

HONOURS AVIATION ENGINEERING

EXCHANGE PROGRAMME

INFORMATION FOR INTERNATIONAL STUDENTS



AMSTERDAMUAS.COM

CREATING TOMORROW

HONOURS AVIATION ENGINEERING

THIS PROGRAMME OFFERS A WELL-ROUNDED EDUCATION IN RESEARCH AND TECHNOLOGY. YOU WILL JOIN LIKE-MINDED STUDENTS FROM A DIVERSITY OF BACKGROUNDS AND WORK TOGETHER TO DEVISE INNOVATIVE SOLUTIONS TO TODAY'S REAL-WORLD PROBLEMS RELATING TO DATA MINING IN MRO, HUMAN FACTORS AND SAFETY, AND COMPOSITE MATERIALS.

The Aviation Engineering programme has three distinct focus areas that are linked to current aviation challenges, but are also relevant to other transportation industries and sectors.

COURSE FOCUS AREAS

Data mining in MRO

MRO (maintenance, repair and operations) seeks to harness big data to improve maintenance processes. In theory, big data have predictive value for maintenance processes as a whole and for the actual need for maintenance of individual components. Two main challenges confront us:

- ▶ Data availability and standardisation: standardised data is a basic requirement for data analysis.
- ▶ Data analytics: even when MRO is able to unlock the data needed, it remains difficult to find meaningful patterns that have actual predictive value within data sets.

Human factors and safety

How can we maximise the way people and machines work together? When do people make mistakes, and why? Although air travel has never been safer than it is now, safety must remain an ongoing priority, especially as aviation continues to grow. At the same time, aviation needs to remain profitable as companies strive to maintain existing levels of service and employment. Today's challenges lie in the interaction between man and machines – in other words, in human factors.

Composite materials and systems

What is needed for the maintenance of composite materials in aircraft and other transportation equipment? How do we detect damage? How can we best use sensor data? Composite materials are increasingly being used in construction, but the fault sensitivity of these materials is less



predictable than of traditional construction materials. Not only are failures harder to spot, their occurrence can be very sudden. This is the main problem driving our research into the best way to discover damage outside regular inspections and thereby to increase the lifespan of composite materials.

EDUCATIONAL FORMAT

The Honours Programme approach is heavily influenced by similar programmes at American universities. Classes are taught in a seminar style, with a strong emphasis on active participation and discussion. The instructor will regularly call on you, so coming prepared is essential.

You will:

- ▶ have a demanding workload (approximately 25% more demanding than that of the standard final-year curriculum).
- ▶ be at school every weekday from at least 9 am to 5 pm (autumn semester).
- ▶ help to prepare some of the course material.
- ▶ focus on learning research skills, strengthening your theoretical knowledge base and interacting with others.
- ▶ attend workshops and enter the real world of the academic and business research laboratory.

In the spring semester (if you do the full-year exchange) you will tackle a challenging research project in one of the three main focus areas. You will do this either at the AUAS or through a company internship, depending on the topic you choose to investigate.

LEARNING OUTCOMES

After completing this programme you will be:

- ▶ acquainted with the major issues of composite materials and inspection of composites. Understand the concepts and applications of USV, SHM, NDT and CBM.
- ▶ able to understand how data can be used to optimise MRO processes.
- ▶ able to understand the state of the art fundamentals on safety, human factors and systems thinking.
- ▶ able to cope with uncertainty, unexpected situations and opportunities.
- ▶ able to apply the general principles of doing research through discussions, visits, different forms of research and critical thinking.
- ▶ understand how data can be used to optimise MRO processes.
- ▶ able to present your research findings in the form of papers and oral presentations including performing literature studies, academic writing, presentation, argumentation and providing and receiving feedback.



- ▶ Acquainted with the successive phases of scientific research on the basis of projects and interactive methodological feedback. This includes examination of research questions, frameworks and hypotheses and training in qualitative and quantitative methods of data collection and analysis.

PROGRAMME OUTLINE

- ▶ Credits: 30 ECTS (autumn semester) or 60 ECTS (full academic year).
- ▶ Educational format: lectures, workshops.
- ▶ Term: autumn semester (beginning of September- end of January) or full academic year (September-July). You can apply to do an exchange for the autumn semester or the full academic year, not for the spring semester only. If you opt for the full year, your research project may satisfy your home institution's final project/thesis requirements.
- ▶ Course completion certificate: you receive an honours certificate providing proof of your excellence to future employers.

ADMISSION REQUIREMENTS

There is a maximum of 15 places in the Honours Programme each year. Admission is highly selective and limited to students studying Aviation, Engineering, Design and Innovation, E-technology, Business Mathematics and Business Management and Technology.

The following additional requirements apply:

- ▶ You must be in the final year of your Bachelor's programme.
- ▶ You have no more than 5 credits (ECTS) outstanding from previous years.
- ▶ Proficiency in English (CEFR B1).

HOW TO APPLY

If you would like to enrol in this honours programme, please visit amsterdamuas.com/technology-courses and complete the application form before the deadline.

Enrolment deadline

- ▶ Autumn semester: 1 May

PRACTICAL MATTERS

- ▶ International office: internationalofficeft@hva.nl (visa, housing and other practical matters)

Cover photo: Rutger Smulders

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