S7	10,00	WAPRS7	Project	Individual and Group	1,0-10,0	n/a	WAPRS7 \geq 5,5
ME4-S7_ET	WCEP14	Sustainable Energy Systems	4,00	WCEP14	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WCEP14 \geq 5,5
ME4-S7_IE	MBSYE7	System Engineering 7	2,00	MBSYE7	Written Exam	Individual	1,0-10,0	n/a	MBSYE7 \geq 5,5
ME4-S7_IE	WACM5 / WACM10 / WAEP13 / WCEP14 / WADG2 / WAPM13 / WBEP12	Selective module 1 (period 1)	4,00	See module	See module	See module	See module	See module requirements	See module. Selective module 1 should be different from selective module 2.
ME4-S7_IE	WACM5 / WACM10 / WAEP13 / WCEP14 / WADG2 / WAPM13 / WBEP12	Selective module 2 (period 2)	4,00	See module	See module	See module	See module	See module requirements	See module. Selective module 1 should be different from selective module 2.
ME4-S7_IE	WABI	Business Innovation	4,00	WABIP	Assignment	Group	I-S-G	n/a	WABI = WABIT \geq 5,5 provided that WABIP = S or G
ME4-S7_IE	WABI	Business Innovation	4,00	WABIT	Written Exam	Individual	1,0-10,0	n/a	
ME4-S7_IE	WADFX	Design for Excellence	2,00	WADFX	Assignment	Group	1,0-10,0	n/a	WADFX \geq 5,5
ME4-S7_IE	WAPI	Product Innovation	4,00	WAPI	Written Exam	Individual	1,0-10,0	n/a	WAPI \geq 5,5
ME4-S7_IE	WAPRS7	Project S7	10,00	WAPRS7	Project	Individual and Group	1,0-10,0	n/a	WAPRS7 \geq 5,5
ME4-S7_PE	MBSYE7	System Engineering 7	2,00	MBSYE7	Written Exam	Individual	1,0-10,0	n/a	MBSYE7 \geq 5,5
ME4-S7_PE	FEM		4,00	WACM10	Assignment	Individual	1,0-10,0	WACM2 or MEACM2	WACM10 \geq 5,5
ME4-S7_PE	WACM5	Design Principles for precision	4,00	WACM5	Written Exam	Individual	1,0-10,0	WACM2 or MEACM2	WACM5 \geq 5,5
ME4-S7_PE	WADFX	Design for Excellence	2,00	WADFX	Assignment	Group	1,0-10,0	n/a	WADFX \geq 5,5
ME4-S7_PE	WADG2	Dynamic Behaviour of High-tech Systems	4,00	WADG2T1	Assignment	Group	1,0-10,0	WAMR2/WBMR2/WCMR2 or MEAMR2/MEBMR2/MECMR2, WADG1/WBDG1/WCDG1 or MEADG1/MEBDG1/MECDG1	WADG2 = (WADG2T1 + WADG2T2) / 2 \geq 5,5 provided that WADG2T1 \geq 5,5 and WADG2T2 \geq 5,5
ME4-S7_PE				WADG2T2	Written Exam	Individual	1,0-10,0	WAMR2/WBMR2/WCMR2 or MEAMR2/MEBMR2/MECMR2, WADG1/WBDG1/WCDG1 or MEADG1/MEBDG1/MECDG1	
ME4-S7_PE	WAPM13	Production & Materials for Precision	4,00	WAPM13	Written Exam	Individual	1,0-10,0	n/a	WAPM13 \geq 5,5
ME4-S7_PE	WAPRS7	Project S7	10,00	WAPRS7	Project	Individual and Group	1,0-10,0	n/a	WAPRS7 \geq 5,5
ME4-S8	MEGRAD	Graduation	30,00	MEGRAD	Execution, report and defence	Individual	1,0-10,0	See criteria table	Final grade = 0,3 x execution + 0,3 x report content + 0,2 x report style + 0,2 x presentation/defence. All partial grades \geq 5,5

OER-tabel 2021-2022 Werktuigbouwkunde: MECHANICAL ENGINEERING EXCHANGE S3

*1) Passed/Failed will be indicated with Sufficient/Insufficient (S/I) in Progress

semester	unit of study	name of learning outcome	EC	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
ME2-S3EX	EXMEADG1	Dynamic System Behaviour	5,00	EXMEADG1T1	Assignment	Duo	1,0-10,0	n/a	EXMEADG1T1 \geq 5,5
ME2-S3EX	EXMEBEP1	Introduction Energy Theory	5,00	EXMEAEP1P	Practical Assignment	Individueel	Passed/Failed*	n/a	EXMEAEP1 = (EXMEAEP22T + EXMEAEP1T2) / 2 \geq 5,5 provided that EXMEAEP1T2 \geq 4,5 and EXMEAEP22T \geq 4,5 and EXMEAEP1P = Passed and EXMEAEP22P = Passed*
ME2-S3EX				EXMEAEP1T2	Written Exam	Individueel	1,0-10,0	n/a	
ME2-S3EX				EXMEAEP22P	Practical Assignment	Duo	Passed/Failed*	n/a	
ME2-S3EX				EXMEAEP22T	Written Exam	Individueel	1,0-10,0	n/a	
ME2-S3EX	EXMEAMS	Modelling and Simulation	5,00	EXMEAMS	Assignment	Duo	1,0-10,0	n/a	EXMEAMS \geq 5,5
ME2-S3EX	EXMEBCM3	Dynamics	4,00	EXMEBCM3P1	Practical Assignment	Individueel	Passed/Failed*	n/a	EXMEBCM3 = EXMEBCM3T1 \geq 5,5 provided that EXMEBCM3T1 = Passed*
ME2-S3EX				EXMEBCM3T1	Written Exam	Individueel	1,0-10,0	n/a	
ME2-S3EX	EXPO1	Expo 1	3,00	EXPO1	Project	Individual	1,0-10,0	n/a	EXPO1 \geq 5,5
ME2-S3EX	EXPO2	Expo 2	3,00	EXPO2	Project	Individual	1,0-10,0	n/a	EXPO2 \geq 5,5
ME2-S3EX	MEAPM2	Selection of engineering materials and heat treatment	5,00	MEAPM3P1	Practical Assignment	Duo	Passed/Failed*	n/a	MEAPM2 = (MEAPM2T1 + MEAPM2T2) / 2 \geq 5,5 provided that MEAPM2T1 \geq 4,5 and MEAPM2T2 \geq 4,5 and MEAPM2P1 = Passed and MEAPM2P2 = Passed*
ME2-S3EX				MEAPM2P2	Practical Assignment	Duo	Passed/Failed*	n/a	
ME2-S3EX				MEAPM2T1	Written Exam	Individueel	1,0-10,0	n/a	
ME2-S3EX				MEAPM2T2	Written Exam	Individueel	1,0-10,0	n/a	

OER-tabel 2021-2022 Werktuigbouwkunde: MECHANICAL ENGINEERING EXCHANGE S4

*1) Passed/Failed will be indicated with Sufficient/Insufficient (S/I) in Progress

semester	unit of study	name of learning outcome	EC	name of test	type of test	assessment type	assessment scale	prerequisites	norm/compensation
ME2-S4EX	EXHE20	Customer Oriented Innovation	5,00	EXHE20	Written Exam	Individual	1,0-10,0	n/a	EXHE20 \geq 5,5
ME2-S4EX				EXMEACM4P1	Practical Assignment	Duo	I-S-G	n/a	
ME2-S4EX	EXMEACM4	Machine Elements	5,00	EXMEACM4P2	Practical Assignment	Duo	I-S-G	n/a	EXMEACM4 = (EXMEACM4T1 + EXMEACM4T2) / 2 \geq 5,5 provided that EXMEACM4T1 \geq 4,5 and EXMEACM4T2 \geq 4,5 and EXMEACM4P1 = S or G and EXMEACM4P2 = S or G and EXMEACM4P3 = S or G
ME2-S4EX				EXMEACM4P3	Practical Assignment	Duo	I-S-G	n/a	
ME2-S4EX				EXMEACM4T1	Written Exam	Individual	1,0-10,0	n/a	
ME2-S4EX				EXMEACM4T2	Written Exam	Individual	1,0-10,0	n/a	
ME2-S4EX	EXMEAEP3	Applied Thermodynamics	5,00	EXMEAEP3P	Practical Assignment	Duo	Passed/Failed*	n/a	EXMEAEP3 = (EXMEAEP3T1 + EXMEAEP3T2) / 2 \geq 5,5 provided that EXMEAEP3T1 \geq 4,5 and EXMEAEP3T2 \geq 4,5 and EXMEAEP3P = Passed*
ME2-S4EX				EXMEAEP3T1	Written Exam	Individual	1,0-10,0	n/a	
ME2-S4EX				EXMEAEP3T2	Written Exam	Individual	1,0-10,0	n/a	
ME2-S4EX	EXMEAE6P	Project Integrated Product Development	10,00	EXMEAE6P	Assignment	Individual and Group	1,0-10,0	n/a	EXMEAE6P \geq 5,5
ME2-S4EX	EXMEAPM3	Forming, DoE and AM	5,00	EXMEAPM3P2	Practical Assignment	Duo	Passed/Failed*	n/a	EXMEAPM3 = (EXMEAPM3T1 + EXMEAPM3T2) / 2 \geq 5,5 provided that EXMEAPM3T1 \geq 5,5 and EXMEAPM3T2 \geq 5,5 and EXMEAPM3P2 = Passed and EXMEAPM3P3 = Passed*
ME2-S4EX				EXMEAPM3P3	Practical Assignment	Duo	Passed/Failed*	n/a	
ME2-S4EX				EXMEAPM3T1	Written Exam	Individual	1,0-10,0	n/a	
ME2-S4EX				EXMEAPM3T2	Written Exam	Individual	1,0-10,0	n/a	

The following lines are deleted:

semester	Onderwijsseenheid	naam onderwijsseenheid	EC	naam toets	toetsvorm	beoordelingstype	beoordelingsschaal	ingangseisen	normering/compensatie
ME1-S1	MEACAD	CAD & Drawings	3.00	MEACADP1	Practical Assignment	Individual	Passed/Failed*	n/a	MEACAD = Passed when MEACADP1 = Passed and MEACADP2 = Passed*
ME1-S1				MEACADP2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME1-S1	MEARGT	RGT support	1.00	MEARGT	Assignment	Individual and Group	Passed/Failed*	n/a	MEARGT = Passed*
ME1-S1	MEBPPR	Manufacturing Practical	2.00	MEBPPRP1	Practical Assignment	Individual	Passed/Failed*	n/a	MEBPPR = Passed when MEBPPR1 = Passed and MEBPPR2 = Passed*
ME1-S1				MEBPPRP2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME2-S3	MECDG1	Dynamic System Behaviour	4.00	MECDG1	Assignment	Duo	1,0-10,0	MEAMS	MECDG1 \geq 5,5

ME2-S4	MEAPM3	Forming, DoE and AM	5.00	MEAPM3P1	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	MEAPM3 = (MEAPM3T1 + MEAPM3T2) / 2 ≥ 5,5 provided that MEAPM3T1 ≥ 5,5 and MEAPM3T2 ≥ 5,5 and MEAPM3P1 = S or G and MEAPM3P2 = S or G and MEAPM3P3 = S or G
ME2-S4				MEAPM3P2	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEAPM3P3	Practical Assignment	Duo	I-S-G	MEAWI3	
ME2-S4				MEAPM3T1	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEAPM3T2	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME4-S7_ET	WBEP12	Thermal Design	4.00	WBEP12	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WBEP12 ≥ 5,5
ME4-S7_ET	WCEP14	Sustainable Energy Systems	4.00	WCEP14	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WCEP14 ≥ 5,5
ME4-S7_IE	WACM5 / WACM10 / WAEP13 / WCEP14 / WADG2 / WAPM13 / WBEP12 / (EAGC7A+EAGC7B)	Selective module 1 (period 1)	4.00	See module	See module	See module	See module	See module requirements	See module. Selective module 1 should be different from selective module 2.
ME4-S7_IE	WACM5 / WACM10 / WAEP13 / WCEP14 / WADG2 / WAPM13 / WBEP12 / (EAGC7A+EAGC7B)	Selective module 2 (period 2)	4.00	See module	See module	See module	See module	See module requirements	See module. Selective module 1 should be different from selective module 2.

They will be replaced by:

semester	Onderwijsseenheid	naam onderwijsseenheid	EC	naam toets	toetsvorm	beoordelingstype	beoordelingsschaal	ingangseisen	normering/compensatie
ME1-S1	MEBCAD	CAD & Drawings	3.00	MEBCADP1	Practical Assignment	Individual	Passed/Failed	n/a	MEBCAD = Passed when MEBCADP1 = Passed and MEBCADP2 = Passed
ME1-S1				MEBCADP2	Practical Assignment	Individual	Passed/Failed	n/a	
ME1-S1	MEBRGT	RGT support	1.00	MEBRGT	Assignment	Individual and Group	Passed/Failed	n/a	MEBRGT = Passed
ME1-S1	MECPPR	Manufacturing Practical	2.00	MECPPRP1	Practical Assignment	Individual	Passed/Failed	n/a	MECPPR = Passed when MECPPR1 = Passed and MECPPR2 = Passed
ME1-S1				MECPPRP2	Practical Assignment	Individual	Passed/Failed*	n/a	
ME2-S3	MEBDG1	Dynamic System Behaviour	4.00	MEBDG1	Assignment	Duo	1,0-10,0	MEAMS	MEBDG1 ≥ 5,5
ME2-S4	MEBPM3	Forming, DoE and AM	5.00	MEBPM3P1	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	MEBPM3 = (MEBPM3T1 + MEBPM3T2) / 2 ≥ 5,5 provided that MEBPM3T1 ≥ 5,5 and MEBPM3T2 ≥ 5,5 and MEBPM3P1 = S or G and MEBPM3P2 = S or G and MEBPM3P3 = S or G
ME2-S4				MEBPM3P2	Practical Assignment	Duo	I-S-G	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEBPM3P3	Practical Assignment	Duo	I-S-G	MEAWI3	
ME2-S4				MEBPM3T1	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME2-S4				MEBPM3T2	Written Exam	Individual	1,0-10,0	MEAPM1, MEAPM2, MEACM1/MEBCM1/MECCM1	
ME4-S7_ET	WAEP12	Thermal Design	4.00	WAEP12	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WAEP12 ≥ 5,5
ME4-S7_ET	WBEP14	Sustainable Energy Systems	4.00	WBEP14	Written Exam	Individual	1,0-10,0	WAEP22 or MEAEP22, WAEP3 or MEAEP3	WBEP14 ≥ 5,5
ME4-S7_IE	WACM5 / WACM10 / WAEP13 / WBEP14 / WADG2 / WAPM13 / WAEP12 / (EAGC7A+EAGC7B)	Selective modules S7-IE	8.00	See module	See module	See module	See module	See module requirements	See module. 2 course of this module should be completed, where EAGC7A and EAGC7B together count as one 4-ECTS course.

Minor Regulations - 2020-2021

1. Name of Minor: Engineering Minor

2. English Name: Engineering Minor

3. Content of Minor

In the Engineering Minor as an engineering student you determine your own route!

You can choose to increase the depth of knowledge of your own study or broaden your technical skills by choosing courses from other technical studies.

The Minor consists of 5 theory modules and a project of your choice.

The modules you choose depend on your programme and the knowledge you have of the different subjects. The choice for each program can be found in the list below. In the list you can also find the description of each module. The courses are all taught in English.

Theory modules which **everyone** can choose from:

Subject	Code
○ Business Economics	MNHE4
○ Customer Oriented Innovation	MNHE20
○ Vision	MNVSN

Extra choice for Electrical Engineering students

○ Electro. Magnetic Compatibility	MNEMC
○ System Identification	MNSYI

Extra choice for Mechatronics students

○ System Identification	MNSYI
○ Lean Manufacturing	MNPM10
○ Drive Methods	MNCM6
○ Dynamic Behaviour	MNCM7

Extra choice for Automotive students

○ Elec. Magnetic Compatibility	MNEMC
○ Drive Methods	MNCM6
○ Dynamic Behaviour	MNCM7

Extra choice, Mechanical Engineering students

○ System Identification	MNSYI
○ Lean Manufacturing	MNPM10
○ Drive Methods	MNCM6
○ Dynamic Behaviour	MNCM7

Resume for Diploma supplement:

The Minor Engineering gives the student the opportunity to select his own preference from the following modules which is based on his education; Automotive -, Electrical -, Mechanical -, or Mechatronics - Engineering. In the Engineering Minor it is possible to get exemption for the extra hours worked on the

project. The exemption is up to a maximum of 8 EC's that equates to 2 courses of your own choice within the Minor.

The Engineering Minor is now structured as follows (Strike out what does not apply):

Course	Code	EC	hours
Project (research)	MNPROJ	10	280
Extra project hours 1		4	112
Extra project hours 2		8	224
Electro Magnetic Compatibility	MNEMC	4	112
System Identification	MNSYI	4	112
Vision	MNVSN	4	112
Business Economics	MNHE4	4	112
Customer Oriented Innovation	MNHE20	4	112
Lean	MNPM10	4	112
Drive Methods	MNCM6	4	112
Dynamic Behaviour	MNCM7	4	112
Total		30	840

4. Education components (see article 16 general section of the TER)

Brief description of Engineering Minor modules

Business Economics (MNHE4) Examples subjects off some course subjects:

This course will give you an introduction on financial topics you might be involved with as an engineer. You will learn about the most important terminology so that you communicate effectively with finance people. You will be aware on the organizational issues and processes around budgeting, cost price calculations and managing investments. For example questions such as; How do you calculate cost prices? How do you take decisions as you can spend the money only once? How can you better convince the finance department to invest in your plan? Can you come up with a budget, control it and explain variances on it?

It is not a bookkeeping or accounting course, but it will introduce you to the world of finance in a company so that you, as engineer, will be more confident and be able to understand with it!

Customer Oriented Innovation (MNHE20) In this module you are going to find the pros and cons of the different ways of product innovation by doing research in the industry in a small group. One of the focus points will be the involvement of customers in this innovation process. By carrying out this research you will learn to have a critical view on product innovation

Vision (MNVSN) Machine Vision is a subfield of engineering that incorporates computer science, optics, mechanical engineering, and industrial automation. Machine vision is machine-based image processing and requires also digital input/output devices and computer networks to control other manufacturing equipment such as robotic arms. You

learn to gain insight in the basics of machine Vision and to build simple machine vision applications using LabView.

Electromagnetic Compatibility (MNEMC) The EMC course covers the basics during the design process needed to bring a circuit or an electrical system to functions satisfactorily. The phenomena covered by the term Electromagnetic Compatibility takes place both on a chip on a board like this and continues to systems and installations. The requirements set out by the users or customers of the products, play a very important role in the harmonization of these requirements written down in the guidelines of the EEC.

System Identification (MNSYI) You learn the basics of system identification theory in the frequency domain as well as practical experience with the methods. It has a significant added value to the modelling and control courses. It is possible to directly measure the dynamic behaviour of a system. In high tech systems in particular, it can enable higher performance and/or better insights into the dynamical behaviour. The theoretical part of the course is given by Fontys and the practical part is given by ASML.

Lean Manufacturing (MNPM10) The focus will be not be limited to the organisation of production activities, designing production processes and lay outting a manufacturing facility. It will be extended to supply chain management – basically one of the key factors behind the successes of the local High Tech Systems industry – up to sustainability and quality thinking and acting.

Drive Methods (MNCM6) For actuating machines and devices, actuators and various systems are used that are located between the actuator and the load. In order to make the right choice for the drive, it is important to be able to analyze and calculate it is necessary to move the load according to a desired pattern. This is an important part of the profession. In addition, knowledge of different actuators, transmissions and couplings is needed, a selection of which is discussed.

Dynamic Behaviour (MNCM7) In this module, the dynamic behavior is treated as a consequence of the coupling of an actuator (a drive form as treated in the "Drive Technology" module) to a mechanism with a certain mass and stiffness distribution. To be treated: general vibration learning, reduction methods mass spring systems, and achievable dynamic accuracies

Project (MNPROJ) The Engineering minor are multidisciplinary projects where, in addition to the content, collaboration also has an important place. The Engineering Minor projects have a high research content. The projects are carried out in collaboration with international students. and also cooperate with students and teachers of Applied Physics. You can apply for an exemption of 2 courses (max) with a learning agreement.

5. Enrolment in the education components

Engineering Students from Mechanical Engineering, Mechatronics, Electrical, Automotive, Technology and Logistics studies. You must have sufficient knowledge of the modules you want to follow. Obviously you have done your first year before you enrol. Our advice is that you have followed the 2nd academic year.

6. Overview of tests and registration for tests (see articles 18 and 22 general section of the TER)

For each module (both project and theory) in semester S6, the module descriptions in this guide include a description of how the module must be completed and how your work will be assessed. (If in doubt contact the module coordinator, certainly in the case of retakes.) A large number of modules rely on written examinations in the official examination periods

Note!

There is no enrolment for the written exams.

Extended examination time

Physically or sensory challenged students (for example with dyslexia) are offered an opportunity to take the examinations subject to a special regime. This may for example include extra time.

If you wish to be considered for this possibility, you must submit a written request to the examination board in good time. Student counsellors can advise you and have sample letters available.

These facilities are, however, not available for interim examinations.

The examination timetables for the completion of a teaching period are always announced on the Friday of week 5 of the teaching period in question.

The grades, assessments, etc. on completing teaching periods will be communicated via portal.fontys.nl.

Following publication of the grades, students will have 2 teaching weeks following the final publication date to submit a request to the lecturer to view the examination paper. After this period, the grades are considered definitive.

	Code	Duration min	March/ April	June/ July	Oct/ Nov	Jan/ Feb
Elec. Magnetic Compatibility	EMC	100		Reg		Resit
Business Economics	HE4	100		Reg		Resit
Customer Oriented Innovation	HE20	none				
Lean Production	PM10	100		Reg		Resit
System identification	SY1	100		Reg		Resit
Vision	VSN	none				
Drive Methods	CM6	150		Reg		Resit
Dynamic Behaviour	CM7	100		Reg		Resit

7. Passing the Minor (see article 19 (2) general section of the TER)

The study load table for the Engineering Minor in semester 6 consists of two elements

1	Project component: this module has a study load of	280 SH (Study Hours)
2	Theory component consisting of 5 modules each of 112 SH	
	In total	560 SH
Total		+ 840 SH

The project must be completed with a grade at least 5.5. For the theory modules, each module must be completed with a pass grade of at least 5.5. How the final grade for a module is determined appears in the module descriptions.

The Engineering Minor is considered completed once all modules are concluded with a pass grade! At that point you have fulfilled your minor obligations.

Once the Engineering Minor is fully completed, you will receive a Minor Certificate. For students of Engineering, the Minor will be automatically recorded in Progress (V pass). Students from other study programmes are required to submit the original Certificate to the company office or secretariat of their study programme, as proof of completion. The staff will prepare a copy and record the Minor.

8. Examination Board (see article 38 general section of the TER)

In the event of disputes about the Minor, complaints can be submitted to the central Examination Board Chamber at Fontys Engineering. In other words not the Examination Board of your own study programme.

9. Validity

This information applies to the academic year 2020-2021.

Explanation: interim changes to a minor are possible, provided they are clearly communicated to students and are also included in the Minor regulations.

10. Entry requirements Minor

To be able to participate in the Minor, the student must have passed the propaedeutic phase or have obtained permission from the Examination Board of his or her study programme to start the Minor.

11. Accessible for student from different technical study programme

On request it is possible for students from another technical study programme to participate in the minor in whole or in part. This must be in consultation with your own specialization and Engineering Minor coordinator.

No other requirements are to be met for participation in the Minor or passing the Minor than mentioned in these Minor regulations.

Minor Be Creative Minor regulations – 2021 - 2022

1. Name minor

Be Creative

2. English name

Be Creative

3. Content of minor

The Minor Be Creative focusses on the creative and entrepreneurial engineer. Within this minor you, as a student, are encouraged to create your own learning path, discover your talents and share your knowledge focusing in the WHY instead of the WHAT. The ultimate goal to achieve is that you, as part of a group of students, create a new product or concept, in a vast array of subjects. Noticeable regarding learning and educating:

- You are given a huge amount of freedom that makes you responsible for the end result;
- You as students set the pace and course;
- Lecturers are there for encouragement, advice and guidance;
- All within the new concept of learning: Connecting through Technology; we educate you to become the creative engineer of the future.

Rather than learning what the teachers say you have to learn, the minor is focused on what *you* want to learn and on *your* talent. Within this minor we want to focus on a different way of learning, in order to grab all the possible opportunities and excel in a way you did not expect. We want to create an environment in which learning is key instead of focusing on a forced result implied by the school system. We want you to have a great learning experience and reach your full potential in the next 20 weeks!

Resume for diploma supplement

The minor Be Creative focusses on the creative and entrepreneurial engineer. Within this minor students are encouraged to create their own learning path, discover their talents and share their knowledge. Students of the Be Creative minor learn in real-life situations where they, as part of a group of students, create a new product or concept in collaboration with various stakeholders.

4. Education components (see article 16 general section of the TER)

We believe that education should be focused on the learning goals and ambitions of a student. Understanding what the qualities of each individual student are and what the student wants to improve are of great importance to let this way of educating succeed. We believe that students should show a level

of growth within their learning path and goals and are willing to share their knowledge and talents among other students. Our starting point within this minor consist out of main guidelines, that shares our vision on education.

1. Focus on continuous learning, talent and feedback

We believe that a continuous learning process is valuable for the student. It is of importance that students do not only learn a lot towards the end of a project or course, but throughout the whole project. Not only will the student learn more throughout the process, the student will also be aware of their strengths and weaknesses and know where they can improve early in the process. The continuous learning process is stimulated by feedback sessions held every three weeks. Next to that, the continuous learning process is also supported by their own individual learning goals. This intrinsic motivation of learning a specific skill stimulates the student even more. A motivated student sees education as a privilege not as an obligation.

We believe, every student should be able to choose their own learning path. By choosing your own learning path, you will be more motivated to reach your goals and grow in skills and personal

development. Each student has to write a Personal Development Plan in which the student describes who he/she is and what he/she wants to learn throughout the minor. This means that the student should be able to self-reflect and be aware of the skillset and talents they have. Not only will they be able to discover their talent, but they might find a passion and will work from that.

Regular feedback and reflection moments are more valuable than just final grades, in this way we support talent development of every individual student. Through feedback the students will realize what their strengths and weaknesses are, and how they can develop and grow even further.

Receiving feedback throughout the minor gives students the opportunity to adjust their way of working or attitude and show their qualities. Providing feedback to the students, will give the students the opportunity to strive for more and excel in what they didn't expect. As there is no focus on (final) grades, students will grow along the way throughout the project, rather than growing their focus learning peak in a final exam.

2. Learning in context

We believe the students are able to learn more when they are put into a real-life situation. As the projects are in collaboration with different stakeholders (companies, foundations, universities), the students experience a real-life situation with the stakeholders as client. Students need to plan and manage their own project, making them entrepreneurial and creative engineers. When the outcome of their project is successful enough, they will even realize it in the real world.

3. Sharing knowledge

We believe that every student has a certain set of knowledge and skills. By sharing this knowledge and skill set to the other students within their project, they are able to learn from others and grow in certain learning activities they did not expect. Students are stimulated to share their skills and their learning goals, to see and find where they match and can learn from each other. Because why would you learn something from scratch if someone else can teach you?

5. Enrolment in the education components

Does not apply

6. Overview of tests and registration for tests (see articles 18 and 22 general section of the TER)

As indicated above we focus on 3 main guidelines in the Be Creative minor. The evaluation criteria can be found in Appendix A.

1. Focus on continuous learning, talent and feedback is based on the final PDP report, reflection and 5 intermediate feedback presentations. These are graded by teachers and peers, based on 8 evaluation criteria.
2. Learning in context according project process and content based on final project report. These are graded by teachers, based on 12 evaluation criteria.
3. Sharing knowledge according course material based on given lectures or documentation.

These are graded by the teachers and/or peers, based on 8 evaluation criteria.

The following requirements must be met in order to qualify for the final assessment:

1. The student has written and delivered their Personal Development Plan with specific goals in the first weeks;
2. The student has an overall positive chart, meaning that he showed an overall growth throughout the minor. An overall positive chart means:
 - The student has received *neutral* or *positive* in at least 3 out of 5 feedback sessions;
 - The student did not receive *negative* in the first two feedback sessions.
3. The student has been present at all of the feedback moments;
4. The student has shared knowledge and documented this in his portfolio;
5. The student has kept a blog about the project and personal progress;

6. The student has written a final document containing the following:
 - Personal Development Plan (this plan can be slightly different to the first version);
 - Collection of processed peer- and teacher feedback (as found in the feedback document);
 - Critical self-reflection on the whole project;
 - Group report about the project.
 - Portfolio (based on blog)
7. The student has made a video about their project (1 video per group);
8. Teacher should approve the final documents as mentioned in 6.

At the final assessment, there are three possible outcomes:

- Failure: Student scores less than 15 out of the 28 criteria on sufficient or higher, meaning that the student has failed the minor – no repairing phase is possible.
- Repair: Student scores less than 20 but more than 15 criteria on sufficient or higher. In this case the student is able to enter the repairing phase in agreement with the assessors. Together will be decided what is included to repair the score.
- Success: Student scores 20 or more out of the 28 criteria on sufficient or higher.

7. Passing the minor (see article 19 (3) general section of the TER)

In order to pass to minor the student needs to score at least 20 out of 28 evaluation criteria (Appendix

A) sufficient or higher (based on a bullet scale). The bullet scale resembles the following grading:

O	O	O	O
Insufficient	Sufficient	Good	Excellent

The student will receive either a 30 EC or none (sufficient or insufficient).

8. Examination Board (see article 38 general section of the TER) Exam committee Electrical Engineering
Jan v.d. Linde (chairman)

Henk Mandemaker (secretary)

Tekin Yilmaz (member)

Willem-Jan Verkerk (member)

Marianne Kersten (secretarial assistant)

e-mail: examencommissie-engineering@fontys.nl

8. Validity

This information applies to the academic year 2021-2022.

9. Entry requirements minor

To enter the minor, students should have received a propaedeutic certificate or have permission of the examination committee of their own educational program. We also recommend students to gain experience in working project-based prior to the minor.

10. Not accessible for

Does not apply

No other requirements are to be met for participation in the minor or passing the minor than mentioned in these minor regulations.

Appendix A: Evaluation criteria

Learning objectives:	Level on which the study objective is tested			
	Reproduce	Explain	Apply	Analyze, evaluate, create
1. Focus on continuous learning, talent and feedback (Matrix 1) 2. Learning in context (Matrix 2) 3. Sharing knowledge (Matrix 3)				
1. Focus on continuous learning, talent and feedback according PDP and focus on feedback. Based on final PDP report, reflection and 5 intermediate feedback presentations. (Graded by teachers and peers) <i>Minimal required products:</i> 1. written and approved PDP 2. Overall positive chart 3. Presence at all feedback sessions 4. Blog 5. Portfolio				X
2. Learning in context according project process and content based on final project report (graded by teachers) <i>Minimal required products:</i> 1. Group project report 2. Final presentation + interim presentations 3. Video of the final prototype			X	
3. Sharing knowledge according course material based on shared knowledge and documentation (graded by teachers and/or peers) <i>Minimal required products:</i> 1. Documentation of shared knowledge 2. Evaluation by peers on shared knowledge 3. Reflection on shared knowledge				X

Assessment form 1: Focus on continuous learning, talent and feedback

Learning objectives:	Level on which the study objective is tested	
1. Improvement of (technical) level 2. Approach 3. Working Attitude 4. Social Communicative Attitude 5. Professional Attitude 6. Giving & Receiving Feedback 7. Reflection 8. Presentation skills	Feedback	Rating e.g.: 0 - 0 - ● - 0
1. Improvement of (technical) level The student creates and evaluates an improvement of their technical level throughout the minor. The student creates and evaluates an improvement of their soft skills throughout the minor.		0 - 0 - 0 - 0
2. Approach The student has been working efficiently and result oriented using SMART-goals as described in his Personal Development Plan. The student is able to analyze his social responsibility. The student makes sufficient use of the available approaches. The student shows initiative in developing himself. The student is willing to grasp the ability to learn more than expected.		0 - 0 - 0 - 0
3. Working Attitude The student shows flexible behavior. The student shows a positive working attitude towards his/her learning process.		0 - 0 - 0 - 0
4. Social Communicative Attitude The student communicates clear with other students and stakeholders, and is respected team member. The student is able to collaborate with other students and professionals involved.		0 - 0 - 0 - 0
5. Professional Attitude The student is able to create a planning and works according this planning, if necessary evaluate and adapt planning. The student is able to work independently and is disciplined. The student is able to challenge within his learning goals.		0 - 0 - 0 - 0
6. Giving & Receiving Feedback The student is able to give constructive feedback to team members. The student is able to cope with received feedback and improves himself according to the feedback received.		0 - 0 - 0 - 0
7. Reflection The student is able to reflect upon his (learning) activities. The student is able to evaluate himself and the way he works in order to improve.		0 - 0 - 0 - 0
8. Presentation Skills The student is able to present his reflection and learning goals. The student is able to present with a logical setup, correct structure and valid arguments. The student make use of audio-visual aids in a supporting way. The student is able to communicate well, both oral and non-oral, while presenting.		0 - 0 - 0 - 0

Assessment form 2: Learning in context

Learning objectives:	Level on which the study objective is tested	
1. Technical Level 2. Quality 3. Integration Soft Skills & Hard Skills 4. The Problem Environment 5. The Problem Definition 6. Goal & Requirements 7. Approach Research Framework 8. Design/Research Methods 9. Results/Research Outcomes 10. Conclusions & Recommendation 11. Summarize 12. Readability of Report	Feedback	Rating e.g.: 0 - 0 - ● - 0
1. Technical level The technical level of the student is sufficient enough to successfully execute the project, meaning creating a working prototype.		0 - 0 - 0 - 0
2. Quality The student shows quality within his performed work as a professional.		0 - 0 - 0 - 0
3. Integration Soft Skills & Hard Skills The student is able to apply his soft/hard skills within the project		0 - 0 - 0 - 0
4. The Problem Environment The student is able to clearly analyze the assignment. The student is able to apply the assignment in the proper context. The students is able to identify which stakeholders are professionally involved within the project.		0 - 0 - 0 - 0
5. The Problem Definition The student is able to extract a clear assignment from the problem description. The student is able to identify the opportunities, requirements and constraints from the problem description.		0 - 0 - 0 - 0
6. Goal The student is able to clearly define the goal of the project. The student is able to describe the goal of the project well including the boundary conditions (financial, time, etc.) and the goal has been concretely formulated SMART. The student creates a clear set of requirements he has to comply with.		0 - 0 - 0 - 0
7. Approach Research Framework The student is able to have a well-defined and clear design strategy. The student is able to define a logical and realistic design framework. The student is able to sufficiently motivate his design choices.		0 - 0 - 0 - 0
8. Design/Research Methods The student is able to apply a design method. The student is able to underpin for the choice of material and components. The student is able to take potential manufacturing and production methods into account		0 - 0 - 0 - 0
9. Results/Research Outcomes The student is able to adequately describe the final result. The student is able to match the final result with the requirements as stated in the assignment/goal.		0 - 0 - 0 - 0
10. Conclusions & Recommendation The student is able to reflect and evaluate on the realization of the project The student is able to make conclusions based on proper analytic consideration. The student is able to write relevant recommendations		0 - 0 - 0 - 0
11. Summarize The student is able to clearly describe his project in spoken and written communication by means of a summary.		0 - 0 - 0 - 0
12. Readability of Report The student is able to write a readable report for the target group (both client and teacher).		0 - 0 - 0 - 0

Assessment form 3: Sharing Knowledge

Learning objectives: To share and broaden knowledge by giving class to other team members. <ol style="list-style-type: none"> 1. Preparation 2. Knowledge level 3. Wide Interest Area 4. Quality 5. Learning Goals 6. Presentation & Communication 7. Questions 8. Documentation 	Level on which the study objective is tested	
	Feedback	Rating e.g.: 0 - 0 - ● - 0
1. Preparation The student is able to prepare appropriately for the sharing of knowledge and write a one page proposal		0 - 0 - 0 - 0
2. Knowledge Level The student has sufficient knowledge about the given subject at the moment of sharing his/her knowledge.		0 - 0 - 0 - 0
3. Wide Interest Area The student is able to explain and find relevance of general knowledge for the subject and generate a critical attitude towards this relevance.		0 - 0 - 0 - 0
4. Quality The student shows quality within his performed work as a professional.		0 - 0 - 0 - 0
5. Learning Goals The student is able to formulate the learning goals before the sharing of the knowledge.		0 - 0 - 0 - 0
6. Presentation & Communication The student is able to share knowledge with a logical setup and a correct structure. The student makes use of supporting materials (e.g. audio/visual.) The student is able to communicate well		0 - 0 - 0 - 0
7. Questions The student is able to understand the questions and/or feedback.		0 - 0 - 0 - 0
8. Documentation The student is able to document the shared knowledge so it is reproducible by others.		0 - 0 - 0 - 0

Minor Adaptive Robotics

1. Name minor: Adaptive Robotics (AR)

2. English name: Adaptive Robotics (AR)

3. Content of the minor

The minor Adaptive Robotics (AR) is an innovative minor both in terms of teaching form and the related examination method. The minor is talent-based and there is considerable focus on talent development among the individual students. The minor will be taught in English.

The minor consists of an intensive kick-off phase (lasting 2 weeks) followed by an orientation phase (of 3 weeks). During these phases, the students will be given assignments (individually and in groups) and will receive teaching in the following modules:

- ROS for Engineers (Robot Operating System)
- Principles of Robotics
- Vision, Sensors & Perception
- Norms, Standards & Safety
- Hardware Abstraction & Embedded Hardware

In each of these subject areas, examination will often be based on the work undertaken, including videos, posters, presentations, development of own teaching material, etc. On that basis, students will demonstrate that they have achieved their own in-depth learning targets.

The knowledge acquired will be applied and expanded within a multidisciplinary group project that will be undertaken during 14 weeks of the minor period. During these 14 weeks, students will spend 4 days a week on their project, and 1 day a week on acquiring in-depth knowledge in classes and workshops. Within specified frameworks, the students will have the opportunity to define their own project, in close consultation with relevant subject lecturers. These projects will be coached by lecturers (both in terms of process and technical content).

The minor offers a new educational model in which students will learn to recognise and use their own talents and in which teaching will be offered in the form of (multiday) workshops.

This minor is suitable for students with a technical background at the engineering level as mechatronics, electronics, ICT, mechanical and automotive. Also students who demonstrate sufficient prior technical knowledge can take part in the minor. This minor is ideal for students open to selfdevelopment,

talent development, technology and who demonstrate a proactive attitude. Following this minor is not recommended for students who have not yet completed their company internship, or who wish to follow more 'traditional' education.

Within the minor AR, students will work on the following competences:

Analysis: Students themselves are capable of defining a project, formulating objectives and drawing up a schedule of requirements. The students will also learn to prepare safety requirements for the product in the module Norms, standards & safety.

Design: Students are capable of producing a design for their (robot) system within their project. Design will also be dealt with in the modules Hardware Abstraction & Embedded Hardware and ROS for Engineers (Robot Operating System).

Realisation: The end product of the project is a working demonstrator. As part of a group, students will be able to build the demonstrator during the course of the project.

Control: Within the project, students will be able to evaluate whether their product complies with the requirements drawn up, and whether it complies with (existing) safety standards.

Management: Students learn to manage a project using the SCRUM method. Every two to three weeks, the students define the tasks in their project, and every two to three weeks deliver a subproduct. The results of each period (sprint) are presented in a project pitch for their fellow students and coaches.

Research: Supervised by coaches, students learn to study the material in depth from the modules that form part of the minor, together with other knowledge needed to implement their main project.

Professionalization: Supervised by coaches, students learn to define (and achieve) their own learning objectives, define their talents and reflect on those talents.

4. Overview of teaching activities in the minor (see article 12 general section of the Teaching and Examination Regulations)

The minor AR consists of four phases:

1. Kick-off (2 weeks): During the kick-off phase, students and lecturers are introduced to one another and to the content of the minor. Students are introduced to mechanics, motor control and motion control, 3D printing and the SCRUM method. The majority of this phase consists of a project (Gripper Case: ARGC6) carried out within a team of 2 to 3 people.
2. Orientation (4 weeks): In the orientation phase, students become conversant with all aspects (modules) of the minor AR. This is achieved on the basis of a series of workshops within the module. The most important (multiday) workshop is learning to work with ROS (Robot Operating System). The students work in groups of 3 to 4 in the Holonomic AGV and FPGA Case (ARHC6), where they build and program a mobile robot with 4 motors using an FPGA for communicating to the motors. This phase is concluded with a project in which students use ROS to control a real robot (Navigation case ARNC6). During this phase, students also start investigating their talents and (in consultation) define the project they wish/intend to carry out in the project phase.
3. Project ARMP6(14 weeks): In the project phase, students use their talents, knowledge and skills within a multidisciplinary team. During the project, they deepen their knowledge of the various modules/subject areas, with the assistance of their coach lectures and their selfdefined learning objectives are tested. Students also develop their talents.
4. Conclusion (1 weeks): In the conclusion phase, students examine their final outstanding learning objectives, conclude the project work and present the project in a symposium. The conclusion phase is integrated with the project and evaluation of the minor.

The minor consists of the following modules:

ROS & Python for Engineers (ROSE6)

ROS (Robot Operating System) is a flexible framework for the development of robot software. It is a collection of tools, libraries, programming constructions and programming agreements. The most important use for ROS is the building of simple, platform-independent, complex robot applications.

Within the module ROS for Engineers, the basic principles and most commonly used tools and software components of ROS are discussed, to assist in the construction of various robot applications. This is using basic Object Oriented programming code in Python. This grants an insight into the possibilities of ROS. The programming of new robot software components is dealt with in the higher levels of this module.

Principles of Robotics (PR6)

Robots are evolving rapidly from factory workhorses, limited physically to their work cells, into increasingly complex machines capable of implementing challenging tasks in a day-to-day environment. The aim of this module is to understand the basic concepts and algorithms on which the development of mobile robots and robot arms are based. The focus is on mobile travel and arm kinematics, observation of the environment, localisation and the production of a model of the environment (map) and path planning.

Vision, Sensors & Perception (VSP6)

A traditional robot in manufacturing industry is programmed to carry out a specific task, for example blindly picking up or setting down an object. The robot observes nothing of what is going on in its environment, and to protect factory workers, the robot is placed in a cage. An adaptive robot observes its environment with sensors such as cameras, laser range finders and with ultrasonic systems, and is required to act in a changing environment. This may be the observation of a factory worker or perceiving whether there is a cup of coffee on the draining board in a house. In this module, a series of camera and observation techniques are discussed (1D, 2D and 3D), together with a number of filter techniques, aimed at extracting relevant information from sensor data.

Norms, Standards & Safety (SAFE6)

Machines and robots are required to comply with a series of regulations and standards. For industrial robots (fixed in their cell), these standards are already available (i.e. ISO10218-1 and ISO10218-2). For the next generation of robots (e.g. mobile platforms that move freely or robots that collaborate with

other robots and people), these standards are currently being defined. In this module, students will be introduced to the world of standards, and will learn the basic principles of designing safe machines/robots both for industrial applications and for the next generation of robots.

Hardware Abstraction & Embedded Hardware (HA6)

In this module, students will be taught how robot hardware, such as actuators and sensors can be combined using ROS and how abstraction from this hardware is possible, for ROS. Students learn which design choices they have to make in order to implement hardware abstraction for example for embedded systems or industrial buses. Students will learn about:

- different types of actuator
- motor controllers
- position sensors on wheels and joints
- image sensory systems and distance sensory systems
- the translation of sensor signals
- the translation of motor commands

The minor also includes a talent line. In this talent learning line, students are taught to understand and recognise their talents, by talent coaches. They also learn to recognise obstacles in their day-to-day life to making full use of their talents. A talent is different from a competence. A competence can for example be design. A talent could for example be 'bridge builder' or 'pointing out someone's errors'. Talents can support competences and can be deployed for acquiring competences, or implementing competences in a particular manner.

Adaptive Robotics Minor	Code S6	Points to Achieve	3 years study Engineering
Kick off Phase		1	2 weeks
Gripper Case	ARGC6	1	weeks 1 and 2
Orientation Phase		9	4 weeks
Holonomic AGV and FPGA Case	ARHC6	2	weeks 3 and 4
Navigation Case	ARNC6	2	weeks 5 and 6
ROS & Python for Engineers	ROSE6	1	weeks 2 to 6
Principles of Robotics	PR6	1	weeks 2 to 6
Vision, Sensors & Perception	VSP6	1	weeks 2 to 6
Hardware Abstraction & Embedded Hardware	HA6	1	weeks 2 to 6
Norms, Standards & Safety	SAFE6	1	weeks 2 to 6
Core and evaluation phase		Up to 25	14 weeks
AR Minor Project	ARMP6	0	weeks 7 to 20
ROS & Python for Engineers	ROSE6	up to 7	for getting 5 or 7 points in a subject, you must define and agree with the teacher your assignment before the end of week 17
Principles of Robotics	PR6	up to 7	
Vision, Sensors & Perception	VSP6	up to 7	
Hardware Abstraction & Embedded Hardware	HA6	up to 7	
Norms, Standards & Safety	SAFE6	up to 7	
Talent	ART6	0	Must be applied during the minor.

Note: To pass the Adaptive Robotics Minor you must get a minimum of 22 points and pass ARGC6, ARHC6, ARNC6, ARMP6 and ART6.

Figure 1. Short description of the Adaptive Robotics minor

5. Registration for teaching activities in the minor

Registration for this minor is possible via ProgressWWW (Fontys internal) or kies-op-maat (external) up to 1 month prior to the start of the minor.

6. Minor examination and registration for examinations (articles 18 and 22 general section of the Teaching and Examination Regulations)

Within the minor AR, five technical modules have been defined: Principles of Robotics, Vision & Perception, Norms, Standards & Safety, Hardware Abstraction & Embedded Hardware and ROS for Engineers (robot programming). Within each module, a student can achieve 4 levels. Learning objectives have been defined for each level, by a subject-competent lecturer (also the module owner). These learning objectives have been defined according to the Taxonomy of Bloom and range from understanding (level 1) through to application (level 2-3) and analysis/evaluation/ creation (level 4). The students are required to achieve at least level 1 for each module. Students can then opt to specialise further within the 5 modules. This further learning is based on a personal learning plan.

Learning objectives include:

Beginner: The student is able to explain such terms as SLAM, Kinematics, holonomic, omniwheel (Principles of Robotics)

Novice: The student is able to apply the key safety principles in system development (Safety)

Intermediate: The student is able to program a robot using software modules not discussed in class (ROS)

Expert: The student is able to combine information from a number of sensors to create an accurate 3D image of the environment (Vision)

Learning objectives for levels 1 and 2 are fixed for each module. For levels 3 and 4, students can attempt to achieve the learning objectives defined in advance, or select their own learning objectives (with a comparable degree of difficulty). These learning objectives must then be approved by the relevant module owner. A student cannot skip any levels; if a student wishes to achieve the learning objectives of level 4, he must first achieve the learning objectives of level 3.

For each technical module, examinations have been laid down for achieving level 1 and 2, that are the same for everyone. These learning objectives are examined for example via projects, video presentations, standard presentations and poster presentations. To achieve the learning objectives for levels 3 and 4, agreements must be reached concerning the form and submission method, with the module owners in question. Certain learning objectives can be examined according to specific work pieces undertaken by the student within his group project. Within the group project, each student has their own tasks. These are defined by the students themselves. Each student who design, developed and test of a robotics ROS compatible system can in this way demonstrate his learning objectives for example for level 3 or level 4 of the module ROS for engineers. The student is required to reach agreements on the demonstration requirements with the module owner. The module owner will determine whether the intended level has been achieved according to the work, the documentation and possibly additional explanation (e.g. viva) of the student.

Students can also opt to demonstrate learning objectives in the form of work that goes beyond the project. This can for example be achieved by producing a teaching module on a particular subject that relates to the learning objective and is approved by the module owner. An item of evidence must be presented with every examination.

The progress of the group projects is examined on the basis of two to three-weekly project pitches, in which students talk about what they have achieved and describe their next steps.

Talent education is concluded with a poster and video presentation in which the student demonstrates those areas in which he has achieved personal growth within this minor (which talents he has learned to recognise and how he has made use of those talents within the project).

There are no fixed intervals/moments for students, at which they 'complete' their subjects. In other words, the level can be determined at any moment the student and lecturer consider suitable (this will facilitate greater flexibility in the learning process). It does however mean that any retakes (of opportunities to demonstrate a level achieved) must always take place during the course of the minor, in consultation with the relevant lecturer(s).

7. Concluding the minor (see article 19, lid 3 general section Teaching and Examination Regulations)

If a student passes a level (learning objectives) within a module, points will be awarded. If the student has reached beginner level for all modules, he will be awarded 5 points. At the end of the minor, the student must have scored at least 22 points. He or she is therefore required to achieve a number of new learning objectives, and specialise in a number of modules. For each level achieved, the student will be awarded 2 additional points. For example:

Subject	Level	Points
ROSE6	4	7
PR6	2	3
VSP6	2	3
HA6	2	3
SAFE6	1	1
ARGC6	passed	1
ARHC6	passed	2
ARNC6	passed	2
Total		22

In the Kick-off phase, students participate in groups of 2 or 3 members in the Gripper case (ARGC6), if they meet the minimum requirements established for the competition, they are awarded 1 points.

In the orientation phase, students participate in the Holonomic AGV and FPGA Case (ARHC6) and in the navigation case (ARNC6), if they meet the minimum requirements for each competition they are

awarded 2 points per competition, so a total of 4 points.

In addition to individual learning objectives and to the gripper and navigation case, students must also successfully complete their group project. This is evaluated according to the following elements:

- is the technical level of the finished product sufficient
- is the work attitude within the group sufficient
- are the project results sufficiently described (technical reporting of the entire project)

These requirements are assessed by the group tutor. The specific criteria are announced to the students at the start of the minor.

Talent development is subject (among others) to the following specific learning objectives:

1. You are able to explain how talent influences your work in a project team
2. You are able to explain how you intend to use the knowledge and experience of the talent in applying for a suitable job.

You are able to explain clearly what your unique personal professional development you have undergone.

The minor will conclude with an overall assessment, and no ECs will be allocated for each individual module.

8. Board of Examiners (article 38 general section Teaching and Examination Regulations)

Fontys School of Engineering acts as secretary for this minor. As a result, the Board of Examiners of the Fontys School of Engineering will determine whether the student has passed the minor and ensures that the student receives a certificate. The Board of Examiners is composed as follows:

Chair: Jan van der Linde

Secretary: Wim v.d. Laak

Members: Joep Adamczyk, Max Bogers, Piet van Loon, Jan van Schijndel

The Board of Examiners can be contacted by e-mail (examencommissie-engineering@fontys.nl) for information about additional facilities and examination of the minor.

9. Validity

This information is valid for academic year 2021-2022.

Explanatory notes: interim changes to a minor are possible on condition they are clearly communicated to the students, and included in the minor regulations.

10. Admission requirements minor

To be able to participate in this minor, the student must have completed the foundation course phase and S3 and S4, or have received permission from the Board of Examiners of his study programme, to participate in the minor.

Furthermore, this minor is only open to students of a technical study programme in higher professional education (Engineering or ICT) and students who demonstrate a technical background at higher professional education level.

There are 40 places available in the minor. Therefore students are required to write a motivation letter of maximally 2 pages explaining why he/she wants to participate in this minor and his/her educational and professional technical background and affinity with robotics. Based on this motivation letter the participants of this minor will be selected. Students will receive notice the latest 1 month prior to the start of the minor.

11. Not open to:

Students with no demonstrable technical background at higher professional education level.

No other requirements for participation and completion of the minor are imposed on students, than those laid down in the minor regulations presented in this document.

Minor SPDAM Regulations - 2021-2022

1. Name minor:

Smart Product Development Additive Manufacturing (SPDAM)

2. English name:

Smart Product Development Additive Manufacturing (SPDAM)

3. Content of minor

The minor Smart Product Development with Additive Manufacturing (SPDAM), an in-depth technical minor on 3D-printing. You will achieve competences –a combination of practical and theoretical knowledge, practical and cognitive skills, and behavior and values– enabling you to work in an additive manufacturing (AM) environment. The program learning goals are stated below:

- You will learn about the possibilities and limitations of AM-machines, and how to help companies (e.g. high tech industry, medical) to implement this new production technology.
- You will attain skills in the engineering design process:
 - systematic approach from function to solution,
 - in the field of mechanical, thermal, and flow product structures.
- You will be able to use specialized software packages for drawing, modelling, analysis, and simulation.
- You will learn about selecting materials and production technologies, and gain skills to operate different types of AM-machines and associated equipment:
 - properties of a machine
 - material science tests
 - occupational health and safety issues

Unit	Contents
Theory module	Design for Additive Manufacturing (DFAM) Design guidelines, Topology optimization, Economic aspects, Killer application identification (practice).
Practicals module	Practical Skills for Additive Manufacturing (PSAM) Hands-on experience in the lab with AM-equipment, Reverse engineering, Production preparation, Post processing, Testing materials and printed parts, Using specialized software (e.g. Materialise Magics), Occupational health and safety issues.
Theory module	Production technology and Materials (PM11) Properties of materials for AM, Heat treatment, Testing of materials. Conventional (lathes, milling, welding) versus additive processing, Different types of AM-machines, Support structures, Production flow.
Computer Module	Stress analysis and Optimization (CM11) Theoretical background and practical skills in finite element method. Modelling, analyzing, and optimizing mechanical stress by topology optimization in a product using professional software.
Computer Module	Heat and Flow analysis (EP11) Principles of heat and flow transfer. Theoretical background and practical skills in finite element method. Modelling and analyzing heat and/or flow, e.g. in a heat exchanger or injection mold, using professional software.
Project	Integrated Product Development (IPDAM) Project assignment from different companies (High Tech Systems, Medical, or General), which involves analyzing, designing, building and testing a product in which AM can deliver a superior solution.

3.1 Summary for diploma supplement

The minor Smart Product Development with Additive Manufacturing (SPDAM) is an in-depth technical minor on 3D-printing where learned a combination of practical and theoretical knowledge, practical and cognitive skills, and behavior and values– enabling to work in an additive manufacturing (AM) environment. The possibilities and limitations of AM(-machines), and how to help companies (e.g. high tech industry, medical) to implement this new production technology.

4. Education components (see article 16 general section of the TER)

Code	Title / Examination	Study load and contact hours
DFAM DFAM1 DFAM2	Design for Additive Manufacturing Written exam (individual) 100 minutes Re-designed part, presentation, report	DFAM: 112 hours total = 5.6 hr/week (4 EC)
PSAM PSAM1 PSAM2	Practical Skills for Additive Manufacturing Practical assignments and participation Practical assignments and participation	PSAM: 112 hours total = 5.6 hr/week (4 EC)
PM11 PM11T1 PM11T2	Production technology and Materials Written exam (individual) 100 minutes Written exam (individual) 100 minutes	PM11: 112 hours total = 5.6 hr/week (4 EC)
CM11 CM11P1 CM11P2	Stress analysis and Optimization Practical assignments Project + written exam (individual) 100 minutes	CM11: 112 hours total = 5.6 hr/week (4 EC)
EP11 EP11P1 EP11P2 EP11P3	Heat and Flow analysis Practical assignment heat Practical assignment flow Project	EP11: 112 hours total = 5.6 hr/week (4 EC)
IPDAM IPDAMP1 IPDAMP2	Project Integrated Product Development with Additive Manufacturing	IPDAM: 280 hours total = 14 hr/week (10 EC)

5. Enrolment in the education components

Does not apply n.v.t.

6. Overview of tests and registration for tests (see articles 18 and 22 general section of the TER)

Code	Title / Examination	Grading
DFAM DFAM1 DFAM2	Design for Additive Manufacturing Written exam (individual) 100 minutes Re-designed part, presentation, report	(DFAM1 + DFAM2) / 2 ≥ 55% Grade: 10-100% Grade: 10-100%
PSAM PSAM1 PSAM2	Practical Skills for Additive Manufacturing Practical assignments and participation Practical assignments and participation	(PSAM1 + PSAM2) / 2 ≥ 55% Grade: 10-100% Grade: 10-100%
PM11 PM11T1 PM11T2	Production technology and Materials Written exam (individual) 100 minutes Written exam (individual) 100 minutes	(PM11T1 + PM11T2) / 2 ≥ 55% Grade: 10-100% Grade: 10-100%
CM11 CM11P1 CM11P2	Stress analysis and Optimization Practical assignments Project + written exam (individual) 100 minutes	(CM11P1 + CM11P2) / 2 ≥ 55% Grade: 10-100% Grade: 10-100%
EP11 EP11P1 EP11P2 EP11P3	Heat and Flow analysis Practical assignment heat Practical assignment flow Project	EP11P1 + EP11P2 = 'sufficient', then EP11 = EP11P3 Grade: insufficient / sufficient Grade: insufficient / sufficient Grade: 10-100%
IPDAM IPDAMP1 IPDAMP2	Project Integrated Product Development with Additive Manufacturing	≥ 55% (all parts, also individual)

- Written exams are provided in the Dutch language.
- Enrolment for the exams (regular & resit) are automatically done by the organization for all students

7. Passing the minor (see article 19 (3) general section of the TER)

See table, section 6. All parts (DFAM, PSAM, PM11, CM11, EP11 and IPDAM) of the minor must be completed successfully. Sign up through Kies op Maat (<https://www.kiesopmaat.nl>), each module within be terminated whit a 5.5 or higher and the endscore will be:

$$\frac{((\text{DFAM score}/840 \times 112) + (\text{PSAM score}/840 \times 112) + (\text{PM11 score} /840 \times 112) + (\text{CM11 score}/840 \times 112) + (\text{EP11 score} /840 \times 112) + (\text{IPDAM score} /840 \times 280))}{6} = \text{Endscore minor SPDAM}$$

8. Examination Board (see article 38 general section of the TER)

Exam committee Mechanical Engineering

E-mail: examencommissie-engineering@fontys.nl

Wim Broekman (chairman)
 Karin van Krijl (secretary)
 Jan van Schijndel (member)
 Ton Gielen (member)
 Esther Vinken (member)
 Gisela Greijmans (secretarial assistant)

Centrale examencommissie

Email: examencommissie-eng-aut@fontys.nl

Chairman: Jan van der Linde

9. Validity

Deze informatie geldt voor het studiejaar 2021-2022

10. Entry requirements minor

- Entry requirements based on an engineering/technical bachelor study, such as Mechanical engineering, Mechatronics, Automotive, or Applied Physics.
- The student must be registered with one of the aforementioned studies and have completed the propedeuse.
- Only Dutch language

11. Not accessible for

Students from programs other than **Mechanical engineering, Mechatronics, Automotive, or Applied Physics*** are excluded from participation.

*See section 10.

Minor Motorsport

Minorregeling Motorsport Engineering

1. Naam minor: Minor Motorsport Engineering.
2. Engelse benaming: Minor Motorsport Engineering.
3. Inhoud minor/samenvatting voor diplomasupplement:

In de Minor leert de student allereerst theoriecomponenten om in de motorsport industrie te kunnen werken. Die vijf specifieke vakken zijn:

- *Datalogging,*
- *Engine performance,*
- *Vehicle dynamics,*
- *Aerodynamics,*
- *Structural design.*

De theorie die in deze vijf vakken aan bod komt is toegespitst op de projecten die in de tweede periode van de motorsport minor gekozen kunnen worden. Daarin zal de student in een multidisciplinair team in staat worden gesteld om het opgestelde project binnen de tijd te voltooien met een voldoende resultaat.

4. Overzicht onderwijsactiviteiten minor (zie artikel 16 algemeen deel van de OER)

De minor bestaat uit een eerste periode van theorie en een tweede periode met daarin een project. In die tweede periode komt de geleerde theorie samen met de praktijk. De omvang van de theorie en het project is beide 420 SBU waardoor het totaal komt op een totaal van 840sbu.

Een totaal van 30 studiepunten wordt toegekend na het succesvol afronden van alle onderdelen.

De minor is toegankelijk voor studenten van de volgende Engineering studies:

Automotive, Werktuigbouwkunde, Mechatronica, Elektrotechniek, en techniekstudenten van andere hogescholen kunnen zich voor de minor inschrijven.

Studenten dienen voldoende algemene Engineerings kennis te hebben om deel te kunnen nemen aan de minor.

Semester 6 Minor Motorsport Engineering:

- *Motorsport gerelateerde vakken;*
 - o *84 SBU per vak*
 - o *Totaal 420 SBU*
- *Project met daarin;*
 - o *Systeemdenken*
 - o *V-model*
 - o *Eindproject*
 - o *Totaal 420 SBU*
- *In het eindproject komen de onderwerpen van de theorie vakken weer aan bod.*

5. Aanmelding onderwijsactiviteiten minor

Behaald propedeuse certificaat

6. Toetsing minor en aanmelding voor toetsen (artikel 18 en 22 algemeen deel OER)

De Minor Motorsport Engineering maakt geen gebruik van toetsen maar het gemaakte werk gedurende de theorie periode wordt individueel beoordeeld. De projecten en werkzaamheden lopen gedurende de

geroosterde toetsweken door, wel is het mogelijk om je af te melden voor lessen i.v.m. hertentamens van je major opleiding.

Beoordelingen vinden plaats op basis van het ingeleverde huiswerk, de verslagen per studieonderdeel en de opgeleverde onderdelen zoals gespecificeerd in de projectopdrachten. Ingeleverde onderdelen moeten met een voldoende worden afgesloten.


Beoordeling vindt plaats op basis van rapportage van het project waarin de individuele bijdrage van iedere student te herkennen valt, beoordeeld door de projectbegeleider van de Minor Motorsport en de opdrachtgever van het specifieke project.

Publicatie resultaten

De cijfers, beoordelingen, etc. over afgesloten onderwijsperioden zullen gecommuniceerd worden via portal.fontys.nl. Na publicatie van de cijfers heeft de student 2 lesweken, na de uiterste publicatiedatum, de mogelijkheid om inzage van het gemaakte werk te vragen bij de docent. Na deze periode worden de cijfers als definitief vastgesteld beschouwd.

7. Minorafronding (zie artikel 19, lid 3 algemeen deel OER)

Overzicht van de te beoordelen lesmodules:

	Module	Soort beoordeling	Periode 3	Periode 3	Periode 4	Periode 4
MEP	Minor Engine Performance	Huiswerk/Verslag/Project	x	x		
MDA	Minor Data Aquisitie & Analyses	Huiswerk/Verslag/Project	x	x		
MVD	Minor Vehicle Dynamics	Huiswerk/Verslag/Project	x	x		
MSD	Minor Structural Design	Huiswerk/Verslag/Project	x	x		
MVA	Minor Vehicle Aerodynamics	Huiswerk/Verslag/Project	x	x		
MTP	Minor Technical Projects	Deliverables, projectverslag & urenverantwoording			x	x

Het eindcijfer van de minor wordt met een cijfer bepaald, (1 – 10)

8. Examencommissie (artikel 38 algemeen deel OER)

Voorzitter kamer Automotive	Edgar van de Laak
Secretaris kamer Automotive	Resi Fuchs
Lid en plaatsvervangend secretaris, opleidingsdeskundige voltijdopleiding	Rob Gulikers
Lid en plaatsvervangend voorzitter, opleidingsdeskundige voltijdopleiding	Ted Wonders
Ambtelijk secretaris (gecombineerd met lidmaatschap examencommissie, secretaris)	Resi Fuchs

9. Geldigheid

Deze informatie geldt voor het studiejaar 2021-2022.

Toelichting: tussentijdse wijzigingen van een minor zijn mogelijk, mits deze duidelijk gecommuniceerd worden met studenten en ook worden opgenomen in de minorregeling.

10. Ingangseisen minor

Om te kunnen deelnemen aan de minor moet de student de propedeuse behaald van een engineering opleiding hebben of toestemming hebben van de examencommissie van zijn major opleiding om de minor te volgen.

11. Niet toegankelijk voor: NVT

Minorregeling - Electric Drive

2020-2021

1. Naam minor: Minor Elektrisch Rijden (MER)

2. Engelse benaming: Minor Electric Drive (MED)

3. Inhoud minor

In de Minor Elektrisch Rijden leert de student alle ins en out betreffende elektrische voertuigen, de theorie die hier aan bod komt is:

Power units

Electronics en

Communication

Battery technology

and management

Vehicle design and

simulation

Aerodynamics

Project

Management &

Reporting

Gastcolleges (Fuel Cell Technology, Functional Safety Engineering,

Packaging & Layout EV's, Promotion & Website)

Daarnaast bestaat het merendeel van de minor uit een omvangrijk project met een "challenge":

Dit project is een onderdeel van de ontwikkeling van een solar voertuig voor het Fontys Studenten team ter deelname aan de Bridgestone World Solar Challenge en/of iLumen European Solar Challenge. Het studententeam i.o wordt gesponsord door ACE mobility.

Samenvatting voor diploma supplement

In de minor Elektrisch rijden leert de student alle aspecten kennen van elektrische aandrijvingen in voertuigen. De student maakt hierbij deel uit van een multidisciplinair team welke werkt aan de ontwikkeling en of verbetering van een elektrische aandrijving. Hierbij maakt de student kennis met de hedendaagse relevante technologieën die noodzakelijk zijn voor elektrisch rijden. De elektrische aandrijving is hierbij een complex systeem waarin energiemangement, energieopslag, control en terugwinning en interfacing in het voertuig geïntegreerd ontworpen zijn. Bij de afronding van de minor is de student in staat om moderne elektrische aandrijvingen te beoordelen op prestatie, efficiency en toepasbaarheid.

4. Overzicht onderwijsactiviteiten minor (zie artikel 16 algemeen deel van de OER)

De minor bestaat uit een project waarin theorie en praktijk integraal aangeboden worden met een totaal omvang van 840 SBU (30 EC), de verdeling is 12 EC theorie en 18 EC project.

Een totaal van 30 studiepunten wordt toegekend na het succesvol afronden van het project en toetsen/opdrachten voor de theorievakken.

Techniekstudenten van de studies Werktuigbouwkunde, Mechatronica, Elektrotechniek, Automotive, Techniek & Logistiek en techniekstudenten van

andere hogescholen, kunnen zich voor de minor inschrijven. Studenten dienen voldoende voorkennis te hebben van de theorie die aan bod komt.

5. Aanmelding onderwijsactiviteiten minor n.v.t.

6. Toetsing minor en aanmelding voor toetsen (artikel 18 en 22 algemeen deel OER)

De Minor Elektrisch Rijden maakt geen gebruik van tentamens.

Het theoriedeel wordt beoordeeld met opdrachten welke door de desbetreffende docenten worden beoordeeld. Deze beoordeling maakt deel uit van de individuele eindbeoordeling van de Minor.

Beoordelingen vind plaats op basis van per team volledige rapportage van het project waarin de individuele bijdrage van iedere student te herkennen valt, beoordeeld door de Minor Coördinator metaansluitend een volledige peer assessment van alle project deelnemers.

OVERZICHT MINOR ELECTRIC DRIVE			TOETSING			
Hoofdgroep	Vakcode	Benaming	Toetswijze	Deliverable	Score	Weging
Building	EDMP	Materials & Production	Aanwezig & Deelname aan opdrachten in de les	uitwerking	O-V-G	voorwa
Electric	EDPV/SG	PV systems & Smart Grid	4 opdrachten in de les (transitiemodel, debate future mobility, meting zonnecellen, programmeren RP6)	verslag, presentaties, contest	1-10	6,
	EDPU	Power Units	Practicum en opdracht	uitwerking	1-10	6,
	EDBM	Battery Management	Practicum en opdracht	uitwerking	1-10	6,
	EDFC	Fuel Cells	Aanwezig & Deelname		O-V-G	voorwa
System	EDEC	Electronics & Communication	Toets op 23 maart	toets	1-10	6,
	EDBP	Basic Programming	Aanwezig & uitvoering opdrachten in de les		O-V-G	voorwa
Construction	EDAK	Automotive Knowledge	Aanwezig & Deelname		O-V-G	voorwa
	EDG1	Gastcollege FC2 - TNO	Aanwezig & Deelname		O-V-G	voorwa
	EDAS	Aerodynamics Simulation	Praktische opdracht	uitwerking	1-10	6,
Verification	EDG2	Gastcollege Packaging & Lay-out VIRO	Aanwezig & Deelname aan opdrachten in de les		O-V-G	voorwa
	EDG3	Gastcollege FSE – RAI	Aanwezig & Deelname aan opdrachten in de les		O-V-G	voorwa
	EDSAF	Electric Safety	Aanwezig & Deelname aan opdrachten in de les		O-V-G	voorwa
	EDVD	Vehicle Dynamics	Aanwezig & Deelname aan opdrachten in de les	uitwerking	O-V-G	voorwa
Human Dynamics	EDPM	Project Management	Aanwezig & Deelname aan opdrachten in de les		O-V-G	voorwa
	EDDS	Design & Simulations	Aanwezig & uitvoering opdrachten in de les	uitwerking	1-10	6,
	EDHD	Human Dynamics	Aanwezig & Deelname		O-V-G	voorwa
	EDG4	Gastcollege Video & Website – ACE	Aanwezig & Deelname		O-V-G	voorwa
	EDPR	Project Reviews	Aanwezig & bijdrage aan reviews (PR/DR/TR)	ppt, reports	O-V-G	voorwa
	PROJ	Project Execution, part 1	Deel v. EDPM @ project initiatie (startup wk1 - 8) (Fulltime wk 9-20) Check van opleveringen (zoals aangegeven in PvA) => Assessment	PvA, PvE	1-10	6,
	PROJ	Project Execution, part 2	Beoordeling rapportage op rapportagetechniek	HW/SW/tests/ reports, demo	1-10	53,

7. Minorafonding (zie artikel 19, lid 3 algemeen deel OER)

Het eindrapport van de minor wordt met een cijfer beoordeeld, (1 – 10)De student zal of 30 studiepunten halen of geen.

8. Examencommissie (artikel 38 algemeen deel OER)

De centrale examencommissie Engineering en Automotive

Voorzitter kamer Automotive	Edgar van de Laak
Secretaris kamer Automotive	Resi Fuchs
Lid en plaatsvervangend secretaris, opleidingsdeskundige voltijdopleiding	Rob Gulikers
Lid en plaatsvervangend voorzitter, opleidingsdeskundige voltijdopleiding	Ted Wonders
Ambtelijk secretaris (gecombineerd met lidmaatschap examencommissie, secretaris)	Resi Fuchs

9. Geldigheid

Deze informatie geldt voor het studiejaar 2020-2021.

Toelichting: tussentijdse wijzigingen van een minor zijn mogelijk, mits deze duidelijk gecommuniceerd worden met studenten en ook worden opgenomen in de minorregeling.

10. Ingangseisen minor

Om te kunnen deelnemen aan de minor moet de student de propedeuse behaald van een engineeringopleiding hebben of toestemming hebben van de examencommissie van zijn opleiding om de minor te volgen.

11. Niet toegankelijk voor:

n.v.t.

Programme Feasibility, Study Load, and Testing for FHENG TU/e Pre-Master's HBO Top Programmes

In collaboration with the Technical University Eindhoven (TU/e), Fontys provides programmes for HBO students in which courses can be taken at the TU/e during the HBO programme that are part of the Pre-Master's programme. This type of programme is also referred to as HBO Top. The admissibility of students is subject to strict requirements determined in consultation with the TU/e. By completing a sufficient number of courses, students are given the opportunity to start directly in one of the Master's programmes at the TU/e after obtaining their HBO certificate.

Background and Definition of the Problem

The various Pre-Master's programmes between universities and HBO programmes vary in scope (see <http://doorstroommatrix.nl/>). It may also be the case that, for logistical reasons and/or programme feasibility reasons, the time span within which the minimum ECTS of additional study load must be completed within the Pre-Master's programme is extended. The TU/e has an HBO Master's track of 150 ECTS which equals a study load of 2.5 years. However, this track spans 3 years. It should be noted that at least in the Master's for Electrical Engineering, Mechanical Engineering, and Systems & Control, this is not done for logistical reasons but in order to guarantee the programme's feasibility. This was confirmed in the annual evaluation meeting that takes place between the TU/e and all Fontys HBO programmes involved in an excellence programme. It is too expensive to provide specific HBO/TU Pre-Master's courses. HBO students are therefore expected to make an extra effort on top of the standard curriculum in the Pre-Master's phase because the theoretical study load of 30 ECTS is not considered feasible to complete in one semester in practice by the TU/e. During the regular 3-year programme, this is covered by providing a 150 ECTS programme over a period of three years.

Since the HBO Top programmes consist of the same Pre-Master's courses that are taken during the minor phase, this creates a problem in regards to the study load to be accounted for in ECTS.

In the Engineering department, a meeting took place on 1 December 2016 between the then Chair of the Central Examination Board: Els Lenssen, member of the Central Examination Board: Max Bogers, and the three excellence programme coordinators for each Engineering programme Willem-Jan Verkerk (Electrical Engineering), Willem van de Groep (Mechanical Engineering), and Nelis van Lierop (Mechanical Engineering). During this meeting, the issue of the feasibility of the HBO Top programme was discussed and a possible solution was defined whereby this minor variant is built up from a part to be allocated by the TU/e and a part to be allocated and tested by Fontys.

Proposal

The HBO Top programme coordinators are mandated by the MT to formulate learning agreements for the various HBO TOP programmes. These learning agreements are used to create a composition minor. The learning agreements to be defined by the coordinators of the excellence programme must meet the following requirements:

1. The agreement must contain at least 20ECTS of TU/e courses that are part of the HBO Top programme applicable to the student. The programme coordinator must ensure that courses which are part of the learning agreement are not used to apply for exemptions from courses in the Fontys Bachelor's programme.
2. The agreement must include a Fontys module of 10 ECTS called "Academic Skills". The structure of the content and the description of the module is included below.
3. By successfully completing the above parts of the composition minor, the student completes their minor phase as part of the Fontys programme.
4. For each programme type there is a programme description in which the content, preliminary conditions, and criteria are established.

Academic Skills Module Description

The Fontys lecturers responsible for this module are the excellence programme coordinators of the engineering programmes as mandated by the MT.

Size of the module: 10 ECTS*

*It is not always possible to create a total of exactly 20 ECTS of relevant TU/e courses within a TU/e semester. It is possible that a student has to obtain more than 20 ECTS of TU/e courses. When more than 20 ECTS of TU/e courses are included in the minor learning agreement (see Appendix I), the courses and the Academic Skills module add up to more than 30 ECTS. However, the total number of EC for the total composition minor in that case amounts to 30 ECTS. It is the student's responsibility, in consultation with their study career advisor and the programme coordinator, to compose a realistic and feasible programme that includes at least 20 ECTS of TU/e courses.

The “Academic skills” module includes the following learning goals/competence development:

- The student must gain experience with large-scale lectures and instructional lesson models.
- The student must be able to independently analyse scientific literature in order to gain lacking previous experience.
- The student must have sufficient knowledge of the English language to be able to study English-taught academic-level courses and materials independently.
- The student must be able to conceptualise abstractly on an academic level.
- The student must be able to observe and reflect at an academic level.
- The student must be able to solve analytical problems independently at an academic level.
- The student must be able to formulate and report mathematical proof at an academic level.

The testing for achieving the above learning goals is done by means of an oral examination in which the student has to present and be able to defend the necessary evidence using a portfolio. The student must therefore demonstrate that they have been able to take level 5 modules at academic levels 6 and 7 of the European Qualifications Framework. This examination is carried out by the HBO Top coordinator mandated by the Examination Board as the first examiner. This mandate is defined in this document. The examination and its results shall be documented using the form included in Appendix II. In order for the HBO Top coordinator, as the sole examiner, to be able to administer the oral examination, this form also requires the student's consent in accordance with Article 17, paragraph 4 of the TER.

Procedure

The procedure to complete and formalise the free composition minor described here is as follows:

1. In consultation with the student, the mandated HBO Top coordinator will formulate a learning agreement in accordance with Appendix 1.
2. After the successful completion of the modules agreed in the learning agreement at the TU/e, an oral assessment will take place which will be administered by the HBO Top coordinator as first examiner and a second examiner appointed by the HBO Top coordinator. In preparation, the student submits:
 - Authenticated original TU/e list of grades of all completed courses included in the learning agreement.
 - Proof of the obtained Academic Skills by means of a portfolio. The composition of this portfolio is the student's responsibility and may consist of but is not limited to: self-reflection, proof of developed professional skills, written papers/articles/reports, etc.
3. If the assessment has been successfully completed, the programme coordinator must complete and sign the assessment form in Appendix II.
4. The student submits the signed test form, original authenticated list of grades, additional evidence, and portfolio material to the Operations Office
5. The Operations Office performs the following actions:
 - All the proof is entered into TRIM
 - The EC obtained are registered in the Progress portal in accordance with the structure below:
 - 43MINATOP – 30 ECTS – **Pre-Master's minor** (name of the minor on the diploma)
 - 43MINAHBOTP – 20 ECTS
 - 43MINAAV – 10 ECTS

The above coding has been determined in consultation with the Operations Office in accordance with the following structure:

- **43MINATOP**: 43MIN = Minor identifier for the institute (43)
- 43MINATOP: revision A. In the case of major changes (e.g. major changes in content or changes in study load)
- 43MINAHBOTP: study load from the TU/e modules of ≥ 20 ECTS
- 43MINAAV: Academic Skills module from Fontys of 10 ECTS.

Appendix I: Learning Agreement for the HBO Top Free Composition Minor

See next page (to allow for the entire document to be included as it was originally).

The red text has to be adjusted individually.

FIELD OF STUDY: "Name Fontys education"

Name of student:

Sending institution: Fontys University of Applied Sciences

DETAILS OF THE PROPOSED STUDY PROGRAMME:

"HBO excellence program Fontys Engineering name field of study and Eindhoven University of Technology (TU/e) name TU/e master"

Course unit code (if any)	Course unit title	Number of ECTS credit
	List of TU/e courses (min. 20ECTS)	
	Academic skills (Fontys course)	10
	Total	30*

*If the individual courses amount to more than 30ECTS, the total number of EC that will be registered for the Fontys minor is still limited to 30 ECTS.

Student's signature

Date:

SENDING INSTITUTION

We confirm that this proposed programme of study/learning agreement has been approved.

Excellence Programme Coordinator**:

Signature:

Name:

.....

Date:

**Mandated by the Fontys Engineering Management Team

RECEIVING INSTITUTION

The attached TU/e enrolment form for the excellence program, including the additional documents indicated in the enrolment form, guarantees that the proposed programme of study/learning agreement can be followed and registered at the TU/e. The excellence program coordinator is responsible for the academic skills course.

Appendix II: Examination Form for the Academic Skills Module of the Free HBO Top Composition Minor

See next page (to allow for the entire document to be included as it was originally).

GENERAL INFORMATION			
Name of student:		Student number:	
Date of assessment:		Name of first assessor:	

Composition of minor part: 43MINAHBOTP (>=20 ECTS)				
Course code (TU/e)	Course name (TU/e)	# EC	Part of learning agreement?*	Course concluded?*
			Yes / No	Yes / No
			Yes / No	Yes / No
			Yes / No	Yes / No
			Yes / No	Yes / No
			Yes / No	Yes / No
			Yes / No	Yes / No
			Yes / No	Yes / No
Total # EC completed:				
43MINAHBOTP part completed?		Yes / No		

Composition of minor part: 43MINAAV (10 ECTS)		
Learning goal	Learning goal demonstrated?*	Notes & Evidence
The student has demonstrated experience with large-scale lectures and instructional lesson models.	Yes / No	
The student has demonstrated being able to independently analyse scientific literature.	Yes / No	
The student has demonstrated sufficient knowledge of the English language to be able to independently study English-taught Academic level courses and materials.	Yes / No	
The student has demonstrated to be able to conceptualise abstractly on an academic level.	Yes / No	
The student has demonstrated being able to observe reflectively on an academic level.	Yes / No	
The student has demonstrated being able to solve analytical problems independently at an academic level.	Yes / No	
The student has demonstrated being able to formulate and report mathematical proof at an academic level.	Yes / No	
Academic Skills part 43MINAAV completed?*	Yes / No	

*Cross out what is applicable

** Concluded only if an original authenticated grade list is available

Final appraisal of HBO Top Composition minor	
The HBO TOP Composition minor has been successfully completed by the student.	
Excellence Programme Coordinator:	Signature:
Name:
Date:	
Student agrees to verbal exam by one assessor (according to OER article 17-4)	
Name student:	Signature:

Appendix III: Background Information

HBO Top student excellence programme between Fontys Engineering Eindhoven and the Technical University Eindhoven (TU/e)

(Below is a quote from: <https://www.tue.nl/studeren/tue-graduate-school/schakelprogramma/hbo-top-minor/>)

“HBO-TOP (minor)

Are you an excellent HBO student? In that case, you may be eligible for the HBO Top programme during your HBO studies. After concluding the HBO Top programme you can easily move on to a Master's programme!

Please note: The HBO Top programme is not a regular minor. It is possible that the HBO Top programme will extend beyond one semester.

Can I participate?

You can join our HBO Top programme if:

- you are selected by Fontys or Avans
- you are selected by TU/e if you are not a student at Fontys or Avans
- you have completed your HBO propaedeutic year
- you have sufficient study progress (at least one propaedeutic year)
- you are interested in a Master's programme at TU/e

What is included in this excellence programme?

- During one or more years of your HBO programme, you will participate in the excellence programme.
- In most cases, you will have direct access to the TU/e Master's programme after successful completion of the HBO Top programme.
- If you have direct access to the TU/e Master's programme after successfully concluding the HBO Top programme, you can register for the Master's programme in studielink. (In that case, the automatic rejection does not apply to you)
- Part of the programme can be “on top of” your HBO programme.
- Within the programme you will receive EC for your HBO programme.”

Requirements for connecting the HBO with the TU/e

(Quoted from: Master's in Electrical Engineering for HBO graduates

https://static.studiegids.tue.nl/fileadmin/content/Faculteit_EE/Reglementen/EE_HBO-masterprogram_2016.pdf)

“HBO-minor and HBO-excellence programme

At some HBO schools, e.g. Fontys, it is possible to take Pre-Master's courses during the HBO programme.

At Fontys, these are the “HBO minor” and the “HBO excellence programme”.

The HBO minor has been discontinued, although part of the programme can still be taken. If you are interested, please contact us (see page 1). Currently, TU/e focuses on offering Pre-Master's courses over a period of two to three years, some of which are part of the HBO programme, and others are in addition to the HBO programme. Check the current situation before making any plans.

When you register at TU/e after having completed your HBO programme, you will continue the programme from where you left off. Unless you completed 30 ECTS at TU/e during your HBO programme, you will register as a Pre-Master's student. After having completed the remaining Pre-Master's EC, you must register as a Master's student.”



PROUD: PRogramme OUtstanding Development
February 2021

PROUD is the honours programme of Fontys Engineering. It is extra-curricular so only meant for those motivated students looking for more challenge in their education. It is meant specifically for getting more experiences and skills in the field of engineering and sharing these with their fellow students and the Engineering Department.

The following selection criteria are checked and applied in order to enter the PROUD programme as a member:

The student:

1. Has completed the first year with the propaedeutic certificate.
2. Has an approval by his/her study counsellor to join the programme.
3. Has proven to be well motivated for the program by means of a written motivation.
4. Passed the intake interview at the university.
5. Has a personal development plan that is approved of by the committee.

Main planning for PROUD:

Semester 3: Intakes and acceptance

Semester 4: Start PROUD work (in the community and at the company / Fontys research)

Semester 5: Internship (when working for PROUD at a company preferable at that company) finalized with a PROUD reflection of his coach and a peer assessment of the student's PROUD colleagues.

Semester 6: PROUD work at company or Fontys and being active in the community where possible to share the additional acquired knowledge and skills.

Semester 7: PROUD work at company or Fontys, sharing the additional acquired knowledge and skills in the community and finalizing the PROUD programme with the student's portfolio.

The student has to share their acquired knowledge from the programme and gain additional coaching experience by helping others students somewhere during the PROUD programme.

During the programme, no big delays in the regular programme are preferred and in case of a delay a discussion with the Fontys PROUD committee should take place. The PROUD student should show active behaviour and ownership in building his/her portfolio as mentioned below. PROUD Committees can decide to remove a PROUD student from the PROUD programme in case of study delay or not showing eagerness to the PROUD programme and/or community.

In order to finalize the PROUD programme with a certificate, we expect the PROUD student to deliver his/her final PROUD portfolio. In this document, the PROUD students show the final results of the required PROUD activities. The final PROUD portfolio shows the committees that the student has performed all the required activities, including a reflection on these items. Based on this evidence, the student will receive a PROUD honours certificate together with his Bachelor's degree.

Exam registration in the academic year 2021-2022, Fontys University of Applied Sciences, School of Engineering Registration for regular and resit examinations

- Full-time and part-time students must register for the regular and resit examinations
- Registration for the examinations is done via the Progress portal (see the manual on the portal).
- The deadline for registration (end of course week 5) for the different examination periods is included in the annual calendar of Fontys University of Applied Sciences Engineering.
- Students who did not register during the registration period, but still wish to participate, can still be registered up to two working days before the examination, by paying a €10 fee per exam (with a maximum of €50 per examination period). Example: if the exam is on Friday, the student can register no later than Tuesday. In order to participate, students must report to the administration office.
- The deadline for registration for resits during the course weeks will be separately announced by the student administration office.
- Payment must be made at the student administration office by debit card.
- Participating in an examination without being registered (via the Progress portal or after the registration period subject to payment) is not possible.
- Students who have not acted in accordance with the registration procedure described above cannot take part in the examination.