Education guide
Master’s program Electrical Engineering
2020–2021

Adopted by the Faculty Board of the Department of Electrical Engineering in September 2020.
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This education guide provides valuable information about the Electrical Engineering Master’s degree program. This document is part of the student statute. The student statute contains the mutual rights and obligations of TU/e and its student. According to law TU/e is obliged to have a student statute and to provide this to its students. The student statute consists of two parts: an institutional section (which applies to the entire TU/e) and a program section (which varies from program to program). This education guide, derived from the online education guide, is the Electrical Engineering Master’s degree program section of the TU/e student statute.

This education guide contains information about the structure and organization of the Master’s degree program in Electrical Engineering as well as all kinds of practical study information.

In addition to the information provided here, you are strongly urged to consult the online education guide. Contrary to this education guide, the online education guide is updated regularly during the academic year. Contrary to this education guide, the online education guide is also updated with information, procedures and regulations concerning the corona-crisis (COVID-19 crisis) during the academic year of 2020-2021.

1. Master’s program Electrical Engineering 2020-2021

Electrical Engineering is about many things that are essential parts of people’s lives. It involves power generation, communication, healthcare and the environment, and electrical engineers solve a wide range of problems related to these topics. The department’s research focuses on smart, innovative electrical components and on the design of electrical systems, which may become very complex. We cooperate closely with the regional high-tech industry and with other partners all over the world.

The Electrical Engineering discipline is constantly changing. As a graduate of the Electrical Engineering Master’s program you will find yourself equipped for researching, discovering and exploring new boundaries and for leading others along that way.

The purpose of the Master’s program of Electrical Engineering is to teach students to work independently on complex research and design projects with the ability to rethink existing concepts and develop new ones. In the final phase of the program students will be able to present the results of their work to an international community. The curriculum of the Electrical Engineering Master’s program comprises core courses, specialization courses, electives, professional development courses, an internship and finally a graduation project in which the student demonstrates his/her engineering ability to a high standard.

These pages describe the current Master’s program of Electrical Engineering. There are three related special Master’s tracks: Connected World Technologies, Care & Cure, and Artificial Intelligence Engineering Systems. Note that these special Master’s tracks are in essence the Master’s program of Electrical Engineering with specializations focused on the telecommunication, health care, and artificial intelligence domains.

Please note the several opportunities for students of the Master’s program of Electrical Engineering to enjoy an international experience.
2. Curriculum

An overview of the complete curriculum for the Master Electrical Engineering for the academic year of 2020-2021 can be found here.

An overview of the alterations in the curriculum for the Master Electrical Engineering for the academic year of 2020-2021 can be found here. This overview also includes the alterations in the Bachelor curriculum of the majors EE & AT.

Program overview

<table>
<thead>
<tr>
<th></th>
<th>EC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First year</strong></td>
<td></td>
</tr>
<tr>
<td>Core courses</td>
<td>15</td>
</tr>
<tr>
<td>Specialization path</td>
<td>10</td>
</tr>
<tr>
<td>Elective courses</td>
<td>30</td>
</tr>
<tr>
<td>Professional development</td>
<td>5</td>
</tr>
<tr>
<td><strong>Second year</strong></td>
<td></td>
</tr>
<tr>
<td>Internship</td>
<td>15</td>
</tr>
<tr>
<td><strong>Graduation project</strong></td>
<td>45</td>
</tr>
</tbody>
</table>

As of 2018-2019, the graduation project is 45 EC and only applies to master students who started in 2018-2019 and later. For students who started in 2015-2016, 2016-2017 and 2017-2018, the graduation project remains 40 EC.

The study load of the Master’s degree program is 120 EC. All examinations may be taken and completed in any order desired, except for the graduation project.

Check the Checklist Master EE to determine what must be done before the start and during the first quarter of the first year, e.g. signing the TU/e Code of scientific conduct for Master students (send a signed, digital copy to CSA EE).

Safety training

A 5EE01 Safety and health, 1st year instruction training takes place online during Q1. The training consists of an online video. You will gain practical information about the TU/e campus and buildings, and learn how to avoid hazards and risks, how to act in case of emergency, and how to prevent physical complaints caused by computer work. It's important to watch the video carefully, not only for your own safety during your studies, but also for the safety of your fellow students and the EE staff. The training is mandatory for all new students at TU/e and counts as a practical exercise within the Master’s program. You will receive an invitation to watch the online video. If you do not complete watching the video and answering the test questions about the video, you will not be able to complete your Master’s program: your completion will be registered in OSIRIS.
2.1 Core Courses

Students choose three core courses from the table below. The choice is free, but research groups require specific core courses for their specialization.

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>EC</th>
<th>Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>2DME10</td>
<td>Discrete Mathematics</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>2DME20</td>
<td>Non-linear Optimization</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>2DME30</td>
<td>Complex Analysis</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5CCA0</td>
<td>Semiconductor physics and materials</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5CHA0</td>
<td>Classical and modern physics</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5CPA0</td>
<td>Numerical methods in electrical engineering</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5CSA0</td>
<td>Modeling dynamics</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5CTA0</td>
<td>Statistical signal processing</td>
<td>5</td>
<td>1 (1,2)</td>
</tr>
<tr>
<td>5SSD0*</td>
<td>Bayesian machine learning and information processing</td>
<td>5</td>
<td>2 (2,3)</td>
</tr>
</tbody>
</table>

* 5SSD0 is only a core course for the special Master’s track Artificial Intelligence Engineering Systems.

Planning in the right column indicates the quarter in which the course will be offered, and in between brackets the quarters in which the course examinations are scheduled.

Students who have already passed the exam of course 5XPB0 Nano devices and integration in the Bachelor are strongly advised to avoid choosing the course 5CCA0 as a core course due to some overlap with 5XPB0. They can choose another core course instead. See the 5CCA0 course information for more details.

Core course preferences versus research groups 2020-2021

<table>
<thead>
<tr>
<th></th>
<th>Complex analysis (2DME30)</th>
<th>Discrete mathematics (2DME10)</th>
<th>Non-linear optimization (2DME20)</th>
<th>Semiconductor physics and materials (5CCA0)</th>
<th>Statistical signal processing (5CTA0)</th>
<th>Classical and modern physics (5CHA0)</th>
<th>Numerical methods in Electrical Engineering (5CPA0)</th>
<th>Modeling dynamics (5CSA0)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>ECO</td>
<td>✶</td>
<td></td>
<td></td>
<td>§</td>
<td>§</td>
<td>§</td>
<td>§</td>
<td>✶</td>
</tr>
<tr>
<td>PHI</td>
<td></td>
<td></td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>❌</td>
<td>✶</td>
</tr>
<tr>
<td>EES</td>
<td>✓</td>
<td>✓</td>
<td>✶</td>
<td>✶</td>
<td>❌</td>
<td>✶</td>
<td>✶</td>
<td>✶</td>
</tr>
<tr>
<td>EPE</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✶</td>
<td>❌</td>
<td>✓</td>
<td>✶</td>
<td>✶</td>
</tr>
<tr>
<td>EM</td>
<td>✶</td>
<td>✓</td>
<td>✶</td>
<td>✶</td>
<td>❌</td>
<td>✶</td>
<td>✶</td>
<td>✶</td>
</tr>
<tr>
<td>ES</td>
<td>✶</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✶</td>
</tr>
<tr>
<td>IC</td>
<td>✶</td>
<td></td>
<td></td>
<td>◆</td>
<td>◆</td>
<td>✓</td>
<td>◆</td>
<td>✶</td>
</tr>
<tr>
<td>SPS</td>
<td>✓</td>
<td></td>
<td></td>
<td>◆</td>
<td>◆</td>
<td>◆</td>
<td>◆</td>
<td>✶</td>
</tr>
</tbody>
</table>

✶ = Important
✓ = Preferred
2.2 Specialization electives

A specialization path is a set of two courses preparing for specialization in a specific area of Electrical Engineering.

If in specific situations a specialization path from the specialization path table is not an optimal specialization preparation, a different choice of specialization path may be made, which must be approved by the graduation supervisor.

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Control Systems</td>
</tr>
<tr>
<td>ECO</td>
<td>Electro-Optical Communication (including THZ (Terahertz Photonic Systems))</td>
</tr>
<tr>
<td>EES</td>
<td>Electrical Energy Systems</td>
</tr>
<tr>
<td>EM</td>
<td>Electromagnetics</td>
</tr>
<tr>
<td>EPE</td>
<td>Electromechanics and Power Electronics</td>
</tr>
<tr>
<td>ES</td>
<td>Electronic Systems</td>
</tr>
<tr>
<td>IC</td>
<td>Integrated Circuits</td>
</tr>
<tr>
<td>Phi</td>
<td>Photonic Integration</td>
</tr>
<tr>
<td>SPS</td>
<td>Signal Processing Systems (including VCA (Video Coding and Architecture))</td>
</tr>
</tbody>
</table>

The paths and their courses are listed below. In this table, research groups and track abbreviations are used as specified in the table above.

<table>
<thead>
<tr>
<th>Path</th>
<th>Code</th>
<th>Name</th>
<th>EC</th>
<th>Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>SSMC0+</td>
<td>Control principles for engineered systems</td>
<td>5</td>
<td>2 (2,3)</td>
</tr>
<tr>
<td></td>
<td>SSMBO</td>
<td>System identification</td>
<td>5</td>
<td>3 (3,4)</td>
</tr>
<tr>
<td>ECO</td>
<td>SSHA0</td>
<td>Photonic integrated devices</td>
<td>5</td>
<td>2 (2,3)</td>
</tr>
<tr>
<td></td>
<td>SSTA0</td>
<td>Optical fibre communication technology</td>
<td>5</td>
<td>3 (any)</td>
</tr>
<tr>
<td></td>
<td>SSEB0</td>
<td>Decentral power generation and active networks</td>
<td>5</td>
<td>2 (2,3)</td>
</tr>
<tr>
<td></td>
<td>SSECO</td>
<td>Planning and operation of power systems</td>
<td>5</td>
<td>2-3 (3,4)</td>
</tr>
<tr>
<td></td>
<td>SSVAO</td>
<td>High voltage technology</td>
<td>5</td>
<td>2 (2,3)</td>
</tr>
<tr>
<td>Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Quarter</td>
<td></td>
</tr>
<tr>
<td>--------</td>
<td>--------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>SSVB0</td>
<td>Electromagnetic compatibility</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>EM</td>
<td>Microwave engineering and antennas</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td>Sspd0</td>
<td>Electromagnetic modeling techniques</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>EPE-1</td>
<td>Sswa0 Rotary permanent magnet machines</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td>Sswb0</td>
<td>Advanced power electronics</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>EPE-2</td>
<td>Sswc0 Linear and planar motors for high-precision systems</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td>Sswb0</td>
<td>Advanced power electronics</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>ES</td>
<td>Ssia0 Embedded computer architecture</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td>Ssib0</td>
<td>Electronic design automation</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>IC-1**</td>
<td>Ssfo0 Data converters 1: fundamentals</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ssfdo Data converters 2: design</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>IC-2**</td>
<td>Ssfbo RF transceivers 1: fundamentals</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ssfo RF transceivers 2: design</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>Phl</td>
<td>SSHA0 Photonic integrated devices</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>SSHB0 Photonic integration: technology and characterization</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td>SPS</td>
<td>Sscco Adaptive Array Signal Processing</td>
<td>5</td>
<td>3 (3,4)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ssdd0 Bayesian Machine Learning and Information Processing</td>
<td>5</td>
<td>2 (2,3)</td>
<td></td>
</tr>
</tbody>
</table>

* Replaces Model-based control ([SSMA0](#)). Students can take part in the resit of SSMA0 in Q2 and Q3. For the retake of the project students can contact the responsible lecturer.

** It is highly recommended that the course Advanced CMOS design ([SSFC0](#)) is taken in line with these specialization paths.

Planning in the right column indicates the quarter in which the course will be offered, and in between brackets the quarters in which the course examinations will be scheduled.
2.3 Elective courses

Elective courses are all Master courses from Electrical Engineering, Master courses from all other TU/e study programs and from programs from other universities.

It is possible, but not preferred, to include a maximum of 15 credits of Bachelor courses at level 3. Use this option for homologation purposes only.

Core courses and specialization courses are also valid electives.

Language courses (Dutch and English) are permitted at C level but no more than a total of 5 credits.

In case of doubt, the Examination Committee EE decides if a course is admissible as an elective.

A student needs an advice of his/her mentor on the free electives.

Excluded Master electives
The following courses do not count as Master electives:

- All level 1 and level 2 Bachelor courses.
- The elective 5XPB0 Nano devices and integration overlaps with the core course 5CCA0 Semiconductor physics and materials. These courses can therefore not be chosen both.

Elective courses (via Master Marketplace)

2.4 Professional Development

Professional Development consists of the courses listed below. These courses are obligatory.

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>EC</th>
<th>Planning</th>
</tr>
</thead>
<tbody>
<tr>
<td>5CKB0*</td>
<td>Tutoring and Coaching</td>
<td>2.5</td>
<td>(1),2,4**</td>
</tr>
<tr>
<td>5CKF0</td>
<td>Research set-up</td>
<td>2.5</td>
<td>1,3</td>
</tr>
</tbody>
</table>

* In case there are not enough projects available to supervise, students will have the opportunity to replace 5CKB0 with 5CKG0 Career development, 2.5 EC, Q1 (and if necessary Q2).

** 5CKB0 is offered in Q1 of 2020-2021 for those students who were not able to do this course in Q4 of 2019-2020 because of the corona restrictions.

Planning in the right column indicates the quarter in which the course will be offered.
2.5 Internship

Due to the corona crisis regulations for the internship in the academic years of 2019-2020 and 2020-2021 have changed. The latest information can be found [here](#).

Purpose of internship

An internship (15 EC) is a small research project which contributes to the research of the supervising group. The internship is an orientation within the area of electrical engineering. The internship is also the ideal opportunity for an international and/or industrial experience. An internship of 15 EC takes 420 hours. You choose an internship within one of the nine research groups of Electrical Engineering. It is encouraged to do the internship in another research group than you have chosen for your specialization. Note that the internship project should differ from the graduation project.

An internship is supervised by a staff member of the department of Electrical Engineering. It may be carried out within the department (internal), outside it (external), or as a combination. For a (partially) external internship, an external supervisor is also needed for daily supervision. The EE staff member, however, remains formally responsible for the internship. You can extend the internship with an additional 5 EC from your electives ([5I005](#)), resulting in 140 hours additional time.

For the internship, specific [Examination Regulations](#) rules apply. To make sure all prerequisites are fulfilled, you need to fill out an [internship contract](#) before you start the internship. The internship contract should be filled in and signed together with your internship supervisor and handed in digitally to the Center for Student Administration (CSA) EE, via [CSA.EE@tue.nl](mailto:CSA.EE@tue.nl).

Students who do their Internship at ASML can find important information about the Framework agreement between TU/e and ASML and the contract they need to sign [here](#).

It is not necessary to register for an internship or the internship extension through OSIRIS. The Center for Student Administration EE will register you after the internship contract is handed in.

For non-EU/EEA-students doing an external internship in the Netherlands, an additional internship agreement (the [NUFFIC Training Agreement](#)) is mandatory. Dutch law requires that copies of the agreement are kept by both the internship provider and TU/e. You can find more information at the [Study In Holland](#)-website. The training agreement should be signed by Mrs. Jolie van Wevelingen, managing director of the departments of Electrical Engineering and Applied Physics. Please, hand in a printed version of the training agreement to [M.D.M. (Monique) Hunck](mailto:M.D.M. (Monique) Hunck), Flux 0.158. The signed agreement will be ready for you the next day.

HBO-graduates who follow the master program of Electrical Engineering for HBO-graduates do a shorter internship of 10 EC. HBO-graduates have to do the internship internally within the research group; they are not allowed to go outside the faculty or abroad. Furthermore, HBO-graduates are not allowed to extend the internship.
Finding an internship

To find an appropriate internship, check the Master Market Place, an online platform where you can browse through available internship projects of our research groups, or address one of our staff members, e.g. from the table below, and discuss with him or her what you would like to do, where and when. The better you know your preferences, the more likely it is that one of our staff may be able to find the right project for you. Check the group’s website (click the group name in the table below) to find out about the research activities you can take part in with your internship. If you try to find an internship in a specific company, ask the company for existing research contacts with in the EE department and contact these. If you wish to go to a specific country, contact the international office EE.

An internship is supervised by any EE assistant professor, associate or full professor, or anyone explicitly appointed by the EC.

Finalizing the internship

After the internship is finished, it is mandatory to hand in an internship report and give a presentation on your topic. Specific details about this report and presentation are determined in the internship contract. The Professional Skills academic writing and presenting scientific information are integrated in the internship assessment. In case of insufficient results extra training by means of SkillsLab workshops or trainings on Academic Writing and/or Presenting can be advised.

Internship staff contacts

<table>
<thead>
<tr>
<th>Group</th>
<th>Contact</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Secretariaat CS</td>
<td>Flux 5.132</td>
</tr>
<tr>
<td>ECO</td>
<td>J.M.H. Hakkens-Jansen</td>
<td>Flux 9.093</td>
</tr>
<tr>
<td>EES</td>
<td>dr. H.P. Nguyen</td>
<td>Flux 2.078</td>
</tr>
<tr>
<td>EM</td>
<td>F.C.J. Kuijlaars</td>
<td>Flux 9.068</td>
</tr>
<tr>
<td>EPE Electromechanics</td>
<td>dr.ir. D.C.J. Krop</td>
<td>Flux 2.089</td>
</tr>
<tr>
<td>EPE Power electronics</td>
<td>dr.ir. H. Huisman</td>
<td>Flux 2.132</td>
</tr>
<tr>
<td>ES</td>
<td>Secretariaat ES</td>
<td>Flux 4.131</td>
</tr>
<tr>
<td>IC</td>
<td>prof.dr.ir. E. Cantatore</td>
<td>Flux 7.097</td>
</tr>
<tr>
<td>PHI</td>
<td>Secretariaat PHI</td>
<td>Flux 9.068</td>
</tr>
<tr>
<td>SPS</td>
<td>dr. A.E. Alvarado</td>
<td>Flux 7.067</td>
</tr>
<tr>
<td>SPS ICTLab</td>
<td>dr. A.E. Alvarado</td>
<td>Flux 7.067</td>
</tr>
<tr>
<td>SPS-BM/d</td>
<td>prof.dr.ir. M. Mischi</td>
<td>Flux 7.074</td>
</tr>
<tr>
<td>SPS-VCA</td>
<td>prof.dr.ir. P.H.N. de With</td>
<td>Flux 5.092</td>
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2.6 Graduation project

Due to the corona crisis regulations for the graduation project in the academic years of 2019-2020 and 2020-2021 have changed. The latest information can be found here.

The graduation project is a research project on a topic related to Electrical Engineering, supervised by a staff member of the department of Electrical Engineering. It can be carried out in the EE department, within another TU/e department, within a company, at another university, or abroad as long as this is agreed upon by student and supervisor. A graduation project may be preceded by lab training in order to be able to safely handle equipment and emergency situations.

2.6.1 Finding a graduation project

You can find a graduation project in the Master Market Place, an online platform where you can browse through available graduation projects of our research groups. In the Master Market Place, graduation projects are continuously updated throughout the year.

2.6.2 Starting the graduation project

Due to the corona crisis starting criteria for the graduation project in the academic years of 2019-2020 and 2020-2021 have changed. The latest information can be found here.

You are allowed to start the graduation project if at most 10 credits of your electives are still open and the rest of the program is completed.

The graduation contract

A graduation contract is a formal contract between student and supervisor that specifies details of the graduation project such as the research group where the graduation project will take place, project details like project description, duration and other arrangements, and the study progress overview.

If you think you meet the criteria for starting the graduation project you can ask for a concept graduation contract by sending a request by e-mail to the Examination Committee EE. The EC-EE will check your study progress and will include an overview of all courses you have done so far and what courses you still miss in the concept graduation contract. The study progress overview is also your final and definite program of examinations which defines all your electives and other study components, including the graduation project as defined in the OER (article 3.6).

Together with the concept graduation contract the Examination Committee EE will also send you the Code of Conduct for the Master’s thesis which you will need to fill out and sign as well.
Duration of the graduation project
For students from generations 2018, 2019 and 2020, the duration of the graduation is 32 weeks full-time without breaks (45 EC). For students from generations 2015, 2016 and 2017 the duration of the graduation project is 28 weeks fulltime without breaks (40 EC). Depending on your situation you will receive a concept graduation contract of 40 or 45 credits. The graduation contract should clearly specify the start and end date of the graduation project. In case breaks are included in the duration you must mention the period in the contract.

Fill in and sign the graduation contract
Together with your supervisor you must fill in the concept graduation contract. After signing the contract by both you and your supervisor, you have to e-mail it to the Examination Committee EE. After the graduation contract has been sent, you can start the graduation project. The Examination Committee EE will check if you meet all the criteria for the graduation project, for example whether the dates meet the criteria of the duration of the project. The Examination Committee EE will contact you if something is incorrect with your graduation contract and will sort this out with you.

After approval of the contract by the Examination Committee EE you will be registered for the graduation project in OSIRIS by CSA EE. CSA EE will also register the details of the contract in OSIRIS. The actual graduation contract will be uploaded in your student’s file by CSA EE.

Do not forget to send the signed copy of the Code of Conduct for the Master’s thesis to CSA EE.

Additional contracts
For non-EU/EEA-students doing an external graduation project in the Netherlands, an additional graduation agreement (the NUFFIC Training Agreement) is mandatory. Dutch law requires that copies of the agreement are kept by both the internship provider and TU/e. You can find more information at the Study In Holland-website. The training agreement should be signed by drs. J.C. (Jolie) van Wevelingen, managing director of the department of Electrical Engineering. Please, hand in a printed version of the training agreement to M.D.M. (Monique) Hunck, Flux 0.158. The signed agreement will be ready for you the next day.

Students who carry out research for a graduation project at ASML can find important information about the Framework agreement between TU/e and ASML and the contract they need to sign here.

2.6.3 Assessment of the graduation project
The graduation committee
The composition of the graduation committee must be appointed before the halfway evaluation takes place. The graduation committee consists of three voting members and one or two non-voting (advisory) members. The EE Examination Regulations (see Appendix 8b) stipulates strict rules regarding the setup of the graduation committee.

Halfway evaluation
The progress and intermediate results will be evaluated on a halfway presentation and a halfway report. For the evaluation of the halfway presentation and report a halfway evaluation form is being used on the categories:
• Specialization
• Research and design
• Execution
• Report
• Presentation and defense

The Professional Skills academic writing and presenting scientific information are integrated in the halfway evaluation. In case of insufficient results extra training by means of SkillsLab workshops or courses on Academic Writing and/or Presenting can be advised.

The graduation committee studies the half-way report, attends the half-way presentation and presents her remarks and findings to the student and supervisor by means of the Evaluation form halfway graduation project EE.

After the halfway evaluation the graduation committee (either the graduation supervisor, the secretary of the research group or another representative of the graduation committee) sends the evaluation form to the Examination Committee EE per e-mail.

Final assessment
The final assessment is based on the final presentation (defense) and the written report in the format of a paper. During the defense you must present and defend your graduation work to the graduation committee. The assessment is done by the same graduation committee as with the halfway evaluation.

For the assessment of the final presentation an Assessment form graduation project EE is being used on the categories: specialization, research and design, execution, report, presentation and defense. The assessment of professional skills that are completed during graduation are part of the assessment of the graduation project. The final grade of the graduation project shall be rounded to the nearest half grade on a scale of 0 to 10. The graduation project is considered successfully completed if it is assessed with a final grade of 6.0 or more, otherwise the final grade shall be marked in OSIRIS as NMR ‘not met requirements’ (NVD, ‘niet voldaan’). The final grade is only calculated if each category is completed with a minimum of 5.0. The graduation committee may nominate you for the classification Cum Laude/with distinction if your final grade is 9.0 or more. In the Program and Examination Regulations (OER) you can find the cum laude regulations.

After the final assessment the graduation committee (either the graduation supervisor, the secretary of the research group or another representative of the graduation committee) e-mails the assessment form to CSA EE.

Delayed completion
In exceptional cases, it may be necessary to extend the graduation project period. The extension can be at most two months. The Examination Committee EE needs to be informed of this extension with a clear motivation before the end of the original graduation period. If the extension will be more than two months, a new graduation contract must be submitted to the Examination Committee EE for approval. CSA EE will update the details in OSIRIS and upload the new graduation contract in your student’s file.
2.6.4 The graduation paper

The graduation project is concluded by writing a graduation paper between 8 to 12 pages (conform IEEE publications format), which describes the project and its results, and is ready to be submitted as a regular contribution to a periodical.

Apart from sending your graduation paper to your supervisor and the graduation committee, the paper should also be sent by e-mail to the CSA EE at least one working day before the planned graduation committee presentation. Please use this title page for your paper.

TU/e Code of scientific conduct for the Master’s thesis

If you have not done so already, make sure to send a signed copy of the Code of Conduct for the Master's thesis to CSA EE.

3. Curriculum Master track AIES

General information

The new EE master track “Artificial Intelligence Engineering Systems” (AIES) starts August 31st, 2020. At the same moment a track on AI systems will start in the Mechanical Engineering department. These two tracks have been developed in close collaboration.

Below you can find a detailed description of the EE master track AIES. The track involves the CS, ES and SPS research groups. The intention is to involve more research groups of the EE department in the AIES education in the future.

<table>
<thead>
<tr>
<th>Program setup</th>
<th>EC</th>
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<tbody>
<tr>
<td>First year</td>
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<tr>
<td>Core courses</td>
<td>15</td>
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<tr>
<td>Specialization electives</td>
<td>10</td>
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<tr>
<td>Elective courses</td>
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<tr>
<td>Free elective course</td>
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<td>Professional development</td>
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<td>Second year</td>
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<td>Internship</td>
<td>15</td>
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<tr>
<td>Graduation project</td>
<td>45</td>
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</table>

Core courses

Students of the master track AIES must follow three core courses in the 1st year:

- **SSSD0 Bayesian machine learning and information processing** in Q2;
- Choose between **2DME30 Complex analysis** in Q1, **2DME10 Discrete mathematics** in Q1 and **SCTA0 Statistical signal processing** in Q1;
- Choose between **2DME20 Non-linear optimization** in Q1 and **SCSA0 Modeling dynamics** in Q1.
Specialization electives
Students of the master track AIES choose two specialization electives:

- Choose between 5SMC0 Control principles for engineered systems in Q2 and 5LIL0 Intelligent architectures in Q3;
- 5LSL0 Machine learning for signal processing in Q4.

Elective courses
Students of the master track AIES choose 25 EC of elective courses:

- 5ARA0 Programming for Artificial Engineering Systems in Q3 (this is a compulsory study component unless the student can prove sufficient programming skills: the student will then have to choose 10 EC of free elective courses instead);
- 1 study component in ‘Human aspects of AI’ (see table 7);
- 2 study components in ‘AI & engineering systems’ (see table 8);
- 5 EC of disciplinary deepening course(s) on request of graduation supervisor (see table 9).

Free elective
Students of the master track AIES can choose 5EC of free electives courses. Suggestions for free elective courses can be found here.

Professional development
Students of the master track AIES follow two professional development courses. For more information on professional development please visit this webpage.

Internship
Students of the master track AIES do an internship of 15 EC in the field of AIES. For more information on the internship please visit this webpage.

Graduation project
Students of the master track AIES do a graduation project of 45 EC in the field of AIES. For more information on the graduation project please visit this webpage.

AIES certificate
Students who meet the abovementioned criteria receive the Artificial Intelligence Engineering Systems certificate.

Admission & entry requirements
Students with a BSc Electrical Engineering degree are directly admitted to the AIES master track.
Students with a major Automotive technology are recommended to register for the SESCO DSP Fundamentals (signals II) in Q1.

Students with a BSc Applied Physics degree or a BSc Computer Science & Engineering degree will be admitted selectively to the AIES track with the requirement of following two homologation courses, namely SESD0 Control systems in Q1 and SESCO DSP Fundamentals (signals II) in Q1.
4. Curriculum master track Care & Cure

General information
Electrical Engineering is about many things that are essential parts of people’s lives. Health care is an application area of electrical engineering which has seen a rapid development over the last decade. The purpose of the Care & Cure track is to teach students to work independently on complex health-care related research and design projects with the ability to rethink existing concepts and develop new ones. In the final phase of the program students will be able to present the results of their work to an international community.

Program setup

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<td>Core courses</td>
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<td>Free elective courses</td>
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<td>Professional development</td>
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<td><strong>Second year</strong></td>
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<td>Internship</td>
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<tr>
<td>Graduation project</td>
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</table>

Core courses
Students of the master track C&C must follow three core courses in the 1st year. More information about the core courses can be found [here](#).

Specialization electives
Students of the master track C&C choose two specialization electives from one of the research groups belonging to the C&C master track: EM, IC or SPS. More information about the specialization electives can be found [here](#).

Specialization electives
Students of the master track C&C choose two additional specialization electives from the remaining two research groups belonging to the C&C master track. Choose either one specialization path course from each research group, or choose two specialization path courses from one research group. More information about the specialization electives can be found [here](#).

Free electives
Students of the master track C&C choose 20 EC of free elective courses. More information about free elective courses can be found [here](#). See below for the special requirements for the free electives if you want to obtain a Care & cure sub track certificate.
Professional development
Students of the master track C&C follow two professional development courses, worth 5 EC in total. For more information on professional development please visit this webpage.

Internship
Students of the master track C&C do an internship of 15 EC in the field of Care & Cure. For more information on the internship please visit this webpage.

Graduation project
Students of the master track C&C do a graduation project of 45 EC in the field of Care & Cure. For more information on the graduation project please visit this webpage.

Care & Cure certificate
Students who meet the abovementioned criteria receive the Care & Cure certificate.

Care & Cure sub track certificate
Within the Care and Cure track there are four sub tracks: Neuro engineering, Oncology, Cardiology and Perinatology (see below). In order to qualify for a certificate in one of the four sub tracks you need to meet the abovementioned criteria and choose three study components (within your free elective courses) from a Care & Cure sub track. The study components for each track can be found here. Please note that bachelor courses completed in the bachelor also count towards the sub track certificate.

Neuro engineering
Neuro-engineering aims to understand, repair, replace, enhance, monitor, or otherwise exploit the properties of neural systems. Within the Electrical Engineering department, one of the research lines focusses on cognitive and neurological problems in epilepsy and sleep medicine, exploits advanced neuroimaging such as fMRI to find related brain network abnormalities, and investigates (electrical) neurostimulation as treatment option. Furthermore, research is performed into real-time seizure detection and prediction using EEG, heart rate (variability) and various other types of physiological data. Also (ultra)low-power electronics are being developed for ambulatory monitoring of brain function, and research is performed into brain-inspired machine learning and pattern recognition.

Oncology
Oncology focuses on the localization and treatment of cancer. For a successful treatment, timely diagnosis is essential. This requires a combination of applicator hardware design, advanced imaging, and smart integration of relevant information on complementary cancer features (mechanical, hemodynamic, and molecular). Image fusion and registration can then be used to plan and guide minimally invasive targeted treatment, making use of hyperthermia and several forms of tissue ablation. To this end, multidisciplinary knowledge is provided, ranging from imaging, to signal analysis and classification, up to focal (heat) treatments by e.g. electromagnetic fields or ultrasound.

Cardiology
Cardiology deals with dysfunctions of the cardiovascular system. The heart is an extraordinary electromechanical pump, the assessment of which requires investigating both electrical activation and mechanical performance. Depending on the diagnostic objectives, either long-term ambulatory
monitoring or advanced imaging is necessary. Ambitious goals are therefore set, ranging from the realization of noise-robust non-obtrusive (low-power) sensing up to the implementation of accurate, ultrafast dynamic imaging. In combination with blood flow, blood oxygenation is also essential for our cellular metabolism and can be measured by photoplethysmography. Implanted devices to re-establish and maintain a regular cardiac function are also considered.

Perinatology

Even before pregnancy, research is being carried out to support state-of-the-art assisted reproductive technology by assessment of the uterine condition. Pregnancy is the most dangerous period in a person’s life. Monitoring and early warning is therefore crucial to enable timely intervention and decision making. This can be achieved by advanced multimodal sensing, possibly enabling unobtrusive home monitoring of the fetal condition and uterine activity. Also, after birth, early warning is vital and can be achieved by monitoring of brain and cardiorespiratory activity for a complete assessment of the newborn condition. Unobtrusiveness is especially relevant and can be obtained by means of contactless sensors and cameras. Monitoring can then be combined with advanced assistive technology, maintaining the main vital functions and permitting treatment and recovery.

5. Curriculum master track Connected World Technologies

General information

Electrical Engineering is about many things that are essential parts of people’s lives. Telecommunication technology is a specialization based in Electrical Engineering. Telecommunication is a key enabler for today’s information society. The rapidly increasing demand for speed and capacity together with the increasing need for mobility, makes it a field with strong dynamics and frequent introductions of new technologies in the network. The purpose of the Connected World Technologies (CWT) track is to teach students to work independently on complex research and design projects in the area of telecommunication, with the ability to rethink existing concepts and develop new ones. In the final phase of the program students will be able to present the results of their work to an international community.

Program setup

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<td>First year</td>
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<td>Second year</td>
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<td>Internship</td>
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<td>Graduation project</td>
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</table>
Core courses
Students of the master track CWT must follow three core courses in the 1st year. More information about the core courses can be found here.

Specialization electives
Students of the master track CWT choose two specialization electives from one of the research groups belonging to the CWT master track: ECO, EM, IC, PHI and SPS. More information about the specialization electives can be found here.

Specialization electives
Students of the master track CWT choose two additional specialization electives from the remaining research groups belonging to the CWT master track. Choose either one specialization path course from two different research groups, or choose two specialization path courses from one research group. More information about the specialization electives can be found here.

Free electives
Students of the master track CWT choose 20 EC of free electives courses. More information about free elective courses can be found here.

Professional development
Students of the master track CWT follow two professional development courses, worth 5 EC in total. For more information on professional development please visit this webpage.

Internship
Students of the master track CWT do an internship of 15 EC in the field of Connected World Technologies. For more information on the internship please visit this webpage.

Graduation project
Students of the master track CWT do a graduation project of 45 EC in the field of Connected World Technologies. For more information on the graduation project please visit this webpage.

Connected World Technologies certificate
Students who meet the abovementioned criteria receive the Connected World Technologies certificate.

6. Coaching and Professional Skills

Information about coaching and professional skills can be found here.

7. Mentoring

All master students of Electrical Engineering have a mentor no later than three months after the degree program has commenced. The mentor is a lecturer who belongs to the scientific staff. The mentor guides the student from the start of his/her Master’s degree program until the student begins with the internship and graduation project. The mentor supervising the student belongs to the research (capacity) group of the specialization direction chosen by the student. The Examination Committee EE is responsible for the course package; the graduation committee bears the final responsibility for the graduation assessment.
Before you make an appointment with your mentor, you must:

- Sign the **TU/e Code of scientific conduct for Master students**: send a signed, digital copy to **CSA EE**.
- Setup a Personal Development Plan (PDP)
- Decide on your specialization/research group of preference
- Choose your specialization electives and free electives

With your mentor you must:

- Discuss your **Personal Development Plan (PDP)** on how to (further) develop your professional skills
- Discuss your study program including your choice of specialization electives and free electives
- If you have not included a minimum of 15 credits worth of international experience in your program of examinations, discuss this with your mentor.

You have to make an appointment with your mentor to discuss the abovementioned items. The appointment must take place two weeks before the registration deadline of Q2.

The table below shows the mentors for each research group.

<table>
<thead>
<tr>
<th>Group</th>
<th>Mentor</th>
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<tbody>
<tr>
<td>CS</td>
<td>Siep Weiland / Paul van den Hof / Roland Toth / Mircea Lazar</td>
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<tr>
<td>ECO</td>
<td>Oded Raz</td>
</tr>
<tr>
<td>EES</td>
<td>Nikos Paterakis</td>
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<tr>
<td>EM</td>
<td>Bas de Hon</td>
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<tr>
<td>EPE</td>
<td>Naila Nasibulina</td>
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<tr>
<td>ES</td>
<td>Marc Geilen</td>
</tr>
<tr>
<td>IC</td>
<td>Eugenio Cantatore</td>
</tr>
<tr>
<td>PHI</td>
<td>Erwin Bente</td>
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<tr>
<td>SPS</td>
<td>Sveta Zinger/Alex Alvarado</td>
</tr>
</tbody>
</table>

8. **Academic advisor**

The academic advisor of the master EE advises students (either on request or on the advisor’s own initiative) on all the aspects of the degree program, and ensures, partly based on the student’s study progress and whenever necessary, adequate referral to the competent bodies of TU/e, e.g. to student
advisors of the ESA or TU/e confidential counselors. The academic advisor informs students who fall behind in their studies of the opportunities to receive extra support or measures that may need to be taken to minimize further delay. The academic advisor for the master students of Electrical Engineering is Harald van den Meerendonk.

You can make an appointment with the academic advisor here.

9. TU/e Honors Academy

Do you like challenges? Is delivering excellent results what you aim for? Would you like to do scientific research or solve societal problems? Would you like to make a giant leap forward in your professional as well as personal development? Do you love working under pressure, with the strictest of deadlines? Would you like to build a professional network? Then joining the TU/e Honors Academy might be just the thing for you.

The TU/e Honors Academy offers a varied choice of excellence tracks for bachelor and master students. The overall goal is to prepare you for personal leadership as well as scientific, societal and/or industrial leadership in a society that is affected exponentially by changes and developments.

10. International Experience

Due to the corona crisis special policies apply to all international experiences. The latest information can be found here.

Incoming students
Incoming international students can find information on how to apply for an exchange program at TU/e here and on services for exchange students here.

Incoming students can participate in two international programs: SENSE and PIXNET.

Outgoing students
If you wish to study abroad, you have plenty of opportunities.

Internship & graduation project abroad
You can do your internship and/or graduation project outside of the Netherlands. A good starting point for arranging this at a great many of universities, research institutions and companies abroad is the network of the EE staff and EE research groups. Many of our staff have excellent connections with researchers and companies abroad. If you are interested in going abroad for your internship and/or graduation project talk to your graduation supervisor about the possibilities.

Please visit this website to learn more about the application process (via Mobility Online) for an outgoing internship and/or project.

It is very important that whenever you receive a contract for an international internship or graduation, to send the contract to the International Office EE before signing the contract. The International Office EE will help you with checking the (legal) contents and will make sure the contract is signed by the right persons within the EE department.
Courses abroad
You can also go abroad for elective courses, although this requires special attention as only 15 EC of your electives are completely free to choose. A way to deal with this is to combine the internship at a university with a couple of elective courses at this same university. If you are interested in going abroad for courses talk to your mentor about the possibilities.

Please visit this website to learn more about the application process (via Mobility Online) for outgoing courses.

International partners
There are many bilateral agreements with ERASMUS partners in Europe (in countries such as Austria, Belgium, Bulgaria, Denmark, France, Germany, Greece, Italy, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey and the UK).

The TU/e also has an agreement with the National University of Singapore to exchange some 10-12 students per year. For the EE department one student is eligible for this exchange in the 2nd semester.

Language
Wherever you go, speaking the local language enhances your international experience. Take the time to work on this. The Language Center (CLIC) at the TU/e has many facilities to help you with this.

How to organize this?
Contact the International Office EE, Exchange.EE@tue.nl, +31 (0)40 2478524. It is important to allow enough time to prepare your international experience. There are many sources of information: this page is a great place to start.

11. Examination schedules

Exam schedules for all courses can be found in My Timetable.

12. Graduation procedure

Registering for the Examination Committee meeting
In order to graduate you need to register through OSIRIS for the final Examination Committee meeting (in OSIRIS, on the Progress Tab, click Qualification Request). The closing date for registration is about four weeks before the Examination Committee meeting. For exact data, see below. Registration always refers to the first upcoming session of the Examination Committee. You do not have to be present at the meeting.

All program parts must be registered in OSIRIS
All grades of your study program need to be registered in OSIRIS at least 10 working days before the next Examination Committee EE meeting, see below for dates. Also, the TU/e code of scientific conduct for the Master’s thesis needs to be handed in to CSA EE.
After the Examination Committee has decided that you have graduated, you will receive an e-mail from the Examination Committee. You can also check your graduation status in OSIRIS.

Terminating your enrollment from TU/e
When all results of the curriculum are registered and you have been registered for the Examination Committee meeting, you can terminate your enrollment from TU/e. Your enrollment will not be terminated automatically during the academic year. In order to terminate your enrollment before August 31 and receive a refund of your tuition fee, you must submit a request to that effect. The refund does not apply to the months of July and August. You can find all information regarding the termination of enrollment procedure here.

Graduation ceremony
Approximately two weeks before the graduation ceremony, you receive an invitation via e-mail from CSA to the graduation ceremony. You can find the dates of all master graduation ceremonies from Electrical Engineering below. During the ceremony, you (as well as your fellow master graduates) receive your diploma from your graduation supervisor. After the ceremony, you and your invitees are invited for drinks. If you want, you can also engrave your name and graduation year in the glass windows of our TU/e Alumni Avenue before the ceremony.

Graduation deadlines

<table>
<thead>
<tr>
<th>Examination meeting</th>
<th>Closing date OSIRIS</th>
<th>Final date defense</th>
<th>Graduation ceremony</th>
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<tbody>
<tr>
<td>No meeting in July</td>
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After the graduation
After graduating, non-EU/EEA-graduates can apply for an orientation year, or “search year”. With the residence permit that comes with it the graduate is allowed to stay in The Netherlands for a maximum of 1 year to find a job. You hand in the application at IND yourself. You can find more information regarding the “search year” via the NUFFIC website. The following websites will provide you with more detailed information about the search year residence permit:
13. Examination committee EE

The Board of Examiners is the authority to safeguard the standard of the degree program, including matters such as the appointment of examiners, testing and fraud, and all other aspects that are necessary to ensure that students who are awarded a degree have attained the outcomes for the relevant programs. All regulations can be found in the Examination Regulations of the Electrical Engineering department.

One of the tasks of the Board of Examiners is granting exemptions and the approval of study programs. For this purpose, the Study Program Committee has been mandated.

Visit the website of the Examination Committee of the Electrical Engineering department for more information.

Students can email a request to the Examination Committee. Requests to the Examination Committee need to be submitted Friday before the next meeting at the latest.

Students may appeal a decision of the Examination Committee. Their appeal should be addressed to College of Appeals for Examinations (CBE) of the Eindhoven University of Technology within six weeks after the decision is made.

Downloads
Fraud Policy
Assessment Policy EE
TU/e Exam framework
TU/e Central examination regulations
OER MSc, Program and Examination Regulations EE 2020-2021
Examination Regulations of Electrical Engineering department 2020-2021

14. Program committee EE

In the Program Committee EE student members and staff members discuss the quality of the Bachelor’s and Master’s program within the department of Electrical Engineering and the way in which these programs are organized. The Program Committee consists of an equal number of student members and staff members, and is assisted by several student and staff advisors.

The task of the Program Committee EE is to guard and enhance the quality of the educational programs offered within the department of Electrical Engineering.
In this context, the Program Committee issues solicited and unsolicited advice on the design of the curricula, quality assurance, student evaluations and policymaking to the program director, the departmental board, and teaching staff.

Furthermore, the Program Committee has the right of consent and the right of advice regarding program specific sections of the Education and Examination Regulations (OER), the task to assess the implementation of these regulations annually, and the task to advice on these regulations.

Lastly, the Program Committee has the right of consent regarding the quality assurance plan of the department.

The Program Committee actively contributes to educational innovation and enhancement within and outside its own department. Four members have been appointed representatives to the TU/e Joint Program Committee.

Program Committee meetings take place once every month. Visit the website of the Program Committee of the department of Electrical Engineering for more information.

15. Admission

Direct access
The following Bachelor's degree certificates provide direct access to the Master's program:

- Bachelor of Science in Electrical Engineering Eindhoven University of Technology (TU/e)
- Bachelor of Science in Electrical Engineering University of Twente (UT)
- Bachelor of Science in Electrical Engineering Delft University of Technology (TUD).

Visit the TU/e Admission and Enrollment website for more information about admission and other requirements.

Other TU/e Bachelor's degrees
Students with a TU/e Bachelor's degree in Psychology and Technology (domain Robotics), a TU/e Bachelor's degree Applied Physics, a TU/e Bachelor's degree Biomedical Engineering or a TU/e Bachelor's degree Mechanical Engineering have to follow a pre-Master's program first. Upon completion of this pre-Master's program, they are admitted to the Master's program of Electrical Engineering.

For more information about the pre-Master's program, please visit the Pre-Master Electrical Engineering website.

Other Dutch university Bachelor’s degrees
Students with a Bachelor of Science from another Dutch university, please visit the TU/e Admission and Enrollment website for more information about admission and other requirements.
University of Applied Science Bachelor's degrees
Students with a Bachelor of Science Electrical Engineering from a Dutch University of Applied Science (HBO) have to do the standard pre-Master's program Electrical Engineering first. Upon completion of this pre-Master's program within one academic year, they are admitted to the Master's program of Electrical Engineering for HBO Bachelors. Visit the TU/e Admission and Enrollment website for more information about admission and other requirements. For more information about the pre-Master's program, please visit the pre-Master Electrical Engineering website.

International Bachelor's degrees
Students with an international Bachelor degree Electrical Engineering, please visit the TU/e Admission and Enrollment website for more information about admission and other requirements.

16. Regulations

IMPORTANT UPDATE ADDENDA OER

Due to the measures taken against the corona virus there have been several changes in education and examination. This applies to the academic years of 2019-2020 and 2020-2021. Several decisions have been made to allow for these adjustments. On the basis of these decisions, a number of regulations have been or will be (temporarily) amended. Addenda to the regulations have been made for this. You can find the addenda here.

16.1 OER & ER

Program and Examination Regulations (OER)
The Program and Examination Regulations (OER) for a program contain clear and sufficient information about the program, making it the basic document for both students and teachers.

Subjects covered by the OER include:

- the content of the program and the associated final examinations, the number and sequence of other examinations and the times when these can be taken
- the type of examination (oral, written or other types of examination)
- the period of validity of successfully completed examination components
- the right of inspection and evaluation

Examination Regulations (ER)
The Higher Education and Research Act draws a distinction between the OER and the rules and procedures of a departmental Examination Committee. Subjects regulated by the TU/e Examination Regulations (Examination Regulations EE) include:

- compilation Examination Committee
- procedures Examination Committee
- tasks Examination Committee
- rules relating to quality assurance of testing and exams
- rules relating to measures taken in the event of fraud by examinees
• rules and guidelines relating to testing and exams
• compensation regulations
• graduation regulations

16.2 Exemptions

The Examination Committee shall only process individual requests for exemptions. The request must have a detailed motivation, proof of having attained the study component, the subject description, the study materials, the test made, an official grade list, and advice from the teacher who is responsible for the subject for which exemption is being requested. The above shall be considered in the decision making, in which previous decisions shall be taken into account.

Exemptions are only granted if the student can provide persuasive evidence from which it is clear he/she meets the learning objectives of the study component in question. The advice of the teacher is taken into consideration.

The following limitations apply for the Master program:

• Exemptions are not possible for:
  - core courses (another core course must be chosen).
  - specialization path courses and other certification courses (if the relevant teacher agrees with the fact that the student already possesses the knowledge and skills, a free elective must be chosen instead).
  - free electives (another elective course must be chosen).
• Exempted courses cannot be listed as elective.
• The graduation project cannot be exempted.

16.3 Transitional arrangements

Diagnostic test for professional skills
A student is exempt from the diagnostic test for professional skills with retroactive effect (which was mandatory prior to the academic year 2020-2021) in as far as this test was not completed by the student on or after September 1, 2020.

Master’s program 2014-2015 and earlier
Students who started their Master’s program in 2014-2015 or earlier, will be transferred to the revised Master’s program of September 2015. Depending which part of the old Master’s program already has been completed, the examination committee will compose an adapted program.

Graduation project
As of 2018-2019, the graduation project is 45 EC and only applies to master students who started in 2018-2019 and later. For students who started in 2015-2016, 2016-2017 and 2017-2018, the graduation project remains 40 EC.
Professional development program
For students of generation 2018-2019 or earlier who (partly) finished the old professional development program, the Examination Committee EE will arrange an adapted program.

17. Quality Assurance

Providing high quality education is of utmost importance to the department of Electrical Engineering. To maintain the quality, it is essential that every educational component is subject to structural and recurrent evaluation.

Course evaluations
The most common method of evaluation is by conducting surveys. Courses and projects are evaluated with digital surveys in EvaSys on a yearly basis. The results of the surveys enable us to collect the thoughts and opinions of students and give them the opportunity to provide feedback on their education. Educational components that are new will be evaluated for 3 consecutive years using surveys until they reach a sufficient level (see quality assurance plan for the criteria). Components that have reached a sufficient level are evaluated once every 3 years (1-year evaluation, 2 years no evaluation). The results of the surveys are evaluated by several stakeholders, such as the program committee, examination committee, quality assurance officer, the responsible lecturer/teacher, chairmen of research groups and the departmental board. If the course scores insufficient, an improvement plan will be conducted together with the responsible lecturer/teacher for the next round. The following year these components are monitored based on the evaluation and the improvement plan. After this the cycle of quality assurance starts again.

The educational program as a whole is also subject to yearly evaluations, organized on a central level by TU/e or other interested external parties (VNSU).

Additional Quality Assurance evaluation methods
In addition to the surveys, the department makes use of other more direct methods of evaluation for educational components. Student meetings are organized for bachelor and master students (year councils) on a regular basis. This way students can provide direct feedback on their educational program to the staff.

Compared to surveys, where evaluations take place at the end of the educational component, these types of evaluation methods are powerful tools for intermediate evaluations. For an overview of our evaluation instruments, see the quality assurance plan.

Quality Assurance officer
A quality assurance (QA) officer is appointed by the department to maintain all the processes related to quality assurance and ensures that all responsible parties receive the information necessary to perform their duties. For example, the departmental QA officer maintains a record of course evaluations and determines which courses require evaluation, which policy should be used and communicates with the central QA officer of ESA on practicalities regarding EvaSys surveys. In addition to this, the QA officer
attends meetings with other departmental QA officers to discuss general matters and developments related to quality assurance.

**Accreditation**

Based on the framework of accreditation developed by the Dutch-Flemish Accreditation Organization (Dutch abbreviation: NVAO) all educational programs are subject to periodic evaluation by a visiting panel. Accreditation is a formal decision that the educational program complies to the quality demands formulated by the NVAO and that the graduation diploma is recognized as valid by the government. Accreditation lasts for 6 years and the current accreditation decision for the educational programs of Electrical Engineering lasts until **27th of April 2023.**

**Downloads**

Quality assurance EE 2020-2021

18. Contact

**Departmental Board**

prof.dr.ir. A.B. Smolders, dean

prof.dr.ing A.J.M Pemen, vice-dean research

prof.dr. M. Matters-Kammerer, vice-dean education

drs. J.C. van Wevelingen, managing director

**Program directors**

ir. S. Hulshof, Bachelor

prof.dr. M. Matters-Kammerer, Master, PDEng, PhD

**Manager Education and Student Affairs EE**

dr.ir. R.R. Trieling

**Center for Student Administration Electrical Engineering (CSA EE)**

Flux 0.125

T 040 247 4883 / 2806

E CSA.EE@tue.nl

Office hours: Monday - Friday 12:00 - 14:00 hrs.

Every first working day of each new quarter (August 31\textsuperscript{st}, November 9\textsuperscript{th}, February 1\textsuperscript{st}, April 19\textsuperscript{th}) CSA EE will also be open from 08.30 till 09.30hrs.

**Contact person Education guides EE**

C.R. van Kesteren MA

19. A-Z

A

Absent during an exam or obligatory practicum—when you are unable to attend due to special circumstances, you need to report this within 24 hours to your academic advisor.
Canvas - You can use MyTU/e to access Canvas, the learning management system. In Canvas you'll find course information, practice tests, assignments, slides and more. You use Canvas during your education period, and to prep for exams. For any questions and comments, please contact the helpdesk by mailing ESAhelpdesk@tue.nl or calling 3826.

Center for Student Administration (CSA EE) - opening hours from Monday till Friday from 12.00 till 14.00 hrs., location Flux 0.125. Every first working day of each quarter (September 2nd, November 11th, February 3rd, April 20th) CSA EE will also be open from 08.30 till 09.30 hrs. Outside opening hours you can email CSA.EE@tue.nl. Forms can be put in the postbox CSA near the reception desk of Flux.

Complaints – When you have a complaint about courses, grants, teachers, the way of testing of examinations, you can first contact our academic advisor. In case of complaints about, for example a decision of the examination committee or an examiner, admission to the Master Program, you can appeal to the Examination Appeals Board. For more information check our study guide.

Confidential advisor - TU/e currently has three confidential counselors who hold an independent position and enjoy the protection of the student.

Examination Committee – The Examination Committee is, among other things, responsible for the quality of the exams and final examinations. If you have a request, compliant or comment, you can send an e-mail to EE Examination Committee: Examination.Committee.EE@tue.nl

Honors program – In the TU/e Honors Academy various Honors Tracks have been launched, addressing major societal and scientific questions and challenges.

Illness during an exam- When you are not able to attend an exam due to illness, you need to report this within 24 hours to your academic advisor.

IEEE - The Institute of Electrical and Electronics Engineers, Inc. is an international organization by and for academic engineers in the field of electrical engineering. Worldwide, there are more than 330.000 members. IEEE SBE is the student branch at TU/e. It is the most active branch of IEEE in Europe. Every year, they organize a wide range of activities. With this, the Student Branch Eindhoven prepares students socially, culturally and professionally for their future. More information on IEEE SBE, its activities and memberships can be found on the IEEE student branch website.

MyTimetable - MyTimetable generates your personal schedule, which can be used by students and lecturers. It’s possible to synchronize with all regular agenda-applications, so you can use your own preferred system to view your schedule. The schedule in MyTimetable is adjustable to your own needs, and schedules of individual courses can be viewed. The tutorial can be found here. For questions you can contact roosters@tue.nl.
MyTU/e – MyTU/e provides an easy-to-use, personalized and effective system for you to manage everything you need to make a success of your learning and working at TU/e. this cloud based system provides you with everything you need in one place and with notifications to keep you updated. MyTU/e will be your go-to app for your learning, education and working experience.

O
OSIRIS - Go to MyTU/e to log into OSIRIS, the student information system that records all student data, from enrollment right through to graduation. Lecturers use OSIRIS to enter grades and check their groups and course information. Students use OSIRIS to view their grades, register for courses and examinations, and to keep track of their progress. For questions about OSIRIS you can contact the helpdesk at 3826. You can also contact the Center for Student Administration (CSA EE) in Flux 0.125.

P
Program Committee - A Program Committee is an advisory and consultative body at degree program level, instituted by law. The Program Committee of Electrical Engineering covers the bachelor and master programs. The Program Committee consists of an equal representation of both lecturers and students.

Q
Quality Assurance
Quality assurance - Providing high quality education is of utmost importance to the department of Electrical Engineering. Therefore, it has set up a quality assurance program and a quality assurance officer. You can read all about this here.

R
Registering for a course - To participate in courses you need to be registered for the course. This is possible up to 20 working days before the start of the new quarter. If you are not registered for the course, you will not be able to take it. If you do not register for exams, you will also not be able to take them. The deadlines for enrollment can be found here.

Registering for exams after the registration period has passed - Students who fail to register for an exam within the period specified shall not be allowed to participate in the exam, unless the students have paid administration costs totaling € 20 per study component no later than five working days before the examination period. After payment of the administration costs the students are immediately registered.

S
Student statute – As a student you have rights and obligations. You can read about this on our study guide.

Student body - The Student Body (SB) is the center of education participation at the department of Electrical Engineering. SB is run by three students of the department. Any student who has suggestions, complaints, or questions about the education can contact the SB.

Student teams – TU/e is a breeding ground for young engineers who address societal challenges by carrying out projects. Projects in which education, innovation and entrepreneurship are combined with
surprising outcomes. TU/e counts several student teams which address challenges in the fields of energy, health and smart mobility.

Thor - The study association Thor focusses on the enrichment of the students of Electrical Engineering and Automotive Technology at TU/e. In order to achieve this goal, activities are organized for and by students