BSc in Biology

Semester 1	Semester 2	Semester 3	Semester 4	Semester 5	Semester 6
Diversity of plant species	Plant form and function	Terrestrial ecology	Aquatic ecology and Marine biology	Field course: Aquatic and terrest. ecology	BSc thesis
Invertebrate zoology	Vertebrate zoology	Cytology	Zoophysiology and Histology	Fish biology	
Mathematics and Statistics	Biochemistry	Genetics and Molecular biol.	Microbiology and microbial ecology	Option	
General and Inorganic chemistry	Organic chemistry	General oceanography	Option	Option	Option

Service courses | Animals | Plants | Ecology | Other biol. courses | Optional

The 3-year programme is structured in six semesters. The first five semesters contain four equally sized (7.5 ECTS) courses. The sixth semester contains the bachelor thesis and one additional course. Click on a course to read the course description.

Short description of Biology courses

Semester 1

Diversity of plant species
The course gives an overview of the plant kingdom, starting with the algae in the ocean and continuing with the terrestrial plants from the mosses to the flowering plants as well as fungi and lichens. Throughout the flowering plant families, evolution is discussed. In this course an introduction on how to use a flora to identify a plant is given.

Invertebrate zoology
The animal kingdom, from Protozoans to the invertebrates closest to vertebrates, is presented. The taxonomy and the newest theories of invertebrate evolution are discussed. The different organ systems are shown both in theory and practice during dissection of the animals. The course starts with a week of taxonomy, teaching how to identify invertebrates.

Mathematics and statistics for life scientists
This course has B-level high-school mathematics as a prerequisite. Basic concepts such as functions, differentiation, integrals, matrices etc. are treated with a view towards applications in biology. Basic concepts in probability and statistics, like distributions, samples, tests etc., are dealt with and explained through biological examples. Appropriate computer software will be used.

General and inorganic chemistry
The course gives a solid basis for chemical assessments in environmental and biological matters. The subject explains why some substances react chemically, why some are colored, and why some metal ions are beneficial and others lethal. Stimulating laboratory experiments are a natural part of the subject.

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Semester 2

Vertebrate zoology
The course starts with the most advanced invertebrates and ends with man. The taxonomy and vertebrate evolution is discussed. The different organ systems are shown both in theory and practice during dissections of fresh animals.

Plant form and function
This course gives an overview of how plants are constituted both externally and internally. The diversity of forms of leaves and flowers will be discussed, as well as how these diversities are adaptations to the environment. Finally, we discuss different cells and tissue in different part of the plants, as well as how the plants maintain themselves by means of photosynthesis and uptake of water and nutrients.

Biochemistry
Biochemistry gives a thorough exposition of the internal structure and biological function of living cells. It deals with the structure and function of cellular components, such as proteins, carbohydrates, lipids, nucleic acids, and other bio-molecules. Stimulating experiments form a natural part of the subject.

Organic chemistry
Organic chemistry gives a solid basis for chemical assessments in environmental and biological matters. Organic compounds are important constituents of many products, e.g. paints, plastics, food, explosives, drugs and petrochemicals, and form the basis of all earthly life processes. Stimulating laboratory experiments form a natural part of the subject.

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Semester 3

Terrestrial ecology
This course provides an overview of interactions between populations in terrestrial plant and animal communities, including topics such as character of interactions within and between populations, and their importance for terrestrial ecosystem structure, function and dynamics. Also discussed are population structure, growth and decline succession, plant life histories, competition, population interaction, physical and chemical soil conditions, light and climatic conditions, and growth and reproduction of individuals.

Cytology
Cells are the structural and functional unit of all living organisms, and each cell is at least somewhat self-contained and self-maintaining. Each cell has its own set of instructions for carrying out various activities. In the course the students are given basic information on various kinds of cells and the structure and function of the organelles within the cells.

General genetics and molecular biology
Genetics is the science of heredity and variation in living organisms. In the course we will deal with how genetic characteristics are preserved, changed and dispersed within and among populations. The first part of the course consists of the classical Mendelean genetics, while, in the second part, we deal with modern genetics on a molecular level.

General oceanography
This course provides a general description of the terminology used in oceanography. Characteristics of seawater and processes in the world ocean are discussed with emphasis on the circulation and watermasses around the Faroe Islands. Also, meteorology and climate change are briefly introduced, and how changing conditions in the oceans may affect living organisms.

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Semester 4

Aquatic ecology and marine biology
The course is about the organisms and ecology in aquatic environments. The emphasis is on marine ecosystems and includes pelagic as well as benthic organisms, their life strategies and environments. The course describes various ecosystems, their functions, interactions between organisms and environments, and gives insight into research of marine ecosystems.

Microbiology and microbial ecology
Bacteria and other microbes are among the most diverse and most abundant groups of all living organisms. In this course, the students learn about various kinds of microbes and their taxonomy, and are introduced to growth techniques. Also covered are various bacteria in natural systems, and their ecology, processes and role in natural cycling of organic and inorganic compounds.

Zoophysiology and histology
The physiology of all the different organ systems through the animal kingdom is discussed, for instance how insects and birds breathe, how animals keep their water-balance during very different living environments, such as salt-water versus freshwater, and deserts.

Optional – click here

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Semester 5

Fish biology
This course gives an overview of the main Faroese profession – the fishery. The course will involve ecology and estimation of the populations of the common fish species around the Faroes. The ecological part comprises fish taxonomy, feeding, distribution, growth, reproduction, life-history strategies and fisheries effects on ecosystems. In the assessment part, we focus on general fish population estimates and collection of data necessary for these calculations.

Field course in aquatic and terrestrial ecology
The terrestrial, freshwater and marine environment in a fjord is the topic of this course. Different sampling methods are demonstrated, as well as how to determine, preserve and treat the sampled material scientifically, and to report the results. This also leads to an understanding of the distribution and numbers of living things and the influence of the environment upon them.

Optional – click here

Semester 6

Bachelor Thesis
The biology programme is completed with an independent scientific investigation and thesis. The subject is chosen by the student in cooperation with a supervisor. The thesis comprises collection and working up of material, scientific analysis, and presentation of results in a written report, which will be evaluated by the supervisor and an external examiner. The work should be completed within 16 weeks and a final date is set for delivery.

Optional – click here

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Optional courses

The following are examples of optional courses. Optional courses may also be selected from other degree programs.

Gene technology

This course gives a theoretical knowledge of molecular biology and gene technology, as well as experience in critical interpretation of molecular biological data. The discipline is the basis of the success in e.g. improving crop technology and the manufacture of synthetic human insulin through the use of modified bacteria.

Bioinformatics

Bioinformatics provides the basis for the use of important bioinformatical tools and theories, and facilitates future work in the biological sciences (e.g. biology, biochemistry, biomedicine etc.). Bioinformatics can help answer such questions as whether a newly analyzed gene is similar to any previously known gene, whether a protein's sequence can suggest how the protein functions, and whether the genes turned on in a cancer cell are different from those turned on in a healthy cell.

Physical geography

This course studies the characteristics of the physical features of the Earth's surface and the natural processes that shape these features. Several sub-fields make up physical geography. Geomorphology deals with the form of the Earth’s surface and how it was shaped. Hydrology studies the water on and under the surface, moving or accumulating, in rivers, lakes, aquifers, glaciers, etc. Glaciology focuses on glaciers and ice sheets. Climatology deals with climate and long-term weather. Field trips will examine physical features of the Faroe Islands.

Biogeography

This course will provide the ecological and historical foundations for understanding the distribution and abundance of species and how these change over time, both on a global and a local scale. In the course, specific emphasis will be placed on island biogeography. Different factors that are of importance for the distributions patterns and species diversity will be reviewed and discussed on different time scales – geological, historical and evolutionary.

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Below-ground ecology
This course provides an overview of abiotic and biotic environments in the soil and the soil structure and composition, both geological and chemical. There will be special emphasis on the beneficial interaction between soil and plant roots, and between plant-root bacteria and fungi. We also discuss how underground ecology is affected by changing environmental factors such as temperature and moisture.

Ecotoxicology and pollution
Human activity creates a large number of toxic compounds that may affect living organisms negatively. The course gives an overview of these pollutants, their transport, and their effects on living organisms.

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