



Board of Teacher Education  
Biology

# Syllabus

## Biology and Biology Teaching 3

<b>Course Code:</b>	BIGBI3
<b>Course Title:</b>	Biology and Biology Teaching 3 <i>Biologi med didaktisk inriktning 3</i>
<b>Credits:</b>	30
<b>Degree Level:</b>	Undergraduate level
<b>Progressive Specialisation:</b>	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

**Major Field of Study:**  
BIA (Biology)

### Course Approval

The syllabus was approved by the Board of Teacher Education 2019-02-11, and is valid from the Autumn semester 2019 at Karlstad University.

### Prerequisites

BIGBI1 and at least 7.5 ECTS credits of BIGBI2 completed, or equivalent

### Learning Outcomes

The aim of the course is that students acquire broad and relevant knowledge of biology and biology education required for teaching the subject. On the basis of subject knowledge and subject-specific teaching methodology, students are expected to develop skills to stimulate pupils to learn more about the conditions for life.

Attendance is required for the introduction and the practical placement component.

Module 1: Ecology, 10.5 ECTS cr

Upon completion of the module, students should be able to:

1. give an account of how the basic principles of natural and reproductive selection cause variation in the physiology, morphology, and behaviour of organisms,
2. give an account of theories concerning the formation of species, how relationships between species are studied, and patterns of species distribution,
3. give an account of and quantify the dynamics, growth, and regulation of populations,
4. give an account of social ecology theories and various interactions between and within species,
5. explain the significance of biological diversity and quantify it,
6. give an account of the function and organisation of the ecosystem,
7. give an account of how humans are part of and affect biological systems, as well as strategies for sustainable development and preservation of biological systems and functions, and
8. conduct a field study, analyse the data, and write a report.

Module 2a: Practical placement 1, 7.5 ECTS cr (first subject)

Upon completion of the module, students should be able to:

1. act in accordance with the core values stipulated in the Swedish Education Act and the national curriculum,
2. explain the significance of legislation concerning confidentiality and duty of notification and relate it to school activities,
3. reflect upon how equality and equity perspectives can be integrated in pedagogical practice,
4. communicate in a professional way with pupils and staff, individually and in groups, adopting a language in speech and writing that is functional and adequate to the situation,
5. with supervision, plan and conduct teaching based on steering documents and theoretically grounded in subject knowledge and subject-specific pedagogy,
6. describe the special education and pupils' social welfare work of the local school,
7. describe and reflect upon their own teaching and how it is based on steering documents, subject knowledge, and subject-specific teaching methodology, and
8. give an account of their own professional development and identify needs for further development.

Module 2b: Practical placement 2, 7.5 ECTS cr (second subject)

Upon completion of the module, students should be able to:

1. act in accordance with the core values stipulated in the Swedish Education Act and the national curriculum
2. give an account of legislation concerning the duty of schools to prevent and handle discrimination and harassment and compare it to local directives, for example the local equal treatment policy,
3. with some supervision, integrate a critical discussion of norms in educational activities with a focus on equality and equity,
4. communicate in a professional way with pupils and staff, individually and in groups, adopting a language in speech and writing that is functional and adequate to the situation,
5. with some supervision, plan, lead, and conduct teaching sequences based on steering documents and theoretically grounded in subject knowledge and subject-specific pedagogy,
6. plan and conduct teaching adapted to pupils' different situations, and, with supervision, reflect upon special education resources,
7. analyse their own teaching and how it is based on steering documents, subject knowledge, and subject-specific teaching methodology,
8. with supervision, assess pupils' knowledge development and social situation in school and discuss how this information can be communicated to pupils, guardians, and staff,
9. with some supervision, use digital resources in pedagogical practice, and
10. discuss their own professional development and identify needs for further development.

Module 3: Evolution, 12 ECTS cr

Upon completion of the course, students should be able to:

1. give an account of theories concerning the origination, development, and diversification of life,
2. give an account of the emergence of genetic variation and different processes that have an impact on organisms,

3. explain how organisms adapt to their native environment,
4. use and explain the theory of evolution in the classroom,
5. discuss how controversial aspects of evolution can be handled in the classroom, and
6. describe the subject content in relation to methods and teaching strategies, and reflect upon how biology education can be organised on the basis of these relationships.

## **Content**

Module 1: Ecology, 10.5 ECTS cr

The module covers the basics of ecology and evolution. It begins with an introduction, focused on how evolutionary processes form organisms and their adaptations, and moves on to the impact of the physical environment on patterns of species distribution, mechanisms that influence the temporal and spatial variation of populations, ecosystem processes, and ways in which humans are part of and affect biological systems. The module includes a field study, in which students investigate and compare biodiversity in two ecosystems (in the vicinity of Karlstad University). Attendance is mandatory for the field study.

Module 2: Practical placement, 7.5 ECTS cr

During their practical placement, students take part in everyday activities in school and meet pupils and different groups of staff, for instance teaching teams, pupils' social welfare staff, and school management. Students both observe teaching and conduct their own teaching, and have the opportunity to apply teaching methodology theories and subject knowledge in teaching practice. Students apply central steering documents and local pedagogical planning while taking into account equality and equity perspectives, describe the special education and social welfare work of school, and acquire knowledge about legislation concerning confidentiality and duty of notification. An important aspect of the course is for students to reflect upon and discuss the relationship between theory and practice, as well as the profession and their own professional development.

Module 3: Evolution, 12 ECTS cr

This module covers the basic of genetics theory concerning natural selection, and how evolution through natural selection results in biological diversity. An important part is to problematise and discuss different views of the origin and development of life. The subject relates to several controversial issues such as social Darwinism and genetic engineering, as well as borderline issues between science and faith, for example creationism. These questions are studied from the perspectives of biology and biology education. In addition, students consider pupils' difficulties in the subject, and how teaching can be organised and conducted in order to facilitate learning.

## **Reading List**

See separate document.

## **Examination**

Assessment is based on:

Module 1:

Learning objectives 1-7: individual written exam

Learning objective 8: field study report

Module 2a:

Learning objectives 1, 4, and 5: completed and documented practical placement

Learning objectives 2, 3, 6, 7, and 8: oral and written assignments at the university

Module 2b:

Learning objectives 1, 3, 4, 5, 6, 8, and 9: completed and documented practical placement

Learning objectives 2, 7, and 10: oral and written assignments at the university

Attendance is required for the introduction and the school placement component. Occasional days of absence can be made up for on agreement with the module convener. Students who are absent more than five days will have to retake the whole module, unless special circumstances exist.

The number of assessment opportunities for the practical placement component is limited to two.

#### **Module 3:**

Learning objectives 1-3: oral seminars and a written exam

Learning objective 4: teaching a short lesson

Learning objective 5: seminars

Learning objective 6: hand-in assignment and seminar participation

All presentations or submissions for assessment must clearly indicate individual contributions.

#### **Grades**

One of the grades Distinction (VG), Pass (G), or Fail (U) is awarded in the examination of the course.

#### **Quality Assurance**

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

#### **Course Certificate**

A course certificate will be provided upon request.

#### **Additional information**

The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.