

MSc Artificial Intelligence & Engineering Systems Departmental Introduction Day



Part 3: AI&ES PROGRAM INFORMATION

August 29, 2023

WHO ARE WE?



Marion Matters- Kammerer

**Program director EE/AI&ES
Vice-dean Education**



Mircea Lazar

Program Leader AI&ES



Marijke Creusen-Erica

Academic advisor AI&ES
ee.academic.advisor.AIES@tue.nl



Andriana Marian

Education coordinator

WELCOME - And be part of the TU/e community

Welcome MASTER students

Welcome at TU/e

Welcome EVERYONE!



DIFFERENCES AND EXPECTATIONS

Take care of yourself, your program, but also work together and look after each other!

DIFFERENCES AND EXPECTATIONS

First try to find the information yourself !

Education guide, Osiris, Canvas

You can't find it? Not a problem, ask for help!

- **Teachers:** Course materials, explanation
- **Student-mentor:** Finding way at TU/e, in Eindhoven
- **Fellow students:** Help with courses, studying, socializing
- **Education office:** Administrative matters
- **Academic advisor:** Study related question, personal circumstances, regulations, if you don't know whom to go to

A Chinese proverb:

"Teachers open the door, but you must enter by yourself"

TODAY

- **Communication and Information**
- AI&ES Track Selection
- MSc Curriculum
- Broadening
- Coaching and support
- Graduate School (GS) Regulations
- Fraud
- Practicalities



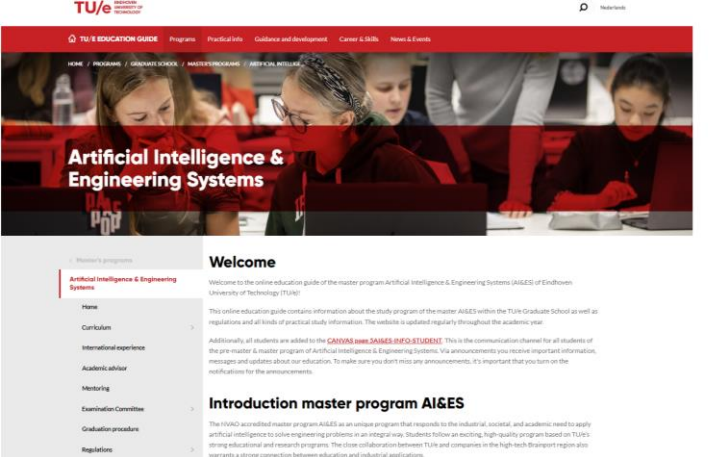
EDUCATION GUIDE AI&ES

<https://educationguide.tue.nl>

Information for students on program, regulations and procedures.

Go to:

- Programs
- Graduate School
- Master's programs
- Artificial Intelligence & Engineering Systems



The screenshot shows the TU/e Education Guide for the Artificial Intelligence & Engineering Systems (AI&ES) program. The page has a red header with the TU/e logo and navigation links: TU/e EDUCATION GUIDE, Programs, Practical info, Guidance and development, Career & Skills, News & Events. Below the header is a large image of students working on laptops, with the text 'Artificial Intelligence & Engineering Systems' overlaid. The main content area includes a 'Master's programs' sidebar with links to Home, Curriculum, International experience, Academic adviser, Mentoring, Examination Committee, Graduation procedures, and Regulations. The main content area also includes a 'Welcome' section with a 'Master's programs' sub-section and an 'Introduction master program AI&ES' section.

Welcome

Welcome to the online education guide of the master program Artificial Intelligence & Engineering Systems (AI&ES) of Eindhoven University of Technology (TU/e)!

This online education guide contains information about the study program of the master AI&ES within the TU/e Graduate School as well as regulations and all kinds of practical study information. The website is updated regularly throughout the academic year.

Additionally, all students are added to the **CADANS** **CHAT** **ROOM** **FOR** **STUDENT**. This is the communication channel for all students of the pre-master & master program of Artificial Intelligence & Engineering Systems. Via announcements you receive important information, messages and updates about our education. To make sure you don't miss any announcements, it's important that you turn on the notifications for the announcements.

Introduction master program AI&ES

The NVAO accredited master program AI&ES is a unique program that responds to the industrial, societal, and academic need to apply artificial intelligence to solve engineering problems in an integral way. Students follow an exciting, high-quality program based on TU/e's strong educational and research programs. The close collaboration between TU/e and companies in the high-tech Brabant region also warrants a strong connection between education and industrial applications.

COMMUNICATION / INFORMATION DEPARTMENT

Education guide AI&ES	Program and curriculum information Examination committee To-do list semester A
Canvas 5INFO 2023	Announcements and Notifications Invitations to student meetings Presentations of student meetings Important changes and developments
Email	Messages from for example ESA central Conversations with teachers and staff Always use your IDNR
Student Meetings	Choose Your Track Event International Experience Graduation Project

TODAY

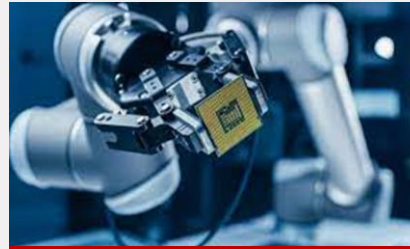
- Communication and Information
- **AI&ES Track Selection**
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AI&ES PROGRAM STRUCTURE

Solid basis & in-depth specialization

- In addition to a broad core program, each student goes in-depth by selecting a specialization track.
- There are 6 tracks in total.
- In principle, each student can choose one of the six tracks.



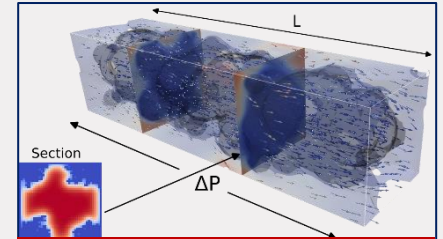
High-Tech Systems & Robotics



Smart Cities



Mobility



Science and Discovery



Healthcare



Manufacturing Systems

AI&ES TRACKS – track coordinators

Track name	Coordinator	Departments involved
1. High-tech systems and robotics	dr. Maarten Schoukens (EE) dr. Dinesh Krishnamoorthy (ME)	ME + EE
2. Mobility	dr.ir. Tom van der Sande (ME) dr.ir. Mauro Salazar (ME)	ME + EE
3. Healthcare	dr. Fons van der Sommen (EE)	BmE + EE
4. Smart cities	dr. Ekaterina Petrova (BE)	BE + IE&IS + EE
5. Science and Discovery	dr. Alessandro Corbetta (AP) dr. Silvia Gaastra-Nedeia (ME)	AP + ME
6. Manufacturing systems	prof. Ivo Adan (IE&IS)	IE&IS + ME

AI&ES TRACKS – track selection (1)

BASIC PRINCIPLES

- Each track has one or two track coördinators (not necessarily a track mentor!)
- In principle, students can choose any track!
- Educational background → Graduation options in a specific track & department.

AI&ES TRACKS – track selection (2)

INPUT

1. Education guide AI&ES
2. Track Video's on the online Education Guide AI&ES
3. 'Choose your Track' event → Thursday September 14, 2023!
4. Educational Background and entrance level
5. Interest in an AI&ES research domain or possible graduation project
 - [Overview of departments and research groups per track](#)
 - [Master Market Place](#)

AI&ES TRACK – track selection (3)

TIMELINE

Before the start

Information in Education Guide
Indication of first track preference via Studielink

- Q1**
- Sept 14 → 'Choose Your Track Event': track presentations
 - Sept 21 → Final track selection: registration via Canvas 5AI&ES INFO
 - Sept 25 – Oct 6 → First mentor meeting: start composing program
 - Oct 15 → Registration deadline courses Q2 and exams Q1

- Q2**
- Second mentor meeting about program choices
 - Submit final Program
 - Register for courses semester B
 - Later on, program changes can be made (after approval mentor and exam committee).

AI&ES TRACK – track selection (4)

AI&ES 'TO-DO' LIST

TO-DO LIST: MSc Program Artificial Intelligence & Engineering Systems

This list is intended for students with a MSc Enrollment per September 2023 in the

By following these instructions you can be sure that you are taking all the necessary administrative steps. In case you have any questions, don't hesitate to contact the departmental CSA administration via ee.academic.advisor.aies@tue.nl. Please always state your name, program and student ID-number in

Prepare your start		
When	What	To-do
Before the start of the program	Be informed. Go to the digital education guide to read all information about the master's program.	Go to: Artificial Intelligence & Engineering Systems (tue.nl)
Before the course & exam registration deadline	Course registration. Register for the mandatory core courses in quartile 1. Save the automated confirmations Osiris sends you as a proof of registration.	Your course and exam registration runs via Osiris. Make sure to register before the deadline (August 27, 2023). A course registration also includes a registration for the first exam attempt. Exception: New MSc students with a first TU/e enrollment can register until Friday in the first education week of the program (September 8, 2023). Pay attention: if your MSc enrollment is not yet completed before the course registration deadline, you can only register for the course itself. After receiving your final master's enrollment, you then still need to register for the master's exams before the first applicable deadline.

Internal progress to master program

[READ MORE →](#)



Safety @TU/e: instruction videos

[READ MORE →](#)

Introduction TU/e online systems

[READ MORE →](#)



Thor study association

[READ MORE →](#)

Canvas student communication platform 5AI&ES-INFO

[READ MORE →](#)



Technificent Student jobs

[READ MORE →](#)

DOWNLOADS

[PDF] MSc AI&ES To-do list semester A (Q1+Q2) 274 KB



More information

Want to know more? Contact us at [+31 40 247 6121](tel:+31402476121) or via the contact form below. The Center for Student Administration Electrical Engineering (CSA EE) is open by appointment only. Appointments can be made up to 30 days in advance via [this bookings page](#).

TODAY

- Communication and Information
- AI&ES Track Selection
- **AI&ES Curriculum**
- Broadening
- Coaching and support
- GS Regulations
- Fraud
- Practicalities

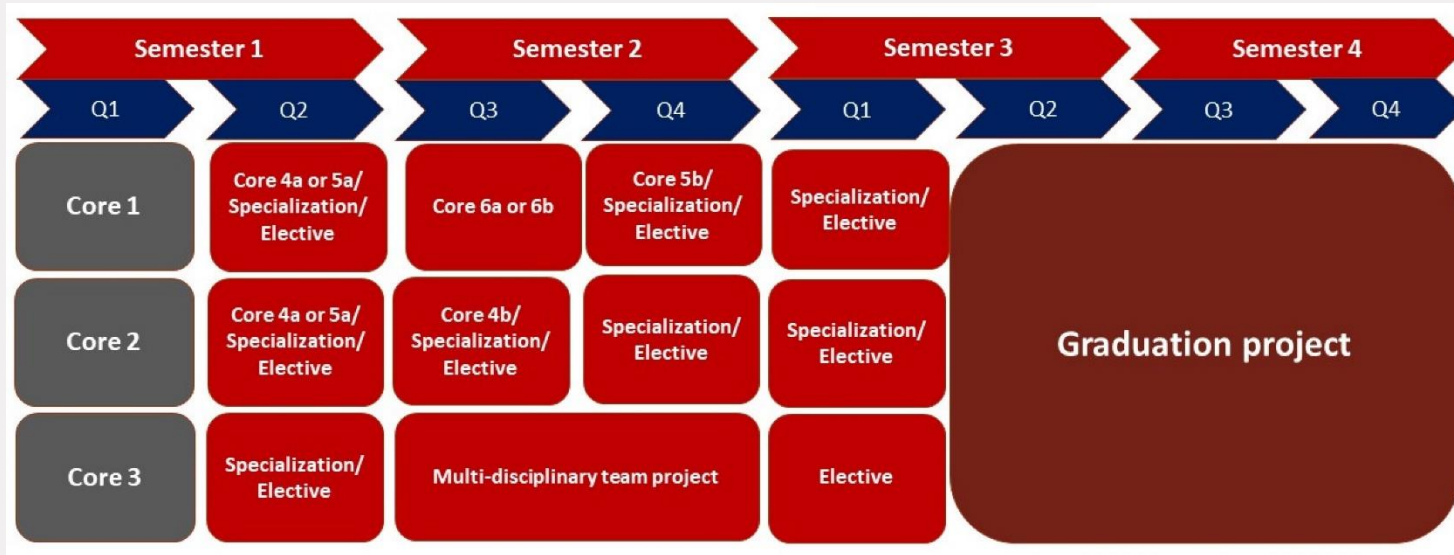


PROGRAM STRUCTURE AI&ES

(2 YEARS – 120 EC)

Core courses	30 EC	
Specialization courses	20 EC	Track-related
Interdisciplinary Team Project	10 EC	
Free Elective courses	15 EC	
Graduation Project	45 EC	Track-related

AI&ES TIMELINE



AI&ES CORE COURSES (30 EC)

To offer you a solid basis in artificial Intelligence *and* Engineering Systems

Topic	Core Course	Code
Data science	1. Data acquisition and analysis	5ARB0
Human interaction and ethics	2. Human interaction and ethics	5ARC0
Programming	3. Software engineering for artificial intelligence	5ARA0
Engineering systems	4a. Control principles for linear systems*	5ARD0
	4b. Physical and data-driven modelling	4CM40
Learning in AI	5a. Bayesian machine learning and information processing	5SSD0
	5b. Decision making with artificial and computational intelligence	1BM120
Mathematics	6a. Statistical signal processing	5CTA0
	6b. Engineering optimization	4DM20

*Students with a TU/e BSc diploma in EE, ME or AP are also allowed to choose the course Control principles for engineered systems (5SMC0).

AI&ES CORE COURSES (30 EC)

- Core Courses 5ARB0, 5ARCO, 5ARA0 are mandatory
- Selection of core courses 4, 5 and 6 depends on, e.g.:
 - Track choice
 - Educational background
 - Interest in a research domain and/or department
 - Timeslots
 -
- It is strongly recommended to discuss your core courses with your TU/e track mentor
- Core courses can also be chosen as electives, in case you need to graduate in a specific domain

AI&ES SPECIALIZATION COURSES (20 EC)

To bridge AI and ES and to prepare for track research projects

- Each track has its own specialization course list → AI&ES education guide!
- Per track courses are spread over four themes
- You need to select 20 EC from this list, one course from each theme
- AI courses have to be discussed with and supported by the track mentor

AI&ES SPECIALIZATION COURSES (20 EC)

Themes	Explanation
Domain specific knowledge	Track dependent domain knowledge relevant for AI&ES
AI in Engineered Systems	Important and universal enablers for implementing AI in the targeted technical environment (e.g., communication, sensors, design, manufacturing).
Data Cultivation	all tracks have their own specific issues and approaches for data collection, curation and analysis.
Learning and Intelligence	Deepening AI-topics with respect to machine learning and intelligence.

AI&ES SPECIALIZATION COURSES (20 EC)

Track 3: Healthcare

No.	Available courses	Code	Themes	Quarter	Timeslot
1	Ultrasound in the (bio)medical engineering	8VM60	1	2	D
2	Orthopaedic soft tissues: biomechanics and mechanobiology	8TM10	1	2	D
3	Biomedical sensing technology	5LSCO	2	3	A2 & A3
4	Monitoring of respiration and circulation	5LSB0	2	2	B1
5	Behavioral operations management	1JM40	2	3	A
6	Human-robot interaction	0HM280	2	4	C
7	Brain-inspired optical computation	5LTC0	2	4	E2 & E3
8	Computer vision and 3D image processing	5LSH0	2,3	2	E
9	Medical image analysis	8DC00	3	1	E
10	Capita selecta in medical image analysis	8DM20	3	3	A & B1
11	Image analysis for health-care technologies	5LSJ0	3	3	D1
12	Video health monitoring	5LIV0	3	2	C2
13	*Advanced sensing using deep learning	5AUA0	3,4	4	D1
14	Machine learning in medical imaging and biology	8DM50	4	1	B

AI&ES FREE ELECTIVES (15 EC)

To adapt the program to your interests and ambition

- Additional AI&ES core or specialization courses
- Courses at MSc level from TU/e or from another university
- Students with mandatory homologation: courses are part of your free electives!
- 5 EC on TU/e language courses at C level
- Only if necessary: courses at BSc level 3 (can be necessary to graduate in a specific AI&ES domain or Department)

Discuss all options with your TU/e track mentor.

Be aware: no overlap between free elective courses and core - specialization electives is allowed

AI&ES INTERDISCIPLINARY TEAM PROJECT

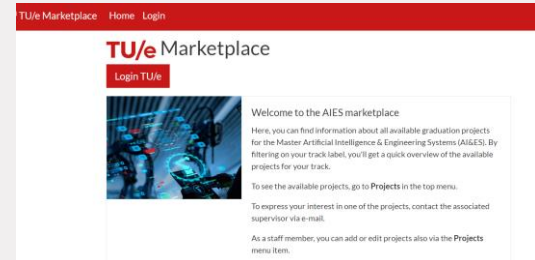
To apply your knowledge on AI&ES to resolve real-life practical engineering problems

- Track depending, open-ended problems & Industrial applications
- Small team of 3 to 5 students
- Professional skills training (academic writing, intercultural communication & collaboration)
- Entrance requirements: sufficiently completed 10 EC AI&ES core and specialization courses
- Registration via Osiris
- Pay attention: Fixed timeslots per track:
 - Q3, timeslot C - track 2,3, and 5 and E - track 1 and 6**
 - Q4, timeslot A - track 2,3, and 5 and B - track 1 and 6**

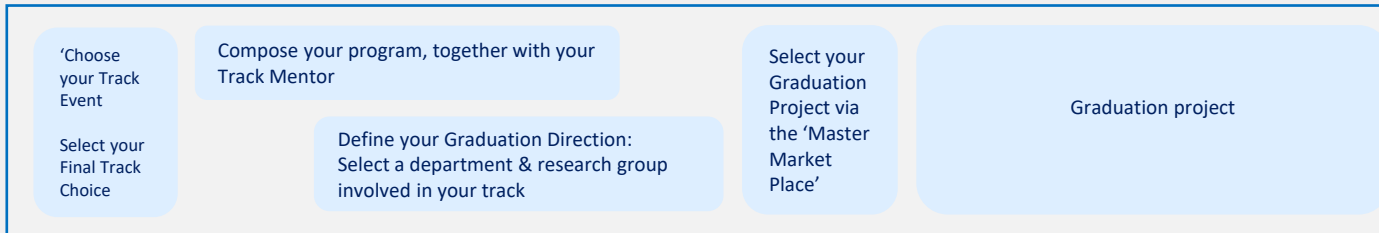
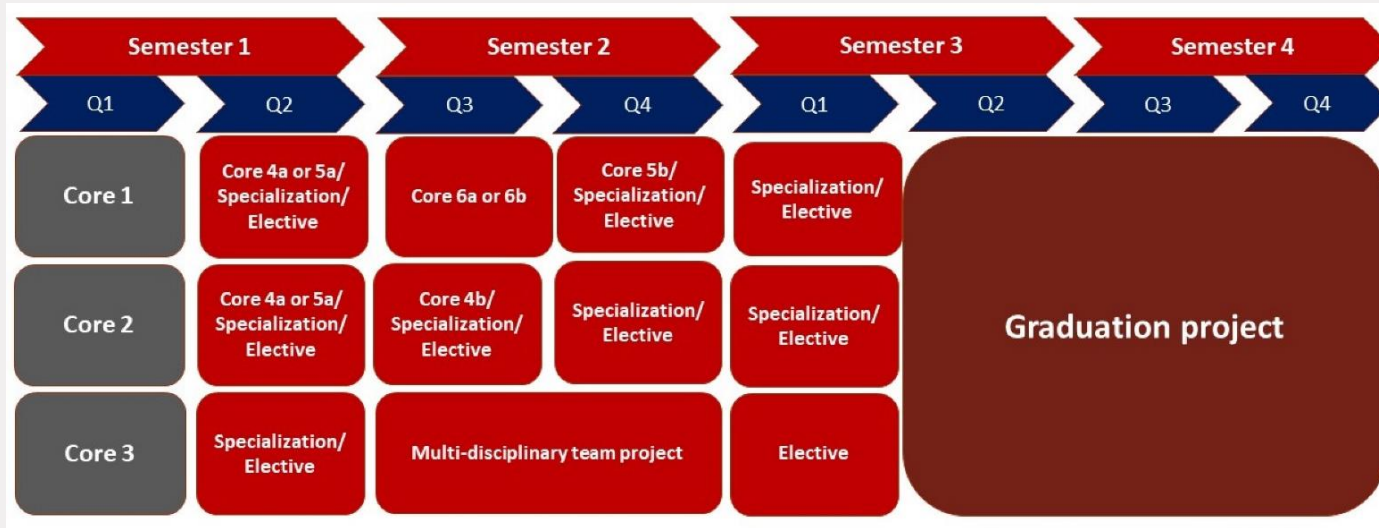
AI&ES GRADUATION PROJECT (45 EC)

To independently execute an academic research project

- Track depending research problems
- Options:
 - Internal project in a research group in one of the Departments or;
 - External project in close cooperation with industry, at a research institute or abroad
- Duration is 32 weeks
- Concluded with an academic report, presentation and defense
- Starting point: Master Market Place / meeting with track mentor



AI&ES TIMELINE (2)



SUBMITTING PROGRAM OF EXAMINATIONS

- You need to fill in a program form and submit this PDF, with an advice of your mentor, via [Osiris Case](#) to the examination committee for approval.
- It is strongly recommended to do this no later than six months after the start of your MSc program.
- Consult your mentor about the courses you would like to include and if there is sufficient coherence.
- The examination committee will have to approve your entire program.
- This [form](#) is available in the digital education guide.

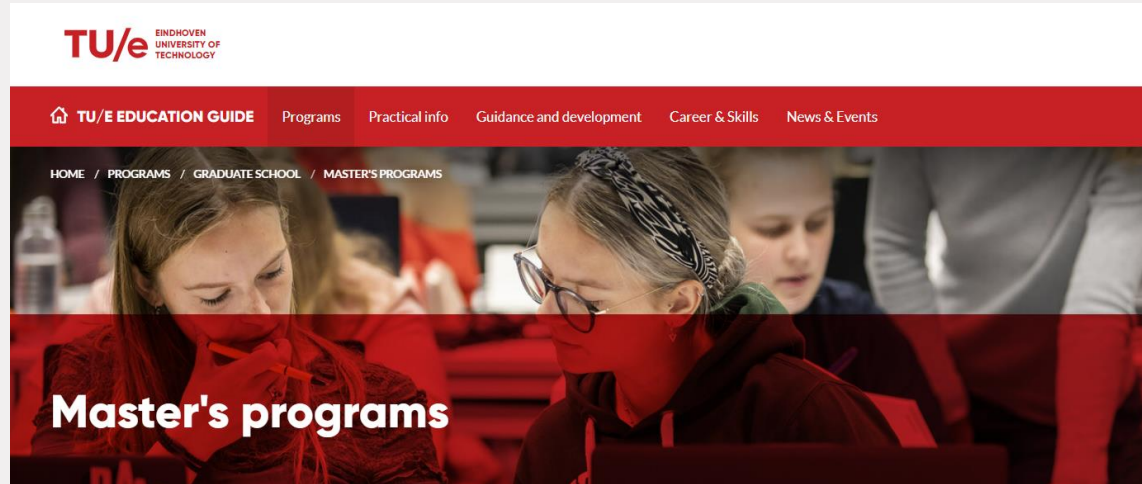
TODAY

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BROADENING

- Honors track
- International Experience
- Certificate programs
- Extra courses
- Training sessions
- Career Academy
- Studium Generale
- SkillsLab
- Double Degree
-



Check the education guide, or ask your academic advisor about all possibilities.

TODAY

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COACHING - MENTOR AND THESIS SUPERVISOR

- **Track Mentor**

- Supervisor in your research track.
- Supports you in composing your curriculum: core, specialization and free electives.
- Discusses with you your plans to further develop your professional skills.
- Supports you in thinking about your career path.

- **Thesis supervisor**

Is a full, associate or assistant professor in a research group involved in your track, and responsible for the supervision of your graduation project.

COACHING - ACADEMIC ADVISOR

Marijke Creusen-Erica

ee.academic.advisor.aies@tue.nl

[Appointment link](#)

Flux 0.122 - 040 – 247 5661

- Advice and support to enhance study progress.
- Study management and planning, course selection, course scheduling, progress graduation project, etc.
- Personal circumstances of influence on study progress and approach
- Information about procedures and regulations according to the PER
- Reactive and proactive monitoring of progress!
- **Personal and confidential appointments!**



Whom to contact

DON'T BOTTLE UP QUESTIONS. WE ARE THERE TO HELP YOU.

Academic advisor
Your first point of contact for study related questions/problems, for example: curriculum, study progress, exam results, specialisations or elective courses.
[READ MORE →](#)

Student counselor
A student counselor provides information about studying with extra support, combining your studies with a career in sports, culture or entrepreneurship, and financial support for study delays due to extenuating circumstances.
[READ MORE →](#)

COACHING – STUDENT-MENTOR

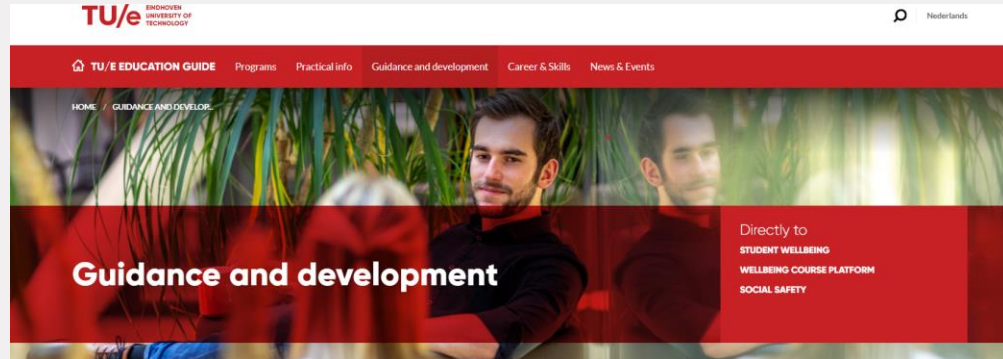


All new TU/e students with a first enrollment at TU/e will be assigned to a student mentor!

- A mentor is a senior MSc student
- Goal: → a first point of contact in case of questions
 → supports you in finding your way at TU/e and creating connections with fellow-students
- Semester A: group meetings and individual meetings

OTHER SUPPORT

- Chain of student guidance
- Wellbeing platform
- Study Plus+
- Trainings
- SkillsLab
- And more!



ONLINE SUPPORT: EDUCATIONAL SYSTEMS



Education guide: Program overview, courses list, regulations, procedures, examination committee, teaching and examination rules, academic year agenda, broadening, communities, extra support, etc....



Osiris: course and exam registration, progress overview



Canvas: Learning management system, course information, course materials, assignments, 4INFOSC, etc.



MyTimetable: personal time schedule



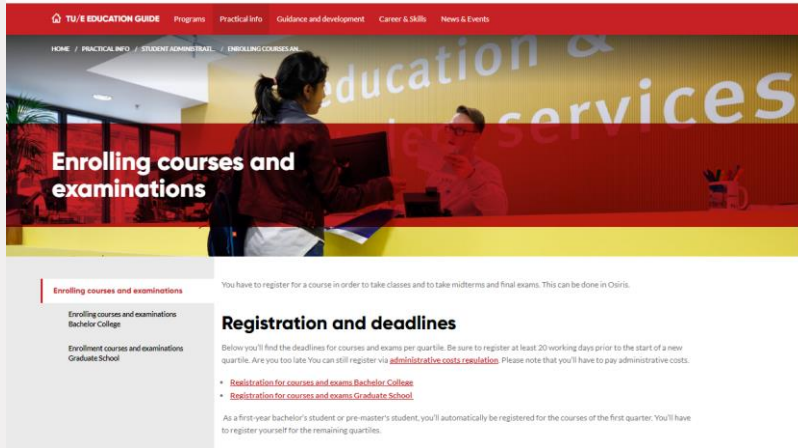
Course Catalogue: Basic course Information

TODAY

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GS REGULATIONS – REGISTRATION COURSES (1)



The screenshot shows the 'Enrolling courses and examinations' page on the TU/e Education Guide website. The page features a red header with navigation links: 'TU/E EDUCATION GUIDE', 'Programs', 'Practical info', 'Guidance and development', 'Career & Skills', and 'News & Events'. Below the header is a navigation bar with 'HOME / PRACTICAL INFO / STUDENT ADMINISTRATION / ENROLLING COURSES AND EXAMINATIONS'. The main content area has a large image of a student and a staff member at a service desk, with the text 'Enrolling courses and examinations' overlaid. Below the image, there is a section titled 'Enrolling courses and examinations' with a sub-section 'Registration and deadlines'. The text explains that students must register for courses to take classes and exams, and provides links for 'Registration for courses and exams Bachelor College' and 'Registration for courses and exams Graduate School'. It also notes that first-year bachelor's students are automatically registered for the first quarter.

[Enrolling courses and examinations \(tue.nl\)](https://www.tue.nl/en/education/practical-info/enrolling-courses-and-examinations)

- You have to register for your courses and exams in Osiris!
- A course registration also includes a first exam registration.
- Make sure to use the check mark 'exams' in Osiris.



The screenshot shows the 'Academic year agenda' page on the TU/e Education Guide website. The page features a red header with navigation links: 'TU/E EDUCATION GUIDE', 'Programs', 'Practical info', 'Guidance and development', 'Career & Skills', and 'News & Events'. Below the header is a navigation bar with 'HOME / PRACTICAL INFO / ACADEMIC YEAR AGENDA'. The main content area has a large image of a student and a staff member at a service desk, with the text 'Academic year agenda' overlaid.

[Academic year agenda \(tue.nl\)](https://www.tue.nl/en/education/practical-info/academic-year-agenda)

GS REGULATIONS – REGISTRATION COURSES (2)

- Check the course registration [deadlines in the education guide!](#)
- You can register for a maximum of 20 EC per quarter.
- Have you missed the deadline → One final opportunity with the AKR deadline.
Up to fifteen working days prior to the beginning of teaching in quarter 2, 3 and 4 = 20,- administration costs.
- Have you missed this extended AKR deadline? Then registration is not possible anymore.
- Course registration for Q1 is closed. Only external students can register for Q1 courses until Friday, September 8.

GS REGULATIONS – REGISTRATION EXAMS (1)

- You are only allowed to take the exam with an exam registration (Osiris).
- A course registration also includes the first exam registration.
- You have to register for re-exams. This is not done automatically.
- You can withdraw until 5 working days prior to the exam period (via ESAhelpdesk@tue.nl.)

GS REGULATIONS – REGISTRATION EXAMS (2)

- Check the exam registration [deadlines in the education guide!](#)
- Have you missed the deadline? One final opportunity with the AKR deadline.
Up to five working days prior to the beginning of the exam period = 20,- administration costs
- Have you missed this extended AKR deadline? Then registration is not possible anymore.
You can't participate in the exam.

GS REGULATIONS – more information

- All course – and exam regulations → [PER and RE AI&ES](#)
- Content of the course, the assessment, and grading → [Osiris catalogue](#)

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FRAUD - BASICS

- **Fraud rules in the Examination Regulations!**
 - A mobile phone in your pocket or on your desk during the exam
 - Copy part of your friend's report
 - Don't refer to all the resources
 - "Forget" some results to bring them in line with other data
 - Forget quotation marks
 - Enable somebody else to copy your work
- **Based upon visible facts, not on intentions**

TU/E CODE OF CONDUCT FOR SCIENTIFIC INTEGRITY

PER MSc AIES, Art. 1.3, TU/e Code of Conduct for Scientific Integrity

‘During enrollment students are held to the TU/e Code of Conduct for Scientific Integrity’.

Mandatory: Signing TU/ Code of Scientific Conduct!

1. Semester A: You have to sign a statement in the presence of your mentor. You have to submit this form to the ee.CSA@tue.nl.
2. At the completion of the Graduation project a signed statement must be attached to your graduation report.

Forms are available in the AI&ES [education guide](#).

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PRACTICALITIES (1)

DATE	TO-DO SEMESTER A (Quarter 1 and 2)	
Before September 4	Be informed!	
Before September 8	Only for new TU/e students: Course registration deadline Q1	
September / October	“Occupational Health, Safety, Environment & Radiation Protection”. A mandatory training (under Dutch law). Intended for all new TU/e students	
September	If you prefer: Subscribe for the EAISI Newsletter!	
September - January	Mentor meetings for new TU/e MSc students	

PRACTICALITIES (2)

DATE	TO-DO SEMESTER A (Quarter 1 and 2)	
September 14	September: 'Choose your Track 'event	
September 21	Submit Final track selection via Canvas 5AIES-INFO	
End of September	First meeting Track Mentor Sign & Submit TU/e Code of Scientific Conduct at ee.CSA@tue.nl	
Before October 15	Registration courses Q2 and exams Q1	
November – January	Second meeting track mentor Submit final program	

THANK YOU!