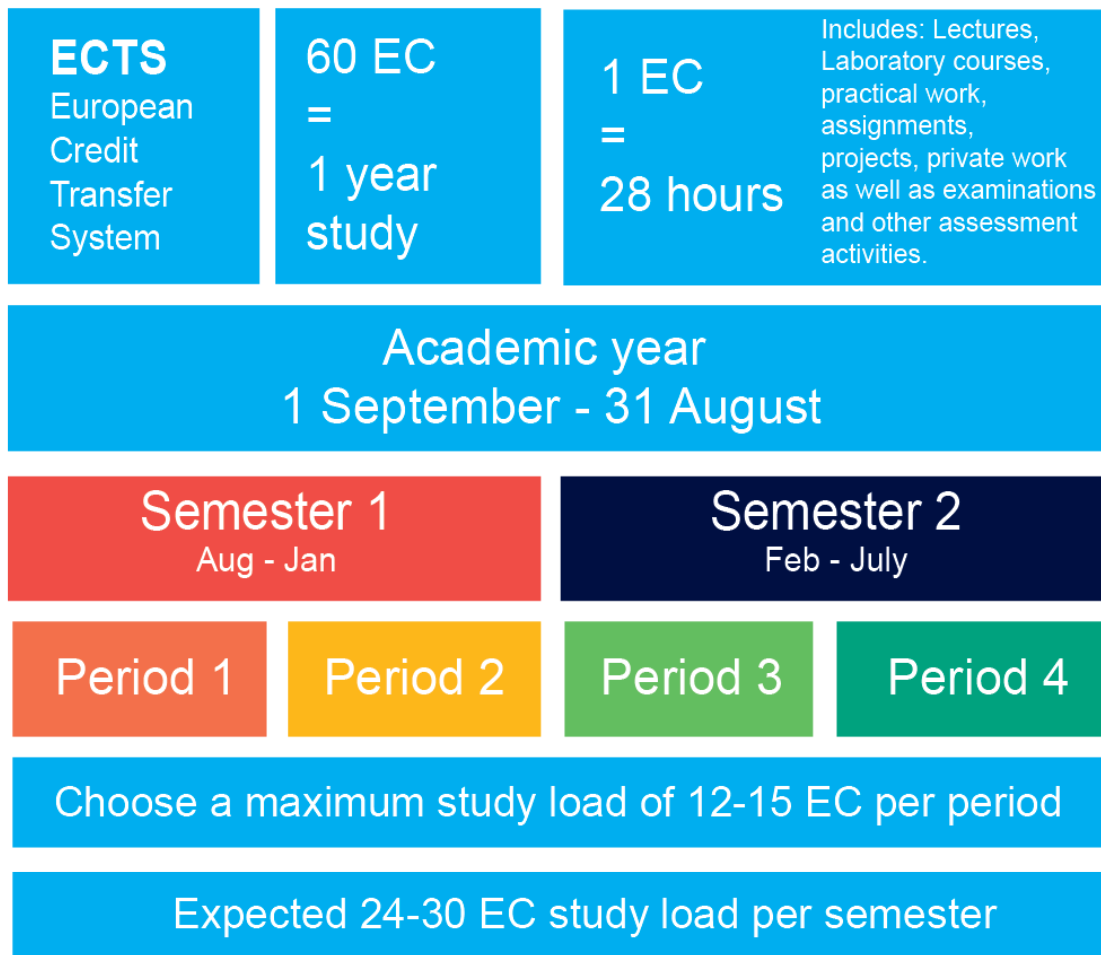Academic Year 2024-2025

Aerospace Engineering
Exchange courses

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.

ECTS European Credit Transfer System	60 EC = 1 year study	1 EC = 28 hours	Includes: Lectures, Laboratory courses, practical work, assignments, projects, private work as well as examinations and other assessment activities.

Academic year 1 September - 31 August			

Semester 1 Aug - Jan		Semester 2 Feb - July	
Period 1	Period 2	Period 3	Period 4

Choose a maximum study load of 12-15 EC per period			

Expected 24-30 EC study load per semester			

Welcome to the course information page for incoming exchange students Aerospace Engineering (AE)!

Below you can find an overview of English taught BSc and MSc courses which are available to exchange students. Some AE courses in this list (last table) are **restricted for exchange students;** you cannot select those. Some other courses are only available to exchange students Aerospace Engineering and not to exchange students from other faculties.

The most recent course information can be found at www.studyguide.tudelft.nl. In the case of conflicting information, the study guide is leading. No rights can be derived from this list. This list is subject to change without notice.

Incoming exchange students registered at the Faculty of Aerospace Engineering are required to follow a minimum of 51% of courses within AE, but are strongly advised to follow a minimum of 70% (the percentages are calculated with regard to the number of EC, not the number of courses).

For incoming students who wish to take courses from other TU Delft faculties, the following conditions apply:
- Students need to clarify in the motivation letter whether they meet the prerequisites of these courses.
- The exchange coordinator of the other TU Delft Faculty must agree to this. Requesting this course approval may lead to a delay in the assessment of the application file. The request will be made by the Exchange Office AE after the student has submitted the exchange application.

The minor programmes Airport Development and Offshore Wind Energy consist of 30 ECTS and are offered in the Fall / 1st semester and consist of 3rd year level BSc courses. The Minors are only available to exchange students enrolled at the Faculty of Aerospace Engineering. We have limited places available, and if needed a selection will be made at the end of the application period (after 1 April).

It is possible to work on research (like a MSc thesis) at our faculty during your exchange. Information about the possibilities and the procedure can be found in the Studyguide through the course AE4997 'Educational Research Project'. It is not possible to take part in any other research/thesis courses, those are meant for our full-time students.

Please be aware that the course offer for the second semester differs from the first semester.

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. You are expected to take a course load equal to 24-30 EC per semester, 12-15 EC per quarter. Carefully consider your course workload per quarter, and the manageability of it.
2. You can only take courses for which you meet the prerequisites, that are stated in the course description of the study guide. This definitely applies to BSc/undergraduate students interested in taking MSc level courses.
3. Most BSc courses from other faculties (than Aerospace Engineering) are taught in Dutch.
4. Changes to your course plan after your arrival still need to meet the requirements mentioned in this Course list AE.
5. Students are not permitted to re-sit exams after the end of the official student exchange enrolment period. Alternative course/s will need to be taken at the home university after return home.

AE
Courses for 2024 - 2025

REMARKS:

*   Very limited places available, course cannot be taken individually (only within the complete Minor program)
**   This course can be taken in two periods; course only lasts one period.

\#   Course requires basic coding knowledge (Python/MATLAB or similar programming languages)
\#\#   Course requires Python coding experience
\#\#\#   Course requires MATLAB coding experience
\#\#\#\# Course requires C++ coding experience

Courses Bachelor first year

Course code	Course name	Cat.	EC.	Period (Q)
AE1108-I	Aerospace Materials	BSc	3	2
AE1108-II	Aerospace Mechanics of Materials	BSc	3	3
AE1110-I	Introduction to Aerospace Engineering I	BSc	5	1
AE1110-II	Introduction to Aerospace Engineering II	BSc	4	2
AE1111-II	Engineering Drawing	BSc	2	1,2
AE1130-I	Statics	BSc	4	1
AE1130-II	Dynamics	BSc	3	2
AE1205	Programming & Scientific Computing in Python	BSc	2	4
AE1241	Physics	BSc	6	3,4
WI1402LR	Calculus II	BSc	5	3
WI1403LR	Linear Algebra	BSc	5	4
WI1421LR	Calculus I	BSc	6	1,2

Courses Bachelor Second year

Course code	Course name	Cat.	EC.	Period (Q)
AE2130-I	Aerodynamics I	BSc	3	1
AE2130-III	Aerodynamics II *(excl. wind tunnel practical!)*	BSc	3	2
AE2135-I	Structural Analysis and Design	BSc	5	2
AE2135-II	Vibrations	BSc	3	2
AE2220-I ##	Applied Numerical Analysis	BSc	3	3
AE2220-II ##	Computational Modelling	BSc	3	4
AE2224-II ##	Artificial Intelligence for Aerospace Engineering	BSc	3	3
AE2230-I	Flight and Orbital Mechanics	BSc	4	3
AE2230-II	Propulsion and Power	BSc	4	3
AE2235-I #	Aerospace Systems & Control Theory	BSc	4	4
AE2235-II ##	Signal Analysis and Telecommunication Principles	BSc	3	4
WI2180LR-I	Differential Equations	BSc	4	1
WI2180LR-II	Probability and Statistics	BSc	4	1

Courses Bachelor Third year

Course code	Course name	Cat.	EC.	Period (Q)
AE3211-I	Systems Engineering & Aerospace Design	BSc	3	3
AE3211-II	Production of Aerospace Systems	BSc	3	3
AE3212-I	Aerospace Flight Dynamics & Simulation *(excl. flight test!)*	BSc	5	3

Minor Offshore Wind Energy

Limited places available for exchange students enrolled at the Faculty of Aerospace Engineering, please contact exchange-ae@tudelft.nl first.

Course code	Course name	Cat.	EC.	Period (Q)
AE3512-20 #	Asset Management	Minor	5	2
AE3513 *	Integration Assignment	Minor	6	2
CT3101 *	Project Management Basics	Minor	5	1
AE3515	Basics of Aeroacoustics for Wind Energy	Minor	3	2
TBM024B	Introduction to Energy systems	Minor	5	1
AE3516A	Fundamentals of Wind Energy I	Minor	3	1
AE3516B	Fundamentals of Wind Energy II	Minor	3	2

Minor Airport Development

Limited places available for exchange students enrolled at the Faculty of Aerospace Engineering, please contact exchange-ae@tudelft.nl first.

Course code	Course name	Cat.	EC.	Period (Q)
AE3501-19	Air Transportation	Minor	3	1
AE3502-14	Airport Planning, Design and Operations	Minor	4	1
AE3503 *	Strategic Planning for Airport Systems	Minor	6	2
TB241TB	Logistics 2	Minor	5	1
CT3080LR	Landside Accessibility of Airports	Minor	6	1
IO3818	Designing an Airport Ecosystem	Minor	6	2

Minor Space Missions

This minor and its related courses are not available for exchange students

MSc Aerospace Engineering Profile courses (all tracks)

A track is a general field of Aerospace Engineering (discipline) and a profile is a refined direction within that field of expertise (subdiscipline). The faculty of AE has five tracks, each with two to three profiles. Profile courses are courses allowing students to focus on their specific subdiscipline within one of the tracks.

Course code	Course name	Cat.	EC.	Period (Q)
AE4115-23	Experimental Simulations	MSc	3	2,3
AE4120	Viscous Flows	MSc	3	2
AE4130-22	Aircraft Aerodynamics	MSc	4	1,2
AE4135	Rotor/wake Aerodynamics	MSc	4	3,4
AE4136-24	CFD 2: Discretization Techniques	MSc	5	2
AE4180	Flow Measurement Techniques	MSc	3	3,4
AE4202	CFD for Aerospace Engineers	MSc	3	1
AE4W02TU	Introduction to Wind Turbines: Physics and Technology	MSc	4	2
AE4W21-14	Wind Turbine Aeroelasticity	MSc	2	4
AE4T40	Airborne Wind Energy	MSc	3	1,2
AE4W09	Wind Turbine Design	MSc	5	3,4
AE4W13 ###	Site Conditions for Wind Turbine Design	MSc	3	3,4
AE4204 ##	Knowledge Based Engineering	MSc	4	3,4
AE4205 ###	MDO for Aerospace Applications	MSc	4	1,2
AE4238	Aero Engine Technology	MSc	4	2
AE4240	Advanced Aircraft Design I	MSc	4	1
AE4261	Internal Flows	MSc	3	2

Code	Title	Level		
AE4302	Avionics and Operations	MSc	3	2
AE4304	Stochastic Aerospace Systems	MSc	3	2
AE4304P #	Stochastic Aerospace Systems Practical	MSc	1	3
AE4316	Aerospace Human-Machine Systems	MSc	4	2
AE4316P	Advanced Topics in Aerospace Human-Machine Systems	MSc	3	3
AE4322-24	Piloted Flight Simulation	MSc	3	3
AE4422-20	Agent-based Modelling and Simulation in Air Transport	MSc	4	3
AE4423-20 #	Airline Planning and Optimisation	MSc	4	2
AE4431-23	Aircraft Noise	MSc	3	1
AE4441-16	Operations Optimisation	MSc	4	1,2
AE4462-17	Aircraft Emissions and Climate Effects	MSc	4	3
AE4463P-23	Advanced Aircraft Noise Modelling and Measurement	MSc	4	2
AE4ASM001	Design of lightweight structures I: Composites & Metals	MSc	3	1
AE4ASM002	Designing Materials with Aerospace Specific Properties	MSc	3	1
AE4ASM003 #	Linear Modelling incl. (F.E.M)	MSc	3	1
AE4ASM004	Manufacturing of Aerospace Structures & Materials	MSc	3	1
AE4ASM005	Fatigue of Structures & Materials	MSc	3	1
AE4ASM101TU-22	Polymer Science	MSc	4	2
AE4ASM103	Functional Coatings	MSc	3	2
AE4ASM106	Stability & Analysis of Structures I	MSc	3	2

Course code	Course name	Cat.	EC.	Period (Q)
AE4ASM108	Experimental Techniques & NDT	MSc	3	2
AE4ASM109 #	Mechanics & Structural Health Monitoring of Composite Structures	MSc	5	3
AE4ASM110-22	Polymer Composite Manufacturing	MSc	4	2
AE4ASM506	Fundamentals of Aeroelasticity	MSc	3	3
AE4ASM524	Spacecraft Structures Development	MSc	3	4
WI2056LR	Systems Theory	MSc	4	1

MSc Electives from all tracks

Electives are more broad than profile courses and complement core and profile courses.

Course code	Course name	Cat.	EC.	Period (Q)
AE4117 ###	Fluid-Structure Interaction	MSc	4	3
AE4139	CFD 3: Large Eddy Simulation	MSc	3	3
AE4138-18 ##	CFD 4: Uncertainty Quantification	MSc	3	4
AE4185	Fluid Flow Data Processing & Visualization	MSc	3	4
AE4260A	Fundamentals of Aeroacoustics	MSc	2	2
AE4260B	Experimental Applications of Aeroacoustics	MSc	2	3
AE4W30	Wind Resource and Wind Farm Yield	MSc	4	1,2
AE4314-21	Helicopter Performance, Stability and Control	MSc	4	3
AE4317 ####	Autonomous Flight of Micro Air Vehicles	MSc	4	3
AE4321-15	Air Traffic Management	MSc	4	2,3

AE4323 ##	Real-time Distributed Flight and Space Simulation	MSc	3	4
AE4350	Bio-inspired Intelligence and learning for Aerospace Application	MSc	3	4
AE4352	Mathematical and human-inspired decision making	MSc	3	3
AE4446	Airport and Cargo Operations	MSc	4	2
AE4465	Maintenance Modelling & Analysis	MSc	4	4
AE4ASM503	Sheet Metal Forming	MSc	3	3
AE4ASM504	Structural Integrity and Maintenance	MSc	3	3
AE4ASM510	Design & Analysis of Composite Structures II	MSc	3	4
AE4ASM511	Stability & Analysis of Structures II	MSc	3	3
AE4ASM515-22	Characterization of materials and components	MSc	4	2
AE4ASM517	Aircraft Manufacturing Laboratory	MSc	6	1,(2),3,4
AE4ASM520	Industrial Composite Manufacturing	MSc	3	3
AE4ASM521	Additive Manufacturing	MSc	3	4
AE4ASM522	Applied Aircraft Aeroelasticity	MSc	3	4
AE4ASM514TU	Continuum Mechanics	MSc	4	3

MSc Electives only open to exchange students enrolled at the Faculty of Aerospace Engineering

Courses listed below are only open to exchange students enrolled at the Faculty of Aerospace Engineering. Exchange students enrolled in other faculties cannot take these courses. This restriction may be due to limited capacity, specific prerequisite knowledge, or special enrolment policies. For checking special enrolment processes, please refer to the Studyguide: https://www.studyguide.tudelft.nl/

Course code	Course name	Cat.	EC.	Period (Q)
AE4006E**	Sustainability in Engineering	MSc	5	2,4
AE4007	AI for Mindfulness in Engineering	MSc	5	2,3,4
AE4872 ###	Satellite Orbit Determination	MSc	6	2,3
AE4874 I	Fundamentals of Astrodynamics	MSc	4	1
AE4876-24	Planetary Missions	MSc	5	2
AE4890-11	Planetary Exploration	MSc	4	1
AE4893-24 #	Physics of Planetary Interiors	MSc	5	4
AE4894 ##	Practical Astrodynamics	MSc	3	2
AE4896	Space Instrumentation	MSc	4	1,2
AE4S12-23	Space Systems Engineering	MSc	4	1,2
WM0324LR **	Ethics and Engineering for Aerospace Engineering	MSc	3	2,3

MSc courses at another TU Delft faculty strongly related to Aerospace

Incoming exchange students registered at the Faculty of Aerospace Engineering are required to follow a minimum of 51% of courses within AE, but are strongly advised to follow a minimum of 70% (the percentages are calculated with regard to the number of EC, not the number of courses).

Course code	Course name	Cat.	EC.	Period (Q)
WM1115TU	Dutch Elementary 1	N/A	3	1,2,3,4
ET4117	Electrical Machines and Drives	MSc	4	2
ME45001	Advanced Heat Transfer	MSc	4	1
ME45026	Introduction to Multiphase Flow	MSc	3	3
ME45030	Turbulence	MSc	5	3,4
ME46060 ###	Engineering Optimisation: Concept and Applications	MSc	3	3
MS43310	Materials at High Temperature	MSc	4	4
WI4014TU #	Numerical Analysis	MSc	6	1,2
WI4019-SP	Non-linear Differential Equations	MSc	6	1,2
WI4201	Scientific Computing	MSc	6	1,2
WI4525TU #	Monte Carlo Simulation of Stochastic Processes	MSc	5	1,2

Please note that the following courses (/projects) are NOT available for Exchange Students:

Course code	Course name
AE1111-I	Exploring Aerospace Engineering
AE1222-I	Design and Construction
AE1222-II	Aerospace Design & Systems Engineering Elements
AE2111-I	Systems Design
AE2111-II	Aerospace Design & Systems Engineering Elements
AE2130-II	Low-Speed Wind tunnel Test
AE2224-I	Test, Analysis & Simulation
AE3212-II	Simulation, Verification & Validation
AE3200	Design Synthesis
AE4140	Gas Dynamics
AE4143	Hypersonic Aerodynamics
AE4206	Turbomachinery
AE4262	Combustion for propulsion and power technologies
AE4263	Modeling, Simulation and Application of Propulsion and Power Systems
AE4270	Control and Operations Project
AE4301	Automatic Flight Control Systems Design
AE4301P	Exercise Automatic Flight Control System Design
AE4311	Nonlinear and Adaptive Flight Control
AE4313-20	Spacecraft Attitude Dynamics and Control
AE4320	System Identification of Aerospace Vehicles
AE4324	Physical Interaction for Aerial and Space Robots
AE4351	Robust Flight Control
AE4353	Artificial Intelligence for Aerospace Control and Operations
AE4866(-1)	Propagation and Optimization in Astrodynamics
AE4868(-1)	Numerical Astrodynamics

AE4870A	Rocket Motion
AE4870B	Re-Entry Systems
AE4895-24	Measurement Strategies for Planetary Science Missions
AE4897	Space Engineering Practical
AE4898	Space debris tracking and mitigation
AE4ASM105	Trinity Exercise
AE4ASM505	Non-Linear Modelling (using F.E.M.)
AE4ASM513	Forensic Engineering
AE4ASM523	Design of Spacecraft and Launcher Structures
AE4ASM525	Materials for Space
AE4ASM526	Spacecraft Thermal Design
AE4S07	Micropropulsion
AE4S10	Microsat Engineering
AE4S15	Space Embedded Systems
AE4S52	Collaborative Space System Design Project
AE4W31	Floating Offshore Wind Energy
AE4010	Research Methodologies
TUD4040	Joint Interdisciplinary Project
AE5051	Internship
AE5055	Professional Training
AE5122	Thesis Aerodynamics & Wind Energy
AE5222	Thesis Flight Performance & Propulsion
AE5322	Thesis Control & Operations
AE5722	Thesis Aerospace Structures & Materials
AE5822	Thesis Space
AE5912	Thesis Wind Energy Rotor Design