Academic year 2023-2024

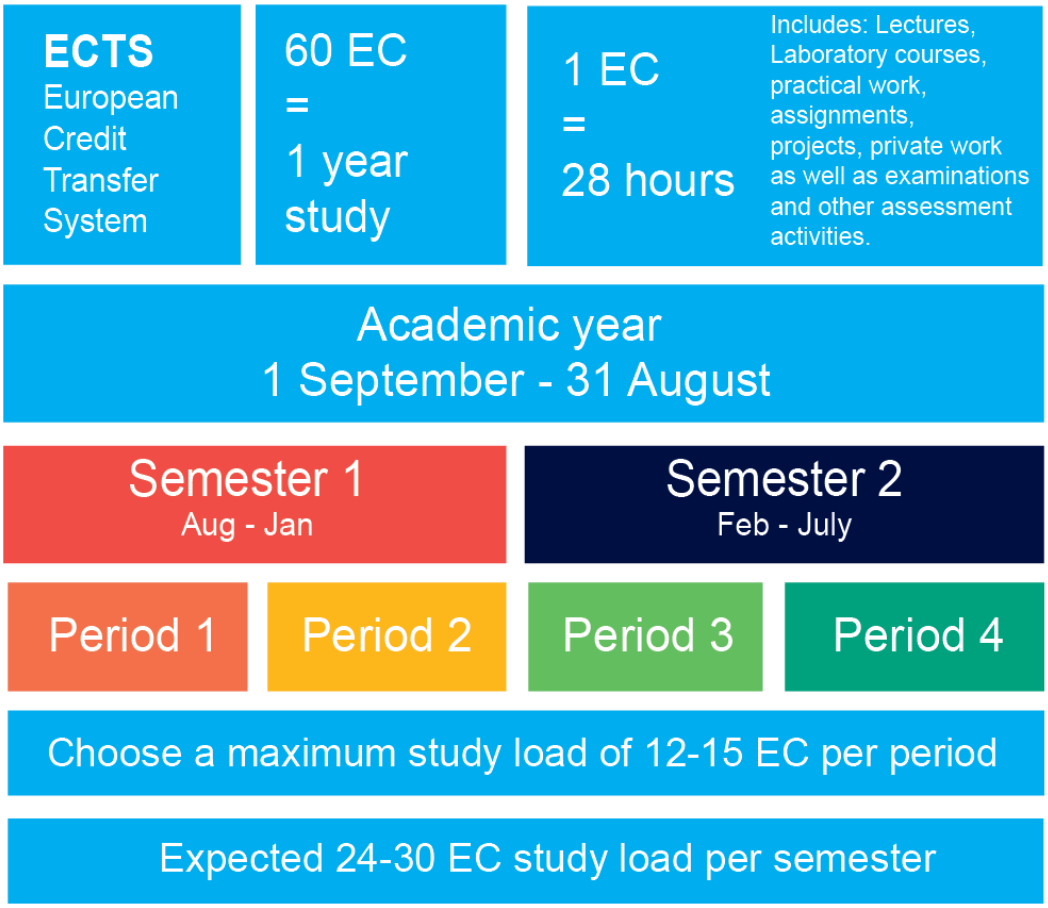
Civil Engineering and Geosciences

Exchange courses

TU Delft

Course selection guidelines

The table below shows how the academic year is divided and what is expected of you from each semester and/or period. With the details below of how many EC you are expected to obtain, you will be able to make a study plan that will need to be approved by your home university and TU Delft.



Things to consider when you choose your courses

1. Will you be staying for 1 or 2 semesters? This will affect the number of EC you need to choose.
2. You must take a course load equal to 24-30 EC per semester, 12-15 EC per period.
3. Most courses should be chosen at the faculty where you are nominated for as student.
4. More detailed information about the courses can be found via the study guide. Guidelines on how to use it can be found here.
5. Are you a BSc or MSc student? Not all BSc courses are taught in English and there are specific requirements to follow MSc courses.
6. Changes to your course plan after your arrival still need to meet the above requirements.
7. Carefully consider your course workload (minimum 24 EC), and the manageability of it. Students are not permitted to re-sit exams after the end of the official exchange period. Alternative course/s will need to be taken at your home university when you return.
8. Within the study programme, the Faculty of Civil Engineering and Geosciences offers fixed course packages for incoming students. These are the recommended module packages, divided per semester and per master programme. If you want a modified package, it is negotiable.

9. Students have the responsibility to check if they meet all prerequisites.

Civil Engineering and Geosciences

Courses for 2023

Important information

Within the study programme, the Faculty of Civil Engineering and Geosciences offers fixed course packages for incoming students. These are the recommended module packages, divided per semester and per master programme.
If you want a modified package, it is negotiable.

The offered courses and modules are divided over the Fall and Spring semester.
All module and course descriptions can be found on our TU Delft study guide.
Students have the responsibility to check if they meet all prerequisites.

Fall semester (September-February)

Master Civil Engineering (1st year)

Course code	Course name	Cat.	Ec.	Period (Q)
CEGM1000	Modelling, Uncertainty and Data for Engineers	MSc	12	Q1, Q2
CIEM0000	Mechanics and Interdisciplinary Perspectives	MSc	9	Q1

Master Civil Engineering (2nd year)

Important note: These courses will only be offered if there are enough enrolments

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM1301	Advanced Computational Mechanics	MSc	5	Q1
CIEM1302	Forensic Construction Materials Engineering	MSc	5	Q1
CIEM1303	Upscaling Techniques in Construction Materials Design and Engineering	MSc	5	Q1
CIEM1304	Glass Science and Engineering	MSc	5	Q1
CIEM2301	Offshore Geotechnical Engineering	MSc	5	Q1
CIEM2302	Trenchless Technologies	MSc	5	Q1
CIEM2303	Rock Mechanics Applications	MSc	5	Q1
CIEM2304	Environmental and Energy Geotechnics	MSc	5	Q1

CIEM3301	Building with Nature	MSc	5	Q1
CIEM3302	Dredging for Sustainable Infrastucture	MSc	5	Q1
CIEM3303	Advanced modelling of turbulent flows and transport	MSc	5	Q1
CIEM3304	Physical Oceanography	MSc	5	Q1
CIEM4301	Onshore Hydropower	MSc	5	Q1
CIEM4302	Cold Regions Engineering	MSc	5	Q1
CIEM4303	Flood Risk	MSc	5	Q1
CIEM4304	Hydraulics Fieldwork	MSc	5	Q1
CIEM5301	Shell Structures	MSc	5	Q1
CIEM5304	CO2 Neutral Structures	MSc	5	Q1
CIEM5305	Fire Safety Design	MSc	5	Q1
CIEM5306	Assessment of Existing Concrete Structures	MSc	5	Q1
CIEM5307	Forensic Structural Engineering	MSc	5	Q1
CIEM5308	Parametric Design and Digital Fabrication	MSc	5	Q1
CIEM5309	Advanced Building Physics	MSc	5	Q1
CIEM5310	Contact and Interface Mechanics for Engineering Structures	MSc	5	Q1
CIEM5311	Loading and life time prediction of transportation infrastructure	MSc	5	Q1
CIEM5312	Emerging Technologies for Transportation Infrastructure	MSc	5	Q1
CIEM6301	Railway Traffic Management	MSc	5	Q1
CIEM6302	Advanced Data Science for Traffic and Transportation	MSc	5	Q1
CIEM6303	Transitions, Sustainability & Innovation	MSc	5	Q1
CIEM6304	eXtended Reality (XR) for Civil Engineering	MSc	5	Q1
CEGM2000	Suspension, Sludges and Soils	MSc	10	Q2
CEGM2001	Sustainable Cities	MSc	10	Q2
CEGM2002	Engineering for Global Development	MSc	10	Q2
CEGM2003	Data Science and Artificial Intelligence for Engineers	MSc	10	Q2
CEGM2004	Noise and Vibration: Generation, Propagation and Effect on Humans and Environment	MSc	10	Q2
CEGM2005	Probabilistic Modelling of real-world phenomena through ObseRvations and Elicitation (MORE)	MSc	10	Q2
CEGM2006	Subsurface Storage for Energy, Water and and Climate Applications	MSc	10	Q2
CEGM2007	Resilient Deltas under Climate Change; Delta Technology	MSc	10	Q2
CEGM2008	Monitoring of Structural Health and Geohazards	MSc	10	Q2
CEGM0210	Engineering Management	MSc	10	Q2

	Systems			

Master Applied Earth Sciences (2nd year)

We offer three fixed course packages in our Master programme for incoming exchange students, in which you can combine electives in the first quarter with a cross-over module in the second quarter.
The cross-over modules will only be offered if there are enough enrolments.

Package Climate and Remote Sensing

Pick two or three courses in the 1st period and 1 course in the 2nd period

Course code	Course name	Cat.	Ec.	Period (Q)
AESM5110C	Aerosol and cloud microphysics	MSc	5	Q1
AESM5120C	Data Assimilation in the Geosciences	MSc	5	Q1
AESM5210C	Climate remote sensing	MSc	5	Q1
AESM5220C	Microwave remote sensing of the Earth's surface	MSc	5	Q1
AESM5240C	Applied space geodesy	MSc	5	Q1
AESM5230C	Coastal remote sensing	MSc	5	Q1
CEGM2003	Data science and artificial intelligence for Engineers	MSc	10	Q2
CEGM2002	Engineering for Global Development	MSc	10	Q2
CEGM2008	Monitoring of Structural Health and Geohazards	MSc	10	Q2
CEGM2001	Sustainable Cities	MSc	10	Q2
CEGM2007	Resilient Deltas under Climate Change/Delta Technology	MSc	10	Q2
CEGM2005	Probabilistic Modelling of real-world phenomena through ObseRvations and Elicitation (MORE)	MSc	10	Q2

Package Geo-resources

Pick two or three courses in the 1st period and 1 course in the 2nd period

Course code	Course name	Cat.	Ec.	Period (Q)
AESM5410C	Occupational Health and Safety Management	MSc	5	Q1
CEGM2003	Data science and artificial intelligence for Engineers	MSc	10	Q2
CEGM2002	Engineering for Global Development	MSc	10	Q2

CEGM2008	Monitoring of Structural Health and Geohazards	MSc	10	Q2
CEGM2005	Probabilistic Modelling of real-world phenomena through ObseRvations and Elicitation (MORE)	MSc	10	Q2

Package Geo-energy
Pick one or two courses in the 1st period and 1 course in the 2nd period

Course code	Course name	Cat.	Ec.	Period (Q)
AESM5310C	Geo-energy integration project	MSc	10	Q1
AESM502C	Data Assimilation for Geosciences	MSc	5	Q1
CEGM2003	Data science and artificial intelligence for Engineers	MSc	10	Q2
CEGM2002	Engineering for Global Development	MSc	10	Q2
CEGM2008	Monitoring of Structural Health and Geohazards	MSc	10	Q2
CEGM2007	Resilient Deltas under Climate Change/Delta Technology	MSc	10	Q2
CEGM2000	Suspension, Sludges and Soils	MSc	10	Q2
CEGM2006	Subsurface storage: energy and climate	MSc	10	Q2

Master Environmental Engineering

Course code	Course name	Cat.	Ec.	Period (Q)
ENVM2100	Industry water	MSc	5	Q1
ENVM2102	Water and health	MSc	5	Q1
ENVM2104	Aquatic ecology & morphodynamics	MSc	5	Q2
ENVM2105	Water law & organization	MSc	5	Q2
ENVM2106	Engineering and development	MSc	5	Q2

Spring semester (February-June)

Bachelor Civil Engineering (3rd Year)

Course code	Course name	Cat.	Ec.	Period (Q)
CTB3330	Structural Mechanics 4	BSc	4	Q3

CTB3310	Surveying & Mapping	BSc	4	Q3
CTB3335	Concrete Structures 2	BSc	4	Q3
CTB3420	Integral Design of Infrastructure	BSc	4	Q4
CTB3350	Open Channel Flow	BSc	4	Q3
CTB3355	Hydraulic Structures 1	BSc	4	Q3
CTB3360	Water Control	BSc	4	Q1, Q3
CTB3365-16	Introduction to Water Treatment	BSc	4	Q3
CTB3415	Water Management Research	BSc	4	Q4
CTB3385	Use of Underground Space	BSc	4	Q3
CTB3390	Mechanics and Flow in Porous Media	BSc	4	Q3
CTB3425-17	Monitoring and Stability of Dikes and Embankments	BSc	4	Q4
CTB3370-18	Geometrical Design of Roads and Railways	BSc	4	Q3

Master modules Civil Engineering (1st Year)

Package Construction Materials

Combine module A with B1 or B2 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM1110	Module A: Measuring and modelling construction behaviour	MSc	9	Q3
CIEM1210	Module B1: Construction materials research	MSc	15	Q4
CIEM1220	Module B2: Design and engineering of construction materials	MSc	15	Q4

Package Geotechnical Engineering

Combine module A with B1 or B2 or B3 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM2110	Module A: Geotechnical modelling	MSc	9	Q3
CIEM2210	Module B1: Geotechnical structures	MSc	15	Q4
CIEM2220	Module B2: Advanced Soil Mechanics	MSc	15	Q4
CIEM2230	Module B3: Delta Geotechnics	MSc	15	Q4

Package Hydraulic and Offshore Structures

Combine module A1 with module B1 or B2 or B3 (24 EC)
or
Combine module A2 with module B1 or B2 or B3 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM4110	Module A1: Hydraulic Structures (Soil-structure interaction)	MSc	9	Q3
CIEM4120	Module A2: Offshore Structures	MSc	9	Q3
CIEM4210	Module B1: Offshore Renewables	MSc	15	Q4
CIEM4220	Module B2: Dams, Dikes and Breakwaters	MSc	15	Q4
CIEM4230	Module B3: Floating and Submerged Structures	MSc	15	Q4

Package Hydraulic engineering
Combine module A1 with module B1 or B2 or B3 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM3110	Module A1: Hydraulic Engineering Fundamentals and Environments	MSc	9	Q3
CIEM3210	Module B1: Coastal Engineering	MSc	15	Q4
CIEM3220	Module B2: River Engineering	MSc	15	Q4
CIEM3230	Module B3: Advanced design of ports and waterways systems and interventions	MSc	15	Q4

Package Structural engineering
Combine module A1 with module B1 or B2 or B3 or B4 or B6 (24 EC)
or
Combine module A2 with module B1 or B2 or B3 or B4 or B6 (24 EC)
or
Combine module A3 with module B1 or B2 or B3 or B4 or B6 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM5110	Module A1: Structural Mechanics and Dynamics	MSc	9	Q3
CIEM5120	Module A2: Design of Structural Components	MSc	9	Q3
CIEM5130	Module A3: Design of Civil Structures and Infrastructures	MSc	9	Q3
CIEM5210	Module B1: Applied Mechanics of Structures	MSc	15	Q4
CIEM5220	Module B2: Applied Dynamics of Structures	MSc	15	Q4
CIEM5230	Module B3: Concrete Structures	MSc	15	Q4
CIEM5240	Module B4: Steel and Composite Structures	MSc	15	Q4
CIEM5250	Module B5: Building Engineering	MSc	15	Q4

CIEM5260	Module B6: Transportation Infrastructures	MSc	15	**Q4**

Package Traffic and Transport Engineering
Combine module A1 with module B1 or B2 or B3 or B4 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
CIEM6110	Module A1: Methods in Traffic and Transport Engineering	MSc	9	**Q3**
CIEM6210	Module B1: Transport Networks and Systems	MSc	15	**Q4**
CIEM6220	Module B2: Road Traffic Systems	MSc	15	**Q4**
CIEM6230	Module B3: Public Transport and Railway Systems	MSc	15	**Q4**
CIEM6240	Module B4: Road and Railway Engineering	MSc	15	**Q4**

Master modules Environmental Engineering (1st Year)
We offer fixed packages in our Master programme for incoming exchange students. Within these packages, students are free to combine one A module with one B module of choice.

Combine module A1 with module B1 or B4 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
ENVM1500	Module A1: Water quality and principles	MSc	9	**Q3**
ENVM1600	Module B1: Water treatment technologies	MSc	15	**Q4**
ENVM1603	Module B4: Water resources engineering and management	MSc	15	**Q4**

Combine module A2 with module B2 or B4 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
ENVM1501	Module A2: Design & modelling of urban water infrastructure systems	MSc	9	**Q3**
ENVM1601	Module B2: Operation, control, management and adaption of urban water infrastructure systems	MSc	15	**Q4**
ENVM1603	Module B4: Water resources engineering and management	MSc	15	**Q4**

Combine module A3 with module B3 or B4 (24 EC)

Course code	Course name	Cat.	Ec.	Period (Q)
ENVM1502	Module A3: River basin hydrology and water management	MSc	9	Q3
ENVM1602	Module B3: Regional hydrology	MSc	15	Q4
ENVM1603	Module B4: Water resources engineering and management	MSc	15	Q4
Combine module A with module B1 or B2 (24 EC)				
Course code	Course name	Cat.	Ec.	Period (Q)
ENVM1200	Module A: Resource engineering	MSc	9	Q3
ENVM1300	Module B1: Waste processing technologies	MSc	15	Q4
ENVM1301	Module B2: Reactive resources and wastes	MSc	15	Q4
Combine module A with module B (24 EC)				
Course code	Course name	Cat.	Ec.	Period (Q)
ENVM1800	Module A: Atmospheric measurements	MSc	9	Q3
ENVM1900	Module B: Grand challenges in AEE	MSc	15	Q4

Master modules Applied Earth Sciences (1st Year)

In the third quarter, students have to combine one 6 EC module with one 9 EC module.
In the fourth quarter, students have to follow a course at another faculty worth 9 EC.

Course code	Course name	Cat.	Ec.	Period (Q)
AESM3001	Atmospheric and Climate Dynamics	MSc	6	Q3
AESM3002	Earth Observation Technologies	MSc	6	Q3
AESM3003	Geo-Energy Engineering Applications	MSc	6	Q3
AESM3004	Economic and Structural Geology	MSc	6	Q3
AESM301A	Atmospheric processes and modelling	MSc	9	Q3
AESM302A	Geo-data analysis and geodesy	MSc	9	Q3
AESM303A	Geo-data and geo-informatics	MSc	9	Q3

AESM304A	Flow and simulation of subsurface processes	MSc	9	Q3
AESM305A	Characterization of the subsurface	MSc	9	Q3
AESM306A	Extraction processes and consequences of raw materials	MSc	9	Q3
AESM307A	Earth deformation processes across scales	MSc	9	Q3
AESM308A	Climate modelling and remote sensing	MSc	9	Q3
AESM309A	Climate change and dynamic landforms	MSc	9	Q3