Reg No: BIAD12/20242

Faculty of Health, Science and Technology
Biology

Syllabus

Scientific Methods in Freshwater Ecology

Course Code:	BIAD12
Course Title:	Scientific Methods in Freshwater Ecology *Vetenskapliga metoder i sötvattensekologi*
Credits:	15
Degree Level:	Master's level
Progressive Specialisation:	Second cycle, has only first-cycle course/s as entry requirements (A1N)

Major Field of Study:
BIA (Biology)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2024-03-07, and is valid from the Autumn semester 2024 at Karlstad University.

Prerequisites
60 ECTS credits in Biology, including 15 ECTS credits in Ecology, and upper secondary level English 6, or equivalent

Learning Outcomes
Upon completion of the course, for a grade of Pass (G), students should be able to:
1. plan and carry out a investigation in freshwater ecology based on a research problem and write a text in which they summarise and evaluate results from the research data that they have collected,
2. summarise and present the content of research literature relevant for freshwater ecology,
3. plan and carry out sampling and testing in accordance with research guidelines and collect adequate data,
4. suggest suitable statistical methods of analysis and analyse and evaluate the data that they have collected,

5.compare the results from their own data collection with published research studies, consider similarities and differences, and discuss possible reasons for such similarities and differences, and
6. critically examine and peer review the research projects of others.

Upon completion of the course, for a grade of Distinction (VG), students should also be able to:
A. in relation to a specific research problem, independently compare the strengths and weaknesses of different methods, decide upon the most suitable one, and justify that decision,
B. demonstrate an in-depth understanding of complex investigations in the field, and be able to integrate knowledge, analyse, evaluate, and present data from them, and
C. pedagogically present, critically examine, and constructively peer review the research projects of others.

Content
Course activities are focused on theoretical (declarative) and practical (procedural) research methods with an emphasis on academic writing, study design, statistics, and aquatic methods.

The course content is mainly about planning and carrying out investigations of freshwater ecology in groups, based on a research problem, and write individual texts to present and evaluate the results of research data thus collected.

The writing done in the course is portfolio-oriented, and the course components correspond to the main parts of a research report.

The learning activities in each component include lectures, group discussions, written assignments with follow-up peer review and seminar discussion, and needs-driven question-and-answer sessions.

Students work with practical research methods in various learning environments. This part includes theory and follow-up practical components carried out in the laboratory and in the field.

Practical components and seminars are mandatory.

Reading List
See separate document.

Examination
Assessment of learning outcomes 1-6 and A-C is based on seminars, an individual written hand-in assignment, and participation in mandatory practical course components.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

Grades
One of the grades Fail (U), Pass (G), or Distinction (VG) 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.

Excursions may entail extra costs for the students.

Students who wish to do so may complete theoretical and practical exercises that qualify them for certification. To achieve this qualification, students are expected to carry out sampling and testing in accordance with guidelines, demonstrate skills when handling laboratory animals, and present knowledge in writing that meets the requirements for the certification in question. Certification requires additional examination through written exams, individual assessment of ethical insight in relation to animal testing, and evaluation of practical skills in connection with laboratory work and excursions.