Master Aerospace Engineering
Flight Performance and Propulsion (FPP)

MSc Programme

Join us in the exploration of future aircraft and propulsion systems! This curriculum enables students to acquire the necessary scientific knowledge and technical skills to address the design challenges of modern and next generation aircraft and their propulsion and power systems. Our goal is to form the new generation of engineers and scientists who will extend the technology leadership of the aeronautic industry and greatly reduce the environmental impact of aviation.

Degree	Master of Science
Starts	September
Type	Full-time
Credits	120 ECTS, 24 months
Language	English
Application deadline	
- Dutch degree	May 1st
- Non-Dutch degree	
• EU/EFTA	April 1st
• Non-EU/EFTA	January 15th
Scholarships	tudelft.nl/scholarships

FPP offers a tailored educational programme organized in two profiles: one focused on flight performance, which covers the domains of aircraft design and design methodologies, and one specific to propulsion and power. The two profiles offer different sets of mandatory courses (profile courses) plus one set of shared (core) courses. The core courses provide the fundamental knowledge necessary to the integration of the aircraft with the propulsion system and include Aircraft Aerodynamics, Aero Engine Technology, Computational Fluid Dynamics and Multidisciplinary Design Optimisation. A period of internship at a company is also common to the two profiles. The study program culminates with an individual thesis project, where students directly contributes to the research activity pursued by the FPP Chairs in the areas of innovative aircraft configurations, advanced design methods, novel propulsion concepts and aircraft-engine integration. Under the supervision of the scientific staff, students explore new concepts and develop the required methods to improve the prediction and simulation of air-vehicle and/or propulsion systems performance. In this effort, they also contribute to the digitalization of the overall design process, thus enhancing its quality and effectiveness.

TUDelft

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FIRST YEAR	SECOND YEAR
CORE COURSES (15 EC)	LITERATURE STUDY (12 EC)
PROFILE COURSES Flight Performance (14 EC) Propulsion and Power (18 EC)	RESEARCH METHODOLOGIES (2 EC)
ELECTIVE COURSES Flight Performance (15 EC) Propulsion and Power (11 EC)	MASTER THESIS PROJECT (42 EC)
INTERNSHIP (18 EC)	

Profiles

The core and profile courses are planned in the first three quarters of the first year of the MSc to leave the fourth quarter free for the internship leave. The second year of the MSc is dedicated to the thesis project and related literature study.

Flight Performance

The specialisation courses included in this profile deal with aerodynamic design of high subsonic transport aircraft, experimental simulations (including tutorials in the Faculty wind tunnel), aeroelasticity and knowledge-based engineering (digital design methods to support the development of complex systems). Some courses have a theoretical approach and aim to provide a fundamental understanding of the governing physics, whereas others are more applied and require good programming skills. In consultation with the profile coordinator, students can choose also a set of elective courses to extend or deepen their knowledge in some specific areas, such as computational fluid dynamics, aircraft manufacturing and aviation sustainability aspects.

Propulsion and Power

The specialisation courses in this profile (18 ECTS in total) cover relevant aspects in turbomachinery, combustion (including tutorials in the Faculty propulsion lab), internal flows, advanced heat transfer and methods for modelling, simulation and application of propulsion and power systems. As for the FP profile, some courses have a theoretical approach and aim to provide a deep understanding of the governing physics, while others are more applied and require programming skills. Elective courses can be selected to extend knowledge, for example, in the areas of advanced aircraft design and environmental impact, or to deepen into the domain of thermodynamics and alternative energy systems.

Student Profile

The ideal FPP student has a passion for aircraft design and/or propulsion, wants to make an impact on future sustainable aviation, has a multidisciplinary mind, is able to go in depth without losing control of the big picture, has solid understanding of flight physics, fluid dynamics and thermodynamics, is strong in mathematics and computer programming, is proactive and can work independently. Optionally she/he is interested in permoring experimental work in some of our world class facilities, including wind tunnels, combustion rigs with laser diagnostics, and manufacturing labs to build sub-scaled aircraft prototypes.

Career prospects

The job perspectives for FPP graduates are outstanding. Many of our graduates pursue a career in the aerospace field, either in industry or research institutes. In the Netherlands, popular employers are GKN Fokker (Aerostructures and ELMO), the Dutch National Aerospace Laboratory (NLR), TNO, Royal Dutch Shell, KLM, Siemens and techno-starters such as KE-works and ParaPy. Many of our graduates aspire to an international career and take interesting positions at Airbus, Leonardo, Rolls-Royce, MTU Aero Engines and Safran, or at research institutes such as the German Aerospace Center (DLR). Others start their own company or work in consultancy and even finance. Some choose to stay in academia and pursue a PhD degree.

21st
QS World Ranking (faculty)

1.263
MSc students

43%
international MSc students

100%
English-language programme

Career Perspective

79%
job within 3 months

40%
job in Aerospace sector

60%
job in other sectors such as Engineering, Management, Consultancy, etc.

TU Delft

www.tudelft.nl/msc/ae

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