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 computer chip or a fuel cell? How do you analyse the dynamics of a racing car? These are just some of the questions you may be exploring on the MSc in Mechanical Engineering programme.

The programme provides students with the opportunity to apply theory to practical issues, with scope for interdisciplinary collaboration. You will gain a sound understanding of advanced calculation methodologies, such as the finite element method (FEM) and multidisciplinary simulation tools. You will study topics such as computational fluid dynamics (CFD), structural dynamics and modal analysis, and fracture mechanics and fatigue. The basis for these competencies includes continuum mechanics, elasticity theory and plasticity theory.

CHOICE OF ELECTIVES AND SPECIALISATION

The first and second semester include a number of compulsory courses and elective course packages within the specialisations of applied mechanics, materials engineering, thermo-fluid engineering and robot systems. The third semester includes elective courses, as well as a project that can be undertaken in collaboration with a company and/or a research group.

As a student on the degree programme, you will be offered semi-annual student development interviews, in which you can discuss topics such as requests and plans regarding choice of courses, as well as choosing subjects from other departments at Aarhus University.

STUDENT LIFE

The Department of Engineering has a number of social spaces where you can meet other students outside class, and this is an excellent basis for social activities. There is also an engineering club for staff and students through which students can network with like-minded people. As in all departments, there is a popular Friday bar, and the Tågekammeret association organises celebrations and social events for all science and technology students across departments.

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

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PLACE OF STUDY
Aarhus

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

WWW
masters.au.dk/mechanicalengineering

AARHUS UNIVERSITY

MSC IN MECHANICAL ENGINEERING*

Due to changes in the general semester structure at the Faculty of Science & Technology from summer 2017, changes will occur in the programme structure and content from summer 2017 – to be announced in the spring of 2017.

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

COMPULSORY COURSES

A basic package of six subjects taken during the first year of studies.

SPRING:

Mechanical Vibrations	5 ECTS
Fluid Dynamics	5 ECTS
Engineering Modeling Project	5 ECTS

FALL:

Continuum Mechanics	10 ECTS
Finite Element Method	5 ECTS

SPECIALISED STUDY PACKAGES

Choose two of the specialised study packages.

SPRING:

Dynamics and Fracture Mechanics

Fracture Mechanics	10 ECTS
Computational Dynamics	5 ECTS

Heat Transfer and Computer Fluid Dynamics

Computational Fluid Dynamics	5 ECTS
Heat and Mass Transfer	5 ECTS
Sensing and Sensor Technology	5 ECTS

Robotics

Robotics	5 ECTS
Computational Dynamics	5 ECTS
Sensing and Sensor Technology	5 ECTS

FALL:

Mechanics of Materials

Beams, Plates and Shells	5 ECTS
Advanced FEM	5 ECTS
Optimization Algiorithms	5 ECTS

Thermo/Fluid Dynamics

Engineering and Statistical Thermodynamics	5 ECTS
Advanced FEM	5 ECTS
Control Theory	5 ECTS

Plates, Control and Optimization

Beams, Plates and Shells	5 ECTS
Optimization Algiorithms	5 ECTS
Control Theory	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 approved by the study programme manager.

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