MSC IN BIOTECHNOLOGY AND CHEMICAL ENGINEERING *
DEVELOPING THE PROCESSES OF THE FUTURE

Developing and optimising chemical and biotechnological processes plays a key role in modern society. Competitive industries will be environmentally sustainable, efficient in terms of resources and energy as well as technologically advanced. We provide our students with the knowledge and tools to enter and develop the industry of the future. In the first year of the Biotechnology and Chemical Engineering programme, laboratory exercises, practical exercises and excursions play a key role in many courses in addition to lectures and theoretical exercises. The second year consists mainly of project work, which often involves students working closely with companies. Students with scientific ambitions have the possibility of continuing with a PhD, which can also involve industrial collaboration.

CHOOSING YOUR SPECIALISATION
The focus of the degree programme is the development and optimisation of processes in the chemical and biotechnological industries and in the environmental sector. If you have an engineering background in chemistry and choose to pursue this specialisation at MSc level, you will be able to work with areas as diverse as food, polymer chemistry, and membrane and separation technology. If on the other hand your background is in biotechnology, you can pursue this specialisation to gain opportunities to work in areas such as developing enzymes and proteins for use in ‘green’ production, lipid technology, and medical biotechnology. Whether your background is in chemistry or biotechnology, you will also be able to specialise in environmental or energy technology, leading to opportunities to work in areas such as waste water treatment, biorefinery, air cleaning and biogas production.

PUTTING RESEARCH INTO PRACTICE
Teaching at Aarhus University is greatly influenced by the research conducted here, as all the lecturers are active researchers. As an engineering student, you have excellent opportunities to work with researchers in the laboratory, or you can complete a project in collaboration with a private company.

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.

Aarhus University campus is unique in that its buildings are closely grouped together and surrounded by nature. The campus is conveniently situated close to the city centre, and student accommodation is readily available as long as you apply on time. There are a range of activities, ranging from running to a regatta on the lake, as well as guest lectures, film screenings, and university events taking place throughout the year. To ensure student well-being, counselling services are available to offer students support and guidance during their time at Aarhus.

CAREERS
As a graduate engineer in chemistry and biotechnology, you will be developing the processes of the future – processes that will ensure that chemical, biotechnological, and environmental knowledge finds sustainable applications that can benefit society as a whole.

The MSc programme is also monitored by representatives of chemical companies such as DuPont, Arla, Aarhus Karlshamn, and Cheminova, all of which are interested in employing newly qualified graduate engineers in chemistry and biotechnology.

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Groundwater can reveal many unpleasant surprises, which is why we are testing groundwater drillings in Denmark today. I want to help make sure that Denmark’s groundwater continues to be of a very high and clean standard.

MIA RIX JALUM
Student, MSc in Biotechnology and Chemical Engineering

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PLACED OF STUDY
Aarhus

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

WWW
masters.au.dk/biotechchemical
# MSC IN BIOTECHNOLOGY AND CHEMICAL ENGINEERING

## 1ST SEMESTER

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| 30 ECTS | 30 ECTS | 30 ECTS | 30 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/

## COMPULSORY COURSES CHEMICAL ENGINEERING

### AUTUMN
- Sensors & Process Control: 10 ECTS
- Transport Phenomena: 5 ECTS

### SPRING
- Innovation and Entrepreneurship: 5 ECTS
- Modelling of Biological and Chemical Processes: 10 ECTS

## COMPULSORY COURSES BIOTECHNOLOGY

### AUTUMN
- Lipid Biotechnology: 5 ECTS
- Protein and Carbohydrate Biotechnology: 10 ECTS

### SPRING
- Innovation and Entrepreneurship: 5 ECTS
- Modelling of Biological and Chemical Processes: 10 ECTS

## SPECIALISED STUDY PACKAGES

### AUTUMN
- **Applied Lipid and Protein Biotechnology**
  - Applied Lipid Biotechnology: 5 ECTS
  - Applied Protein Biotechnology: 10 ECTS

- **Biomacromolecules**
  - Lipid Biotechnology: 5 ECTS
  - Protein and Carbohydrate Biotechnology: 10 ECTS

- **Biomaterial Engineering**
  - Biofabrication: 10 ECTS
  - Tissue Engineering: 5 ECTS

- **Energy and Storage**
  - Membrane Technology and Batteries: 10 ECTS
  - Power to Gas: 5 ECTS

- **Environmental Technology**
  - Biological Environmental Technologies: 5 ECTS
  - Chemical Environmental Technologies: 10 ECTS

- **Process Technology**
  - Sensors and Process Control: 10 ECTS
  - Transport Phenomena: 5 ECTS

### SPRING
- **Biorefining Technology**
  - Experimental Biorefining: 5 ECTS
  - Integrated Biorefining Technologies: 10 ECTS

- **Chemical Processing**
  - Modern Chemical Process Technologies: 10 ECTS
  - Platform Chemicals and Synthesis in Continuous Flow: 5 ECTS

- **Medical Biotechnology**
  - Immunological Biotechnology: 10 ECTS
  - Biomolecular Interactions: 5 ECTS

- **Plastic Materials**
  - Advanced Polymer and Nanomaterials: 10 ECTS
  - Plastic Engineering: 5 ECTS