

MSC IN MECHANICAL ENGINEERING*

COMBINING THEORY WITH PRACTICE

How do you design the blades of a wind turbine? How do you calculate the lifetime of a welded construction? How do you optimise the use of a robot? How to build a rocket engine? How do you improve the use of renewable energy? How do you design the future energy systems? How do you take part in the rapid development of 3D printed materials? How do you analyse the dynamic performance of a racing car or offroad vehicle? How to use a digital twin in the manufacturing processes? These are just some of the questions you may be exploring on the MSc programme in Mechanical Engineering.

The teaching in the programme draws on the lecturers' own research, and students have the opportunity to apply high-level theory and advanced simulations to practical issues, with scope for interdisciplinary collaboration. You will acquire a solid background in mechanical engineering fields such as continuum mechanics, composites, elasticity, plasticity, failure mechanisms, structural dynamics, fluid dynamics, energy storage, energy conversions, thermodynamics, and robotics.

You will also gain a deep understanding of the fundamentals of computational methods in mechanical engineering. Multibody dynamics, modal analysis, and computational fluid dynamics (CFD) will form a core part of your study, using own-developed and commercial software such as the finite element method (FEM).

SPECIALISE AS YOU CHOOSE

The first and second semester include a number of compulsory courses and elective course packages within the specialisations of structural

mechanics, dynamics, materials engineering, thermo-fluid engineering, and robot systems. The third semester includes elective courses and a project that can be undertaken in collaboration with a company and/or a research group.

STUDENT LIFE

At Aarhus University you will be part of an extensive engineering environment with more than 3,000 engineering students. So you will have ample opportunity to get involved in both academic and social student associations with your fellow students.

The Department of Engineering has a number of social spaces for meeting other students outside class, and these are an excellent basis for social activities. As in all departments, there is a popular Friday bar, and the RIA student association organises celebrations and social events for all students at AU Engineering.

CAREERS

Graduates from the Mechanical Engineering programme are currently working in a wide range of fields – from basic engineering or science research in joint projects with research institutes and the industrial sector, to R&D projects in industry. Many have moved into careers within R&D departments in industrial enterprises, while some have undertaken PhDs in Denmark or abroad.



◀ I spent my first year as a structural designer doing computations of the load-carrying structure of the nacelle – the “box” at the top of the tower of a wind turbine. I subsequently got a job as technical project manager in the same department, where I was responsible for the budget and had much more dialogue with different departments at Siemens. I’ve now been appointed team coordinator and am responsible for an eleven-man team, including engineers and specifiers. I regard being a leader as an interesting and challenging job, and I’d like to develop in this area in the future.

ANDREAS GOTFREDSEN

MSc in Mechanical Engineering
Team Coordinator, Siemens Wind Power



PLACE OF STUDY

Aarhus

WWW

masters.au.dk/mechanicalengineering

ANNUAL TUITION FEE

EU/EEA/Swiss citizens: FREE
Others: EUR 13,500

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1 ST SEMESTER	2 ND SEMESTER	3 RD SEMESTER	4 TH SEMESTER
Compulsory Courses	Compulsory Courses	Elective Courses	THESIS
Compulsory Courses	Compulsory Courses	Elective Courses	
Specialised Study Package 1	Specialised Study Package 2	Elective Courses	
		Elective Courses	
30 ECTS	30 ECTS	30 ECTS	30 ECTS

COMPULSORY COURSES

AUTUMN

Continuum Mechanics
Finite Element Method

10 ECTS
5 ECTS

SPRING

Innovation and Entrepreneurship
Mechanical Vibrations
Optimisation Algorithms and Programming

5 ECTS
5 ECTS
5 ECTS

SPECIALISED STUDY PACKAGES

Choose two of the specialised study packages

AUTUMN

Structural Mechanics

Beams and Plates 5 ECTS
FEM for Nonlinear Materials and Geometry 10 ECTS

Fluid Dynamics

Computational Dynamics 5 ECTS
Fluid Dynamics and Turbulence 10 ECTS

Robotics

Robotics 5 ECTS
Control and Sensor Technology 10 ECTS

SPRING

Dynamics

Computational Dynamics 5 ECTS
Dynamic Systems with Applications 10 ECTS

Fracture and Composites

Fracture Mechanics 10 ECTS
Mechanics of Composite Materials 5 ECTS

Thermo Machinery

Thermodynamics and Heat Transfer 10 ECTS
Turbo Machinery and Compressible Fluids 5 ECTS

ELECTIVE COURSES

Choose courses from the specialised study packages or other courses at the Department of Engineering and the broader Faculty of Science, subject to approval by the study programme manager.

AU Course Catalogue: kursuskatalog.au.dk/en/