

## Specializations in the Master's Degree Programme in Biology

In the Master's degree programme, you can choose one of the following specializations:

- Aquatic Ecology
- Biodiversity and Ecoinformatics
- Evolutionary Biology, Ecology and Genetics
- Microbiology
- Nature Conservation and Environmental Management
- Zoophysiology

In the Master's degree programme in Biology, you choose a specialization with a minimum of 30 ECTS. The specialization courses consist of required courses and elective courses that fall within the field of the specialization.

The remaining maximum 30 ECTS in the master's degree programme are elective courses and can be chosen freely from the total offer of courses. It is also possible to follow courses offered from other subject areas if the academic context of the education is ensured.

You can choose between the following specializations:

## Aquatic Ecology

### Entry Requirements

Aquatic biology (autumn, 10 ETCS) or similar courses

1 semester	Elective fundamental course	Elective course	Elective course
2 semester	Elective fundamental course	Required course: Experimental aquatic ecology (10 ETCS)	Elective course
3 semester	Master's thesis (60 ECTS)		
4 Semester			

### Required course

- Experimental aquatic ecology (spring, 10 ETCS)

### Elective fundamental courses

- Freshwater ecosystems (autumn, 10 ETCS)
- Marine ecosystems (spring, 10 ETCS)
- Biological project work within the specialization subject area (10 ECTS).

### Recommended master's courses

- Microbial element cycling and population ecology (autumn, 10 ECTS)
- Management of aquatic ecosystems (autumn, 10 ECTS)
- Identification of animals and plants in lakes and streams (summer, even years only, 5 ECTS).

## Biodiversity and Ecoinformatics

### Entry Requirements

- Geographic information systems (GIS) (autumn, 5 ECTS)

And minimum one of the following three courses:

- Advanced population biology (autumn, 10 ECTS)
- Danish flora and vegetation (spring, 10 ECTS)
- Behavioral biology or similar courses (spring, 10 ECTS).

1 semester	Required course: Macroecology and biogeography	Required course: Statistics and geospatial modelling	Elective course
2 semester	Elective fundamental course	Elective course	Elective course
3 semester	Master's thesis (60 ECTS)		
4 semester			

### Required courses

- Macroecology and biogeography (autumn, 10 ECTS)
- Statistics and geospatial modelling (autumn, 10 ECTS)

### Elective fundamental courses

- Tropical ecosystem management and human security (autumn, 10 ECTS)
- Fauna ecology and management (spring, 10 ECTS)
- Politics and economy in nature conservation and environmental management (spring, 10 ECTS)
- Biological project work within the subject area specialization (10 ECTS).

### Recommended master's courses

- Conservation genetics and molecular ecology (spring, 10 ECTS)
- Advanced zoological field course (summer, 5 ECTS)
- Environmental modelling (spring, 10 ECTS)
- Nature conservation and environmental management (spring, 10 ECTS)
- Fauna ecology and management (spring, 10 ECTS)
- Modelling of biological processes (summer, 5 ECTS) (offered from 2018)
- Tree of life (autumn, 10 ECTS).

## Evolutionary biology, ecology and genetics

### Entry requirements

- Advanced population biology or similar courses (autumn, 10 ECTS)

1 semester	Required course: Experimental evolutionary biology	Elective fundamental course	Elective course
2 semester	Required course: Conservation genetics and molecular ecology	Elective course	Elective course
3 semester	Master's thesis (60 ECTS)		
4 semester			

### Required courses

- Experimental evolutionary biology (autumn, 10 ECTS)
- Conservation genetics and molecular ecology (spring, 10 ECTS)

### Elective fundamental courses

- Macroecology and biogeography (autumn, 10 ECTS)
- Advanced zoological field course (summer, 5 ECTS)
- Biological project work within the specialization subject area (5, 10 ECTS).

### Recommended master's courses

- Statistics and geospatial modelling (autumn, 10 ECTS)
- Fauna ecology and management (spring, 10 ECTS)
- Tree of life (autumn, 10 ECTS)

## Microbiology

The specialization in microbiology can be chosen with focus on an environmental direction and/or a molecular biological/biotechnological direction.

### *Microbiology with focus on the environment*

#### Entry requirements

- Microbial ecology or similar courses (spring, 10 ECTS).

1 semester	Required course: Microbial element cycling and population ecology	Elective fundamental course	Elective course
2 semester	Required course	Elective course	Elective course
3 semester	Master's thesis (60 ECTS)		
4 semester			

#### Required courses

- Microbial element cycling and population ecology (autumn, 10 ECTS)

And minimum one of the following two courses:

- Molecular microbiology (spring, 10 ECTS)
- Biological project work within the specialization subject area (10 ECTS).

#### Elective fundamental course

- Molecular microbiology (spring, 10 ECTS)
- Management of aquatic ecosystems (autumn, 10 ECTS)
- Marine ecosystems (spring, 10 ECTS)
- Biological project work within the specialization subject area (10 ECTS).

#### Recommended master's courses

- Risk assessment of environmentally hazardous substances (summer, 5 ECTS) (offered from 2018)
- Modelling of biological processes (summer, 5 ECTS) (offered from 2018)
- Freshwater ecosystems (autumn, 10 ECTS)

### *Microbiology with focus on molecular biology/biotechnology*

#### Entry requirements

- Microbial ecology (spring, 10 ECTS) or similar courses

1 semester	Required course:	Elective fundamental course	Elective course
2 semester	Required course: Molecular microbiology	Elective course	Elective course

3 semester	Master's thesis (60 ECTS)
4 semester	

### Required courses

- Molecular microbiology (spring, 10 ECTS)

And minimum one of the following two courses:

- Microbial element cycling and population ecology (autumn, 10 ECTS)
- Biological project work within the specialization subject area (10 ECTS)

### Elective fundamental courses

- Microbial element cycling and population ecology (autumn, 10 ECTS)
- Computational thinking in bioinformatics (autumn, 10 ECTS) (offered at Center for Bioinformatics)
- The interaction between microbes and their host organisms (autumn, 10 ECTS)
- Biological Environmental Technology (autumn, 5 ECTS) (offered at Department of Engineering)
- Biological project work within the specialization subject area (5, 10 ECTS)

### Recommended Master's courses

- Tree of life (autumn, 10 ECTS)
- Bioinformatics analysis of Genomic Data (spring, 5 ECTS) (offered at Department of Molecular Biology and Genetics)
- Protein mass-spectrometry (autumn, 10 ECTS) (offered from 2018) (offered at Department of Molecular Biology and Genetics)
- Power-2-gas (autumn, 5 ECTS) (offered at Department of Engineering)
- Fermentation (spring, 5 ECTS) (offered from 2019) (offered at Department of Engineering)
- Cell Biotechnology (spring, 10 ECTS) (offered from 2019) (offered at Department of Engineering)
- Biomolecular structure and function (autumn 10 ECTS) (Offered at Department of Molecular Biology and Genetics)
- Proteins and their interactions (spring, 10 ECTS) (Requires the course Biomolecular structure and function)
- Medical microbiology and immunology (spring, 10 ECTS) (offered at Faculty of Health – new title from 2018: Microbiology and immunology).

## Nature Conservation and Environmental Management

### Entry requirements

- Management of Danish nature and environment (autumn, 5 ECTS) (offered from 2018)
- Geographic information systems (GIS) (autumn, 5 ECTS) or similar courses

1 semester	Elective fundamental course	Required course: Environmental modelling	Elective course
2 semester	Required course: Politics and economy in nature conservation and environmental management	Elective course	Elective course
3 semester	Master's thesis (60 ECTS)		
4 semester			

### Required courses

- Environmental modelling (autumn, 10 ECTS)
- Politics and economy in nature conservation and environmental management (spring, 10 ECTS)

And at least one of the following courses:

- Management of aquatic ecosystems (autumn, 10 ECTS)
- Fauna ecology and management (spring, 10 ECTS)

### Elective fundamental courses

- Risk assessment of environmentally hazardous substances (summer, 5 ECTS)

### Recommended Master's courses

- Freshwater ecosystems (autumn, 10 ECTS)
- Marine ecosystems (spring, 10 ECTS)
- Microbial element cycling and population ecology (autumn, 10 ECTS)
- Identification of animals and plants in lakes and streams (summer, even years only, 5 ECTS)
- Advanced zoological field course (summer, 5 ECTS)
- Biological project work within the specialization subject area (5, 10 ECTS).

## Zoophysiology

### Entry requirements

One of both of the bachelor courses, or similar courses

- Animal ecophysiology (spring, 10 ETCS)
- Ecotoxicology (spring, 10 ETCS).

### Recommended courses at the Bachelor's Degree Programme

- Aquatic biology (autumn, 10 ECTS)
- Plant ecophysiology (spring, 10 ECTS)
- Microbial identification and physiology (autumn, 10 ECTS)
- Applied programming (autumn, 5 ECTS)
- Molecular neurobiology (spring, 5 ECTS) (offered at Department of Molecular Biology and Genetics).

1 semester	Required course: Respiration physiology from molecule to organism	Required course: Neuro, muscle and sense-physiology	Elective course
2 semester	Elective course	Elective fundamental course	Elective course
3 semester	Master's thesis (60 ECTS)		
4 semester			

### Required courses

- Respiration physiology from molecule to organism (autumn, 10 ETCS)
- Neuro, muscle and sense physiology (autumn, 10 ETCS)

### Elective fundamental course

- Biological project work within the specialization subject area (10 ETCS)
- Experimental physiology (spring, 10 ETCS)

### Recommended elective Master's courses

- Modelling of biological processes (summer, 5 ECTS) (offered from 2018)
- Risk assessment of environmentally hazardous substances (summer, 5 ECTS) (offered from 2018)
- Molecular physiology (spring, 5 ECTS)
- Molecular microbiology (spring, 10 ECTS)
- Cell biology in health and disease (4 quarter, 10 ETCS) (offered at Department of Molecular Biology and Genetics)
- Eukaryote test organisms (autumn, 10 ETCS) (offered at Department of Molecular Biology and Genetics).