Department Day Master Kick-Off 2023

Master’s program Electrical Engineering 29 August 2023

Elmine Meyer, Program Leader Master Electrical Engineering
Harald van den Meerendonk, Academic Advisor Master Students Electrical Engineering
Welcome

Marion Matters-Kammerer
• Program Director Electrical Engineering
• Vice-dean of the department of Electrical Engineering

Elmine Meyer
• Program Leader Master Electrical Engineering
• Assistant professor Electromagnetics

Harald van den Meerendonk
• Academic advisor master, pre-master and HBO-TOP students Electrical Engineering
Department Day

- 13:00h – Walk-in with coffee and tea
- 13:15h – Introduction TU/e and Electrical Engineering
- 13:25h – General information for all master students
- 13:55h – Specific information about the curriculum
- 14:15h – Break with coffee and tea
- 14:30h – Tour de Flux
- 16:30h – Drinks and BBQ
- 19:00h – Closure
Before we continue...

Are you a pre-master student?

- Pre-Master kickoff on 4 September 2023 at 10:00h
- Invitation has already been sent
- Today’s information is of interest AFTER you have completed the pre-Master’s program

Furthermore:
- This presentation will be shared on the education guide.
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Eindhoven University of Technology (TU/e)

Top-ranking Dutch University
Eindhoven University of Technology is a first-rate research university specializing in engineering science & technology in the Netherlands.

At the heart of the Brainport region
TU/e is situated in the heart of one of the most intelligent communities in the world: Brainport, renowned for technology and design.

Strong technology heritage Eindhoven
With companies such as Philips, ASML, DAF, NXP and FEI, the Eindhoven region has a strong heritage in technology.
Electrical Engineering

- 2-year Master’s Program (Accredited)
- # of 1st year students 2023 MSc EE: 108
- Total students in MSc EE: 364 (2022-2023)
- Average # MSc EE Graduates per year 92 (2017-2022)
- 275 PhD students and 102 full-time TU/e academic staff members
- Collaboration with industry in the Brainport area on internships and graduation projects (over 200 companies in the area!)
- International connections (academia and industry)
Electrical Engineering Centers

Care & Cure
- Center for Care and Cure Technology
  - Eindhoven MEDTEch innovation center

Connected World
- Center for Wireless Technology
  - Eindhoven Hendrik Casimir Institute

Smart & Sustainable Society
- Center for Cyber-physical Systems
  - Eindhoven Artificial Intelligence Systems Institute
  - Eindhoven Institute for renewable energy research
Center for Care & Cure Technology (C3Te)

Application Areas

- Perinatology
- Cardiology
- Oncology
- Neurology

Technology Areas

- (Home) Monitoring
- Ultrasound Technology
- MRI Engineering
- AI/modeling
Center for Wireless Technology

Internet of Things

Terahertz Technology

Radio Astronomy

Ultra-high data rate communication
Center for Cyber-Physical Systems

High-tech production equipment

Autonomous vehicles

Smart electricity/water grids

Focus areas: productivity, quality safety, power consumption, power quality, stability
Research Groups (1)

Control Systems (CS)
- Dynamic modelling and model-based control of complex dynamic systems
- 9 Labs

Electro-optical communication (ECO)
- High-capacity optical transmission
- Optical networks
- Terahertz photonics

Electrical Energy Systems (EES)
- Power grid technologies
- Intelligent power grids
Research Groups (2)

Electromagnetics (EM)
- Integrated Antenna Systems
- EM for Care & Cure
- Multi-physics modelling and computation
- EM Metrology
- EM Radio Science

Electromechanics and Power Electronics (EPE)
- High-performance motion technology
- High-efficiency energy conversion
- Electromechanics Lab
- Power Electronics Lab

Electronic Systems (ES)
- Model-driven engineering
- Smart electronic systems
- Digital nano-electronics
Research Groups (3)

Integrated Circuits (IC)
- RF transceivers
- Wideband data converters
- Emerging technologies
- Resource efficient electronics
- MRI Hardware development

Photonic Integration (PhI)
Integrated photonic circuits for
- Communication
- Sensing
Focus on indium phosphide technology

Signal Processing Systems (SPS)
- Bayesian Intelligent Autonomous Systems
- Biomedical Diagnostics
- ICT
- Lighting and IoT
Two specialized master tracks

**Care and Cure**

The importance of the health field as a consumer of technological applications and, in particular, electrical engineering...

Research groups: Phi, EM, SPS, IC

**Connected World Technologies**

Telecommunication technology is a dynamic area of expertise: math & IT, physics, chemistry technology and innovation sciences...

Research groups: ECO, Phi, EM, SPS, IC
Master’s track Care & Cure

**Neurology**
Our goal is to understand, repair, modulate, enhance, replace, or (otherwise) exploit properties of the neural system to advance diagnostics...

**Perinatology**
Innovative technology improves healthcare during pregnancy, delivery and neonatal life

**Oncology**
Technology will shape the future of cancer care: From computer-aided detection to nanomagnetic engineer for treatment and in silico models...

**Cardiology**
Evolving medical technology and improvements in metrics transformed the field of cardiology

Center for Care and Cure technology Eindhoven (C3Te)

Department Day Master Kick-Off 2023
Center for Wireless Technology

Institute for photonic integration

Master’s track Connected World Technologies

Nanolab
After graduation

Department Day Master Kick-Off 2023

PhD 4 yr
MSc 2 yr
BSc 3 yr

Engineering Doctorate

Position in Industry

science (fundamental)

engineering (applied)
Department Day

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- 19:00h – Closure
General information for all master students

• Choosing research group/specialization and core courses
• Master Marketplace
• Mentoring
• Broadening
• IND Study Progress Check
• Registration for courses and exams
• Safety and health
• Education guide
• Academic advisor
What do you need to do as a new master student?

• Choose your research group
• Choose your core courses
• Register your research group in the Master Marketplace
• Setup your study program
• Write your Personal Development Plan (PDP)
• Sign the TU/e Code of Scientific Conduct
• Plan a mentor meeting
• Canvas information channel
• Approve your study program
Choose your research group

• Choose a research group (specialization) where you want to do your graduation project.

• Check the research websites of our nine research groups via the education guide: https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/specialization-electives

Check the website of StudentBody, with video presentations: https://www.studentbody.nl/explore-your-master/
Choose your core courses for Q1

• Choose three core courses based on your preferred research group: https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/core-courses/

• Register for the courses of the first quarter.
  For new/external master students only: the deadline for registration has been extended until Friday 8 September 2023 at 17:00h

• Read the checklist to see what you need to do as a new master student (Downloads): https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum
Master Marketplace

Online tool for

1. Registration of research groups (=specialization)
2. For planning and defining your study program
3. Overview of available internship and graduation projects

1. Why registration of research groups?
   - get to know in advance how many master students choose a research group, so that:
   - research groups can guarantee sufficient graduation projects and scientific staff
   - specialization is part of your study program
2. Why filling in your study program?
   - Know in an early stage if your choice of specialization electives and free electives is according to the regulations of the Master’s program
   - Know in an early stage if your choice of specialization electives and free electives is sufficient for the research group where you want to do your graduation
   - Use the Master Marketplace to plan your courses and automatically generate your study program as an Excel file (or fill in the Excel file manually!)

3. Why overview of projects?
   - An online central place for available projects for internship and graduation
   - Get insight in research activities of the research groups
   - Scientific staff can upload their projects
Master Marketplace (1) – Register specialization

To do (see also checklist):

• Save your preferred research group/specialization in the Master Market Place before **16 September 2023**. Changing group/specialization later is always possible
• Choose specialization from this academic year 2023-2024 (e.g. “IC in 2023-2024”)

[https://master.ele.tue.nl](https://master.ele.tue.nl)

• Master Marketplace is open for all new master students of Electrical Engineering
Master Marketplace (1) – Register specialization

Register For Specialization Path

- Student: 
- Cohort: 2020
- Origin: Other institute
- Institute (If not TU/e): 
- Specialization Path: 

Save specialization here

Enter specialization here

Fields marked with * are required.

Department Day Master Kick-Off 2023
Master Marketplace (1) – Register specialization

• After **16 September 2023**, mentors from the research groups will be informed about all students who have selected their group for their specialization.

• Name and email address will be sent to a mentor

• Each research group has its own mentor(s), see Mentoring
Master Marketplace (2) – Planning courses

• In the Master Marketplace, you can plan your courses (core, specialization electives and free electives) for your study program using the Course Planner according to the curriculum (see education guide)

• You can plan
  • All master EE courses (directly from the MMP)
  • Other department courses (you have to add them yourself)
  • Other courses (e.g. from other universities or abroad, you have to add them yourself)
Master Market Place (2) – Course Planner empty

## Course Planner

Specialization path: ECO in 2019-2020

<table>
<thead>
<tr>
<th></th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Y1</strong></td>
<td></td>
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<tr>
<td><strong>Y2</strong></td>
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<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- **Add Year**
- **Validate**
- **Save Planning**
- **Add other department course**
- **Add course outside TU/e**

### Course Types:
- FREE ELECTIVE
- CORE COURSE
- PROFESSIONAL DEVELOPMENT
- SPECIALIZATION
- OTHER COURSES

Department Day Master Kick-Off 2023
# Course Planner

**Department Day Master Kick-Off 2023**

**Master Market Place (2) – Course Planner filled in**

<table>
<thead>
<tr>
<th>Y1</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y1</td>
<td>SCLM0 - Statistical signal processing</td>
<td>SLLV0 - Video health monitoring</td>
<td>SLM0 - Convolutional neural networks</td>
<td>SLSF0 - Applications of information</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>for computer vision</td>
<td>theory</td>
</tr>
<tr>
<td></td>
<td>20ME20 - Non-linear optimization</td>
<td>SLSH0 - Computer vision and 3D</td>
<td>SSSC0 - Adaptive array signal</td>
<td>SLSL0 - Machine learning for signal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>image processing</td>
<td>processing</td>
<td>processing</td>
</tr>
<tr>
<td></td>
<td>SCPA0 - Numerical methods in electrical</td>
<td>SLSB0 - Monitoring of respiration and</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>engineering</td>
<td>circulation</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SCKB0 - Tutoring and coaching</td>
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</table>

<table>
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<tr>
<th>Y2</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
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<tbody>
<tr>
<td>Y2</td>
<td></td>
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</tr>
</tbody>
</table>

**Quarterly courses**

- SCLM0: Statistical signal processing
- SLLV0: Video health monitoring
- SLSH0: Computer vision and 3D image processing
- SLSB0: Monitoring of respiration and circulation
- SCKB0: Tutoring and coaching
- SLM0: Convolutional neural networks for computer vision
- SSSC0: Adaptive array signal processing
- SSSD0: Bayesian machine learning and information processing
- SCKF0: Research set-up
- SLSF0: Applications of information theory
- SLSL0: Machine learning for signal processing
Master Marketplace (2) – Planning courses

• If you have planned all your courses, you can generate a study program as an Excel file with all the courses filled in

• Use the button ‘Download Filled Approval Form’ to download the Excel file

BUT

• You can also fill in the Excel file yourself (use the template Excel Approval study package master EE in Downloads):
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/
Master Marketplace (2) – Planning courses

Register For Specialization Path

Course Planner  Download Filled Approval Form  Download Excel file here

Student: ☑

Cohort: ☑  2020

Origin: ☑ *

Institute (if not TU/e): ☑

Specialization Path: ☑ *

Save
Fields marked with * are required.

Department Day Master Kick-Off 2023

By Kolibri Solu
### Approval form of the study package EE master program

<table>
<thead>
<tr>
<th>Student name</th>
<th>Personal information</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>Student ID:</td>
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<td></td>
</tr>
<tr>
<td>Year email address:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Date of master subscription:</td>
<td>2019</td>
<td></td>
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<tr>
<td>Prior education:</td>
<td>BSc EE TU/e</td>
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<tr>
<td>Subspeciality:</td>
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<tr>
<td>Professional skills:</td>
<td>Personal Development Plan discussed with mentor (Yes/No)</td>
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<tr>
<td>Code of Scientific Content (yes/No)</td>
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<tr>
<td>Have you followed the health and safety training? (Yes/No)</td>
<td></td>
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<tr>
<td>Company code in CSF/TU/e (if any)</td>
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<table>
<thead>
<tr>
<th>TU/e contacts</th>
<th>Remarks</th>
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<td>Mentor name:</td>
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<td>Mentor position:</td>
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<td>Mentor group:</td>
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<td>Mentor institution:</td>
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<table>
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<tr>
<td>1</td>
<td>Control Systems, Systems Analysis</td>
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<tr>
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<table>
<thead>
<tr>
<th>Additional courses (optional):</th>
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<tr>
<td>Total</td>
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</tbody>
</table>

| TOTAL MASTER STUDY PROGRAM | 128 EC |

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**MMP Excel file**

**Department Day Master Kick-Off**
Master Marketplace (2) – Planning courses

• You can use this Excel for the mentor meeting (see Mentoring)

• Check and fill in the other fields of the Excel where necessary

• If you want to follow a track (C&C, C&C with subtrack(s) or CWT), denote this in the Excel as well. Check the requirements on the education guide

• Send it to the Examination Committee for official approval using the EC Sharepoint webform before the registration deadline of Q2. Use article 3.6 of the OER/PER for the item Based on article of OER (EER)
article 3.6
Master Marketplace (2) – Planning courses

• Approval by the Examination Committee also means updating your study program in Osiris

• Update in Osiris means you can check your own study progress

• You have to take the courses listed in your approved study program, but you can always change your study program if you want to take other courses

• If you want to change your study program, you can update the Excel you sent earlier (or use the Master Marketplace to make the changes and download the Excel)

• Send the updated Excel to the Examination Committee using the Sharepoint webform
### Published graduation projects

<table>
<thead>
<tr>
<th>Name</th>
<th>Research group</th>
<th>Responsible staff</th>
<th>Assistants</th>
<th>Specialization Path</th>
<th>End date visible</th>
<th>Progress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data-driven modeling of interconnected systems for separable controller synthesis</td>
<td>CS</td>
<td>m. Lazer</td>
<td>Tom Steenjes</td>
<td>Any</td>
<td>None</td>
<td>Project is being executed</td>
</tr>
<tr>
<td>Modelling of IV emission in the range 2-150 kHz (Bias?)</td>
<td>EES</td>
<td>Vladimir Cuk</td>
<td></td>
<td>Any</td>
<td>None</td>
<td>Project is being executed</td>
</tr>
<tr>
<td>Controller Synthesis for Switched Systems</td>
<td>CS</td>
<td>Tij Donkers</td>
<td></td>
<td>Any</td>
<td>None</td>
<td>Not yet started</td>
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<tr>
<td>Urine electrophysiological monitoring outside pregnancy</td>
<td>SPS</td>
<td>Chiara Rabotti</td>
<td></td>
<td></td>
<td></td>
<td>Not yet started</td>
</tr>
<tr>
<td>Integrated Optical Alignment sensor for Electronic IC production (1/2)</td>
<td>FNI</td>
<td>Erwin Benta</td>
<td></td>
<td></td>
<td></td>
<td>Not yet started</td>
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<td>Tij Donkers</td>
<td></td>
<td>Any</td>
<td>None</td>
<td>Not yet started</td>
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<tr>
<td>Eco-driving algorithm</td>
<td>CS</td>
<td>Tij Donkers</td>
<td></td>
<td>Any</td>
<td>None</td>
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</table>
Low Cost Two-Dimensional Optical Pressure Sensor For Patient Monitoring

By Henrie Van Den Boom

General description

Currently, people suffering from serious sleeping disorders are monitored using expensive camera equipment. Because this equipment cannot be placed in a patient’s home, the patient has to spend one or more nights at a sleep clinic. To reduce costs and increase patients comfort, a system has to be designed which can easily be taken home. A possible implementation is a two-dimensional optical sensor system which can be placed under a mattress which uses a grid of Polymer Optical Fibres.

Polymer or Plastic Optical Fibre (POF) is commonly used for low-speed, short-distance optical data communication. Due to their relatively large diameters of about 1 mm, POFs are easy to handle and allow the use of low precision connectors. Its chief advantage over the glass optical fibre is its robustness under bending and stretching. Polymer optical fibres can also be used for sensing. Systems based on detecting attenuation variation when pressure or bending is applied to the POF are already studied extensively and commercial products are available for various applications. However, a two dimensional pressure detection system using a grid of POF based on only attenuation detection is in principle possible.

The goal is to design and realize a two-dimensional pressure detection system using a grid of POF and is based on detection of the coupling of optical signals at the crossings of a POF grid. Based on this principle, low cost pressure detection can be achieved at each crossing of the fibre grid individually. A proof of principle system has been realized with encouraging results, but further research and development has to be done to obtain a real time and optimized system.

Moreover, this principle can be used for many other applications. For instance it can be used under (or woven into) a carpet to detect walking and falling of elderly persons, which is more privacy-friendly than using for instance video cameras.

We already presented a paper at a conference on this promising subject, see attachment or https://pure.tue.nl/en/ris/files/8873849/2020_POF_sensor_POF2017_final_paper.pdf.

This research is in collaboration with Sleep Medicine Centre Kempenhaeghe, Heerhugowaard, www.kempenhaeghe.nl.

Students task description

Within this research subject you can work on:

- Pressure sensitive optical coupling between crossing fibres
- Design and realising a real time data acquisition and control system
- Design and realising the optoelectronics of the system.
Mentoring

Mentor

- All first-year master students are “assigned” a mentor based on their preferred research group.
- A mentor is a scientific member from Electrical Engineering and belongs to the research group where you want to do the graduation project.
- A mentor guides you from the start of the master until the beginning of the internship.
- Only after 4 September, you must contact your mentor to make an appointment yourself. Do this before 30 September 2023. The actual meeting can be held later but before 14 October 2023 (because of the registration deadline for courses Q2).
Mentoring

Student mentor

- All first year master students who are new to TU/e are “assigned” a student mentor

- Goal: to support you in feeling at home at TU/e, getting familiar with the program, meeting your fellow students, learning more on TU/e educational systems, campus life

- A student mentor is a master student who is already familiar with the TU/e and Eindhoven

- Your student mentor will invite you to join the first meeting
# Mentoring – Who is who?

<table>
<thead>
<tr>
<th>Research group</th>
<th>Mentor</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>Siep Weiland / Paul van den Hof / Tijs Donkers / Mircea Lazar</td>
</tr>
<tr>
<td>ECO</td>
<td>Oded Raz</td>
</tr>
<tr>
<td>EES</td>
<td>Nikos Paterakis</td>
</tr>
<tr>
<td>EM</td>
<td>Bas de Hon</td>
</tr>
<tr>
<td>EPE</td>
<td>Naila Nasibulina</td>
</tr>
<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>
</tr>
<tr>
<td>SPS</td>
<td>Sveta Zinger / Alex Alvarado</td>
</tr>
</tbody>
</table>

[https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/mentoring/](https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/mentoring/)
Mentoring

Before you plan a meeting

1. Write your Personal Development Plan (PDP) on how to (further) develop your professional skills

2. Sign the TU/e Code of Scientific Conduct as part of Scientific Integrity

3. Setup your study program including all core courses, specialization electives and free electives for discussion with the mentor
Mentoring – Personal Development Plan

1. Write your Personal Development Plan

• Write your own Personal Development Plan (PDP) containing:
  • Choices within the curriculum, like courses, internship and graduation
  • Professional skills in academic writing, presenting and teamwork you want to improve
  • Other (academic) skills you want to develop
  • See: https://educationguide.tue.nl/programs/graduate-school/coaching-and-professional-skills/

• Use your PDP to discuss in the mentor meeting

• You can find a template of a PDP on the online education guide (Downloads):
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/mentoring/
Mentoring – Scientific Integrity

2. Scientific Integrity

• Read the webpage on scientific integrity, see https://www.tue.nl/en/our-university/about-the-university/integrity/scientific-integrity/

• Sign the Code of Scientific Conduct: a declaration of how to carry out your academic research regarding scientific integrity. For a link, see https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/mentoring/

• Send a digital signed copy to EE.CSA@tue.nl, put your 7-digit studentID (something like 19XXXXX or 20XXXXX) in the subject
Mentoring – Preliminary study program

3. Setup your study program

• Use the online education guide for more information about the curriculum, master tracks and available core, specialization and elective courses, see the education guide

• Use the Master Marketplace or download a template Excel file from the education guide to fill in your study program
Mentoring – Meeting

With your mentor, you

• Discuss your Personal Development Plan on how to (further) develop your professional skills

• Discuss your study program. The mentor only advises on your choice of specialized electives and free electives, the Examination Committee approves

• Discuss options for international experience
Canvas information channel

Communication

• Important information for all students is communicated via announcements on a specific Canvas information channel

• You are automatically subscribed in the first week of the first quarter

• Important information on the master EE will be communicated via this channel
Broadening - International Experience

- Particularly for Dutch students: it is advised to choose at least 15 EC of international experience by following abroad:
  - Courses
  - Internship
  - Graduation project

- Check the International Experience page on the education guide for more information:
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/international-experience/

- Join the Q&A on International Experience on 15 November
Broadening – Internal double diploma

Joint Master’s degree program

• 165 EC ≤ #credits ≤ 195 EC

• Two diplomas with only a minimum of 45 EC extra

• Combined graduation project 60 EC

• Meet the criteria of both Examination Committees

• https://educationguide.tue.nl/programs/internal-double-diploma/
Broadening – Honors program

Honors program

• For motivated students who want additional challenges, upgrade their personal and professional development, build a professional network

• 20 EC ‘on top of’ Master’s degree program

• Focus on Personal Leadership (5 EC)
  • “This is the best course that I had in university because it helped me to base my decisions, in everything that I do, on love instead of fear” – Honors student

• Focus on Professional Development (15 EC)
  • challenging activities, (external) internships, (external) projects
Broadening – Honors program

Honors program

• Information session on
  Date: Friday 15 September 2023
  Time: 12:45h till 13:25h
  Location: Luna 1.240

• More information about the Honors program can be found here:
  https://educationguide.tue.nl/programs/honors-academy/master-students
IND Study Progress Check with residence permit for study

• Students with a **residence permit for study** have to pass at least 50% of the maximum number of credits per academic year to retain their residence permit.

• For students following the SENSE program, the progress check is based on the credits obtained in this academic year at TU/e.

• A study progress check takes place in September of the **next** academic year based on the results obtained in **this** academic year.
IND Study Progress Check with residence permit for study

• But: a **preliminary** check will also be carried out in this academic year in February/March to see if you are on track

• The academic advisor also checks your study progress regularly (e.g. after Q1)

• In case of study problems, personal circumstances or insufficient study progress, contact your academic advisor in time
Registration for courses and exams

Courses

• Register for courses via OSIRIS in time. Check the deadlines (education guide and ESA emails) and AKR/ACR (Administrative Costs Regulation) procedure!

• Course registration also includes exam registration (only if you are officially enrolled as master student)

• You can register for maximum 20 EC per quarter

• You are not automatically registered for resits. Register separately!

• After registration, you should receive a confirmation email. Check and keep these emails. If not received, contact ESA!

• See the online education guide for more information: https://educationguide.tue.nl/practical-info/student-administration/enrolling-courses-and-examinations/enrollment-courses-and-examinations-graduate-school
Registration for courses and exams

Not officially a master student yet?

• You can still register for master courses but **NOT** for master exams

• After officially enrolled as a master student, do not forget to register for the master exams from Q1 before the deadline for Q2
Safety and health

For all **new** students to TU/e” instruction on safety and health

- Practical information about the buildings and learn how to avoid hazards and risks
- How to act in case of an emergency
- How to prevent physical complaints caused by computer work
- Instruction is mandatory for all new students
- You will be informed later by email what you need to do
Online education guide Electrical Engineering

All information presented here can be found on the online education guide:

- Curriculum: courses, internship, graduation project, Master’s tracks
- Coaching and Professional Skills, Mentoring
- Regulations: Program and Examination Regulations (PER/OER)
- Examination Committee and Program Committee
- Forms: all forms used within the Master’s program
- Quality Assurance, A to Z

https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/
Online education guide: https://educationguide.tue.nl
Online education guide: https://educationguide.tue.nl
Online education guide: https://educationguide.tue.nl
Online education guide: [https://educationguide.tue.nl](https://educationguide.tue.nl)
Academic advisor

Academic advisor advises and helps you

• To improve your study progress
• With practical questions about the Master’s program
• With study-related questions and problems
• With study skills
• With your planning
• In case of personal circumstances
• But: you also have a responsibility
  https://educationguide.tue.nl/guidance-and-development/student-responsibilities
Academic advisor

Academic advisor may refer to

- Study choice advisor: problems related to doubts about study choice
- Student counsellor: study grants, financial support, functional impairment or chronic illness, top-level sports
- Study management advisor: improve study progress and study output
- Student psychologist: depression, anxiety, autism, ADHD, stress, assertiveness, personal circumstances
- Confidential counsellor: conflicts between student(s), teacher(s), staff, supervisors, or in case of undesirable or unwelcome behaviour
- [https://educationguide.tue.nl/guidance-and-development/who-to-contact](https://educationguide.tue.nl/guidance-and-development/who-to-contact)
Study+ - Studying at TU/e with extra support

What support does TU/e offer?
What are my responsibilities?
Where do I go for help?

To find out go to Canvas:
Study+: Studying with Extra Support

Source: Sensibilisation aux différents types de handicaps - Halte Pouce : Accompagner le Handicap au Quotidien (halte-pouce.fr)
Academic advisor

Academic advisor works according to privacy (GDPR /AVG) regulations

• Meetings and correspondence are always STRICTLY CONFIDENTIAL. Notes are being made and stored in your digital file to keep track of your situation. Personal information will NEVER be shared with lecturers and other staff unless there is an acute danger for you and/or others.

https://educationguide.tue.nl/guidance-and-development/who-to-contact

• Part of the GDPR/AVG is that you send emails using your **TU/e mail address**, not your personal email address

• Study progress check after Q1, just to check how you are doing after the first quarter
Academic advisor

Last but not least

• New external students who are assigned a student mentor will receive an email soon
• Let me know if you experience problems in your study (e.g. study delay, planning issues or management of your studies)
• Let me know if you run into personal problems that may influence your studies: the sooner I know, the better I can help you
• “I rather see you studying with pleasure than with distinction”

DO NOT BE AFRAID OR ASHAMED TO TALK TO ME 😊
Academic advisor

But ...

• In case you do not want to discuss your problems with me,

• you can also talk to one of our student Confidentional Contact Persons (peer listeners)

• 24 students are officially trained as confidential contact persons

• [https://educationguide.tue.nl/guidance-and-development/who-to-contact/confidential-contact-persons-peer-listeners](https://educationguide.tue.nl/guidance-and-development/who-to-contact/confidential-contact-persons-peer-listeners)
Student guidance @ TU/e

Student guidance for master’s students

Study approach
- Academic advisor
- ESA study management advisor

Study content
- Course content
  - Program content
  - Assignments
  - Orientation internship/graduation project
- Course teacher
- Study program
  - Study progress
  - Study planning
  - Regulations and facilities
- Mentor
- Academic advisor

Personal
- Study delay due to personal issues
- Functional impairment/financial issues
- Mental/emotional problems
- (Doubts) about study choice
- Career choice
- Academic advisor
- Academic advisor
- Academic advisor
- Academic advisor
- Academic advisor
- ESA Student counselor
- ESA Student counselor
- ESA Student psychologist
- ESA Study choice advisor
- ESA Career academy

Do you have other questions? Or want more info? Please visit: https://educationguide.tue.nl/organization/advisors-and-tutors/
Group training sessions: https://educationguide.tue.nl/broadening/group-training-sessions/
Not sure where to go? Contact your academic advisor.

Department Day Master Kick-Off 2023
Academic advisor

If you have any questions, come and visit me in Flux 0.122, make an appointment or send me an email:

EE.Academic.Advisor.MEE@tue.nl
Join us! Be part of the TU/e community

Everyone is welcome here
Inclusiveness is important

Please make every effort to include all
Speak English

Nationality, gender, religion, race, sexual orientation, appearance:
We are all one!
Join us! Be part of the TU/e community

Join Thor (EE Study Association)
Join COSMOS (International Student Association)

Be active in your mentor group

go to Student Sports Center

Join one of the many Student Associations
Department Day

- 13:00h – Walk-in with coffee and tea
- 13:15h – Introduction TU/e and Electrical Engineering
- 13:25h – General information for all master students
- 13:55h – Specific information about the curriculum
- 14:15h – Break with coffee and tea
- 14:30h – Tour de Flux
- 16:30h – Drinks and BBQ
- 19:00h – Closure
Master’s program of Electrical Engineering

Department Day Master Kick-Off 2023 29 August 2023

Elmine Meyer, Program Leader Electrical Engineering
Harald van den Meerendonk, Academic Advisor Electrical Engineering
### Master’s program of Electrical Engineering

<table>
<thead>
<tr>
<th></th>
<th># EC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1: 60 EC</td>
<td></td>
</tr>
<tr>
<td>Core courses</td>
<td>15</td>
</tr>
<tr>
<td>Specialization electives</td>
<td>10</td>
</tr>
<tr>
<td>Free electives</td>
<td>30</td>
</tr>
<tr>
<td>Professional development</td>
<td>5</td>
</tr>
<tr>
<td>Year 2: 60 EC</td>
<td></td>
</tr>
<tr>
<td>Internship</td>
<td>15</td>
</tr>
<tr>
<td>Graduation project</td>
<td>45</td>
</tr>
</tbody>
</table>

Note: Internship in year 1 or summer is also possible
Core courses master EE

- Choose three (or more 😊) core courses from set of eight in Q1

<table>
<thead>
<tr>
<th>Code</th>
<th>Core course</th>
</tr>
</thead>
<tbody>
<tr>
<td>2DME10</td>
<td>Discrete Mathematics</td>
</tr>
<tr>
<td>2DME20</td>
<td>Non-linear Optimization</td>
</tr>
<tr>
<td>2DME30</td>
<td>Complex Analysis</td>
</tr>
<tr>
<td>5CCA0</td>
<td>Semiconductor Physics and Materials</td>
</tr>
<tr>
<td>5CHA0</td>
<td>Classical and Modern Physics</td>
</tr>
<tr>
<td>5CPA0</td>
<td>Numerical Methods in Electrical Engineering</td>
</tr>
<tr>
<td>5CSA0</td>
<td>Modeling Dynamics</td>
</tr>
<tr>
<td>5CTA0</td>
<td>Statistical Signal Processing</td>
</tr>
</tbody>
</table>

- Choosing more core courses is allowed: add them as Electives

Department Day Master Kick-Off 2023
Core courses master EE

- Research groups require specific core courses

<table>
<thead>
<tr>
<th></th>
<th>2DME30</th>
<th>2DME10</th>
<th>2DME20</th>
<th>SCCA0</th>
<th>SCTA0</th>
<th>SCHA0</th>
<th>5CPA0</th>
<th>5CSA0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complex analysis</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discrete mathematics</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Non-linear optimization</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Semiconductor physics and materials</td>
<td></td>
<td></td>
<td></td>
<td>X/●</td>
<td>X/●</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Statistical signal processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Classical and modern physics</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerical methods in EE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modelling dynamics</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- CS
- ECO
- PHI
- EES-1*
- EES-2*
- EPE-1
- EPE-2
- EM**
- ES
- IC-1
- IC-2
- SPS***

● = Must have
X = Nice to have

*EES-1 & EES-2: students are allowed to deviate from the indicated courses
**EM: choose 2 out of 4, where it is recommended to choose 2DME20 & 2DME30 if you want to pursue a specialization in modelling techniques
***SPS: students of the ICT lab choose 2DME10 as the 3rd course. Students of all other labs choose 5CPA0 as the 3rd course.
Specialization courses

• Choose 10 EC of specialization courses from your preferred research group in Q2 and Q3

<table>
<thead>
<tr>
<th>Path</th>
<th>Code</th>
<th>Course</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>CS</td>
<td>5SMC0</td>
<td>Control Principles for Engineered Systems</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SMB0</td>
<td>System Identification</td>
<td>3</td>
</tr>
<tr>
<td>ECO</td>
<td>5SHA0</td>
<td>Photonic Integrated Devices</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5STA0</td>
<td>Optical Fibre Communications Technology</td>
<td>3</td>
</tr>
<tr>
<td>EES-1</td>
<td>5SED0</td>
<td>Electrical energy systems in transition</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SEE0</td>
<td>Planning and Operation of Electrical Power Systems</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SEF0</td>
<td>Smart grids, ICT and electricity markets</td>
<td>3</td>
</tr>
<tr>
<td>EES-2</td>
<td>5SVA0</td>
<td>High Voltage Technology</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SVB0</td>
<td>Electromagnetic Compatibility</td>
<td>3</td>
</tr>
</tbody>
</table>

5SED0 and 5SEE0 have 2,5 credits!
Some research groups have two specialization paths

<table>
<thead>
<tr>
<th>Path</th>
<th>Code</th>
<th>Course</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM</td>
<td>5SPB0</td>
<td>Microwave Engineering and Antennas</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SPD0</td>
<td>Electromagnetic Modeling Techniques</td>
<td>3</td>
</tr>
<tr>
<td>EPE-1</td>
<td>5SWA0</td>
<td>Rotary Permanent Magnet Machines</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SWB0</td>
<td>Advanced Power Electronics</td>
<td>3</td>
</tr>
<tr>
<td>EPE-2</td>
<td>5SWC0</td>
<td>Linear and Planar Motors for High-Precision Systems</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SWB0</td>
<td>Advanced Power Electronics</td>
<td>3</td>
</tr>
<tr>
<td>ES</td>
<td>5SIA0</td>
<td>Embedded Computer Architecture</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SIB0</td>
<td>Electronic Design Automation</td>
<td>3</td>
</tr>
</tbody>
</table>
## Specialization courses

<table>
<thead>
<tr>
<th>Path</th>
<th>Code</th>
<th>Course</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC-1</td>
<td>5SFA0</td>
<td>Data Converters 1: Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SFD0</td>
<td>Data Converters 2: Design</td>
<td>3</td>
</tr>
<tr>
<td>IC-2</td>
<td>5SFB0</td>
<td>RF Transceivers 1: Fundamentals</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SFE0</td>
<td>RF Transceivers 2: Design</td>
<td>3</td>
</tr>
<tr>
<td>PhI</td>
<td>5SHA0</td>
<td>Photonic Integrated Devices</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SHC0</td>
<td>Microfabrication Technology</td>
<td>3</td>
</tr>
<tr>
<td>SPS</td>
<td>5SSD0</td>
<td>Bayesian Machine Learning and Information Processing</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>5SSC0</td>
<td>Adaptive Array Signal Processing</td>
<td>3</td>
</tr>
</tbody>
</table>
Elective courses

• Choose a total of at least 30 EC of elective courses. Core courses and specialization electives are also valid electives

• Choose from about 70 EE master courses, other TU/e master courses, or master courses from other universities (always to be approved by Examination Committee). Level 3 (Advanced) bachelor courses from EE are allowed for homologation purposes

• Electives can be found on the education guide (PDF): https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/elective-courses/

• Mentor gives advice on specialized and free electives
Professional Development

Main targets

• Formulating a research question and conducting literature review (for every master student)

• Career Development
  • Gaining insight in your own wishes regarding future jobs and companies and use sources to orientate yourself efficiently on the job market

• Improving skills of academic writing and presenting scientific information:
  • using feedback moments at the end of the internship and halfway through the graduation project
## Professional Development

### Main targets

<table>
<thead>
<tr>
<th>Code</th>
<th>Course</th>
<th>Quarter</th>
</tr>
</thead>
<tbody>
<tr>
<td>5CKF0</td>
<td>Research set-up</td>
<td>1 or 3</td>
</tr>
<tr>
<td>5CKG0</td>
<td>Career Development</td>
<td>2, 3 or 4</td>
</tr>
</tbody>
</table>

[https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/professional-development/?L=2](https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/professional-development/?L=2)
Internship

• Research project of 15 EC (course 5I015 Internship 15 ects), for hbo graduates 10 EC (5I010 Internship 10 ects)

• Possibility to extend with 5 EC (course 5I005 Extension internship instead of an elective course), not for hbo graduates

• Advised to choose internship abroad to obtain international experience. Hbo graduates do the internship within a research group

• Always under the responsibility of an EE staff member
Internship

• Before you start, register for the internship (and extension) via Osiris and webform (education guide).

• No registration deadline for internship course code: register when you are about to start

• Assessment is done by internship assessment form

• Advice on extra training via SkillsLab or courses based on results of Reporting and Presenting

• Check the Study guide Internship EE for detailed information: https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/internship
Graduation project

• Graduation project of 45 EC (32 weeks, course code: 5G045 Graduation project 45 ects)

• Project contributes to the research of the supervising research group

• Can be done inside and outside the department of EE

• Always under the responsibility of an EE staff member

• Allowed to start when you have completed all components (core, specialisation, professional development, 20 EC of electives, internship) of your study program except for at most two electives (10 EC).
Graduation project

• Before you start, register for the graduation project via Osiris and webform (education guide).

• No registration deadline for graduation project course code: register when you are about to start

• Examination Committee is very strict on the duration of the graduation project!

• Half way through the graduation project -> evaluation/feedback moment with presentation

• Based on feedback, extra training on writing or presenting may be necessary
Graduation project

- At the end of the graduation: final presentation (defense) and graduation paper

- Assessment is done by graduation committee

- Check the **Study guide Graduation project EE** for detailed information:
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/curriculum/graduation-project/
English language skills

SFC640, SFC630, SFC600

- Good language skills in writing and presenting/speaking are essential in the master and beyond

- You can follow extra courses:
  - SFC640 Academic writing in English (can be used as a master elective)
  - SFC630 Pre-academic writing in English
  - SFC600 English Placement Test (entrance test for SFC630/SFC640)
  - SkillsLab: https://skillslab.tue.nl
  - Academic Writing Skills and English Language Toolbox, see: https://educationguide.tue.nl/career-skills/language-courses-and-academic-writing-skills

- Good language skills are also part of the assessment of internship and graduation
Master’s tracks

Two tracks within the Master’s program of Electrical Engineering

• Care & Cure (C&C):
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/master-track-care-cure

• Connected World Technologies (CWT)
  https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/master-track-connected-world-technologies

Obtain certificate as proof of further specialization
  But: choosing a track is not mandatory

What to you need to do?

• If you choose a track(s), indicate this on the Approval study package Master EE Excel
Master’s tracks C&C and CWT

<table>
<thead>
<tr>
<th>Master’s tracks</th>
<th>Research groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connected World Technologies</td>
<td>ECO, PhI, EM, IC, SPS</td>
</tr>
<tr>
<td>Care &amp; Cure</td>
<td>PhI, EM, IC, SPS</td>
</tr>
</tbody>
</table>

Requirements for certificate C&C and CWT

• Two specialization electives from one of the research groups (main specialization), and

• Two additional specialization electives from the remaining research groups (other specialization), and

• Graduation project is in the field of C&C or CWT
Master’s tracks C&C and CWT

Subtracks within C&C

• Neuro engineering
• Oncology
• Cardiology
• Perinatology

Requirements for subcertificate C&C

• Meet the criteria for the C&C certificate
• Choose three master electives from a specific C&C subtrack, see https://educationguide.tue.nl/programs/graduate-school/masters-programs/electrical-engineering/master-track-care-cure/
• Courses from the C&C subtrack done in the Bachelor also count for the subcertificate
Q&A

Two Q&A’s:

• International Experience 15 November 2023 (probably 😊)

• Internship and graduation project February 2024

Keep an eye on 5EE-INFO 23/24 for more information on the Q&A sessions.
Finally

- This presentation will be shared on the education guide
- Questions?
- Before we go: form 7 groups of students
Department Day

- 13:00h – Walk-in with coffee and tea
- 13:15h – Introduction TU/e and Electrical Engineering
- 13:25h – General information for all master students
- 13:55h – Specific information about the curriculum
- **14:15h – Break with coffee and tea**
- 14:30h – Tour de Flux
- 16:30h – Drinks and BBQ
- 19:00h – Closure
Study Association e.t.s.v. Thor

- Study material
- Symposia
- Workshops
- Excursions

- Lunch lectures
- Study trips
- Parties
What is a Master Association?

• Goal: help (master) students to explore educational and job opportunities in a specific area.

• Organizing activities
  • Excursions
  • Lunch lectures
  • Study trips
Why this presentation?

Bachelor EE

| Care & Cure | Smart and Sustainable Society | Connected World |

Department Day Master Kick-Off 2023
Master study association Waldur
- Electricity Network / Smart Grids
- Sustainability
- Power Conversion / Power electronics
- Electromechanics
- Automotive
Groups: EPE/EES

Communication
- Website www.Waldur.nl
- Facebook https://fb.com/dsdwaldur/
- LinkedIn group
How do we connect?
- Company visits
- Lunch lectures
- Study tours
- Network events
- Vacancies
- Symposium
- Informal Drink
Master Association ODIN

Founded: 10 March 1980
Members: +/- 60
Own alumni society: IORD

Purpose: Introduce (pre-)master students into the field of telecommunications and information technology (Connected world). Promote research in these fields.

Excursions, lectures, trips, symposia, workshops and more...
Activities
What is Eir?

- Care & Cure
- Started in 2016
- +- 50 members

Expertise

- Electromagnetics
- Image Processing
- Bio-Electronics
- Control Systems
- Signal Processing

Department Day Master Kick-Off 2023
More information?

www.waldur.nl

www.ma-eir.nl

www.odin.tue.nl
Master Kick Off 2022
Contact: SB@tue.nl | Studentbody.nl

Department Day Master Kick-Off 2023
The StudentBody

- The educational feedback body of the Department of Electrical Engineering
- By students, for students
THE STUDENTBODY TEAM
What do we do?

- Year Councils
- Panel of Education
  - BBQ
  - Dinner with the Dean
  - Best Teacher Awards
  - Contact us with educational problems
Year councils and panel of education

- Year Councils with Commissioner of Education
- Panel of Education with Commissioner of Education, Program Directors, Quality Assurance Officer and student-member of Department Council
- Setup unique within TU/e
- Short feedback loop
- Problems can be fixed a.s.a.p.
Questions?
Who are we?

Quinten  Luca  Stan
What is IEEE?

• Institute of Electrical and Electronics Engineers
• Global organization, originally from the United States
• Involved in Standards & Regulations, Educational Activities and Publications & Conferences
What does our student branch do?

• Organize a range of activities for members of the faculty EE.
• Manage IEEE memberships for faculty members.
• Focus on interaction, knowledge exchange and a hint of professionalism
Activities
Committees

• WIE (Women In Engineering)
• SailCo
• Capricorn
• ReLCo
• BOCo
• LuCo
More information

• ieee.tue.nl
• Contact us at ieee@tue.nl
• Find us in Flux on the 6th floor, directly opposite of the stairs.