

Scientific Methods Oriented Towards Natural Sciences 7.5 credits

Vetenskapliga metoder med naturvetenskaplig inriktning 7.5 hp

Second cycle

Main field: Environmental Science, Second cycle, has only first-cycle course/s as entry requirements (AIN)

Syllabus is adopted by the Research and Education Board (2017-03-15) and is valid for students admitted for the autumn semester 2019.

Placement in the Academic System

The course is included in Master's Programme in Applied Environmental Science

Prerequisites and Conditions of Admission

90 credits Environmental Science, Environmental Health, Biology, Environmental Engineering or Natural Sciences with focus on Environment.

Applicants must also have written and verbal command of the English language equivalent to English course 6 (Swedish Upper-Secondary School). This can be proved by grades from English education or by such tests as:

- IELTS: score (Academic) of 6.5 or more (with none of the sections scoring less than 5.5)
- TOEFL paper based: score of 4.5 in written test and a total score of 575
- TOEFL internet-based: score of 20 in written test and a total score of 90

Course Objectives

The course aims for practice and knowledge about research methods, statistical analyses of data within natural sciences, training in critical evaluation of research results with special focus on applicability within the main field, as well as familiarity with the scientific way of thinking, statistics and analyses. The course should also give insight into research areas within the main field.

Following successful completion of the course the student should:

Knowledge and understanding

- Show insight into research areas within natural sciences
- Show familiarity with the scientific way of thinking and solving problems with relevance to the main field

- Show understanding of statistical analyses and their theoretical basis

Skills and Ability

- Identify and characterize issues from the main field on a qualified level based on scientific thinking
- Design a scientific study with for the main led relevant research questions

Judgement and Approach

- Do qualified judgments and assessments in the main field based on an understanding of research method and statistical analyses
- Critically evaluate natural sciences based on an understanding of research method, statistical analyses and ethical aspects

Primary Contents

Theoretical part:

Connections between fundamental and applied science. Scientific method.

Methodological part:

Research methods. Methods for analyzing data within the main field. Research question and design. Statistical methods applicable within the main field.

Teaching Formats

The teaching includes exercises, teacher advised discussions, lectures and seminars.

Examination

The overall grades of Fail, Pass or Pass with distinction will be awarded for the course.

Examination is based on written reports, seminars and written examination

Name of the test		Grading
Written Examination - Statistics	4 credits	U/G/VG
Project Plan Master Thesis	2 credits	U/G
Integrated Natural Sciences Project	1,5 credits	U/G

If a disabled student has been granted learning support through a decision by Halmstad University, the examiner may decide on an adapted or alternative form of assessment for this student.

Course Evaluation

Course evaluation is part of the course. This evaluation should offer guidance in the future development and planning of the course. Course evaluations should be documented and made available to the students.

Course Literature

Laake, P. Benestad HB. Olsen, BR. *Research Methodology in the Medical and Biological Sciences*. Academic Press, Elsevier, London, 2007

”Statistic methods applied in natural science”, compendium with worked examples by J. Hylander, ETN, Halmstad 2014.

Scientific papers relevant for the main field. Supplementary literature and exercises.

Supplementary Literature:

Harrad, S et al. *Student Projects in Environmental Science*. Wiley 2008 (Paperback)

or

Vincent WJ. Weif JP. *Statistics in Kinesiology*. 4rd ed. Human kinetics Publishers, Illinois, 2012