



**LUND**  
UNIVERSITY

Faculty of Science

## **BIOC04, Biology: Experimental Design and Analysis for Biologists, 7.5 credits**

*Biologi: Försöksdesign och analys för biologer, 7,5 högskolepoäng*  
First Cycle / Grundnivå

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### **Details of approval**

The syllabus was approved by Study programmes board, Faculty of Science on 2015-09-13 to be valid from 2015-09-14, autumn semester 2015.

### **General Information**

The course is a compulsory first-cycle course for a degree of Bachelor of Science in Biology, and an optional first-cycle course for a degree of Bachelor of Science in Molecular Biology.

*Language of instruction:* Swedish

*Main field of studies*

Biology

*Depth of study relative to the degree requirements*

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

### **Learning outcomes**

#### **Knowledge and understanding**

On completion of the course the student shall be able to:

- explain how hypotheses are set up and handled, their function, and how they are analysed and used in scientific issues
- account for how scientifically correct studies are structured, how weaknesses are identified, and how these can influence scientific conclusions
- describe the relationship between experimental design and data analysis
- explain the implication and the importance of observer variation

## Competence and skills

On completion of the course the student shall be able to:

- apply basic concepts such as accuracy, precision, power function and probability
- identify and analyse sources of variation
- plan and carry out biological experiments
- handle, sort and analyse biological data
- present results of completed studies orally and in writing

## Judgement and approach

On completion of the course the student shall be able to:

- critically review and evaluate experimental design
- evaluate different analytical methods
- discuss and relate to objectivity and scientific honesty

## Course content

The course starts with a survey about the connection between modern biological empirical science and scientific philosophy, hypothesis testing, and research ethics. Thereafter, basic statistical theory, data handling, analytical methods for biological experiments, experimental design, natural and manipulative experiments, and implementation and evaluation of experiments, are addressed.

## Course design

The teaching consists of lectures, exercises and projects. Participation in exercises and projects, and thereby other integrated teaching, is compulsory.

## Assessment

Examination takes place through a written examination and compulsory parts during the course. For students who have not passed the regular examination, an additional examination in close connection to this is offered.

*Subcourses that are part of this course can be found in an appendix at the end of this document.*

## Grades

Marking scale: Fail, Pass, Pass with distinction.

To pass the entire course, approved examination and approved compulsory parts are required. The final grade is based on the written examination.

## Entry requirements

For admission to the course, 45 credits of scientific studies including knowledge corresponding to MOBA01 Cell Biology 15 credits, BIOA01 Genetics and Microbiology 15 credits, and BIOC02 Ecology 15 credits or 15 credits chemistry, are required.

## Subcourses in BIOC04, Biology: Experimental Design and Analysis for Biologists

Applies from H16

1501 Experimental Design and Analysis for Biologists, 7,5 hp  
Grading scale: Fail, Pass, Pass with distinction