



## Course syllabus

Faculty Board of Science and Engineering  
School of Computer Science, Physics and Mathematics

INT011 Naturvetenskap och teknik A för de tidiga skolåren, 15  
högskolepoäng

Natural Sciences and Technology A in Early School Years, 15 credits

### **Main field of study**

Biology, Physics, Chemistry, Technology

### **Subject Group**

Educational Sciences/Theoretical Subjects

### **Level of classification**

First Level

### **Progression**

GIN

### **Date of Ratification**

Approved by the Board of the School of Computer Science, Physics and Mathematics  
2009-08-11

Revised 2010-08-04. Revision of prerequisites, literature list and course evaluation.

The course syllabus is valid from spring semester 2011

### **Prerequisites**

General entry requirements and Science studies A, Civics A. (Field-specific entry requirements 15 with the exception of Mathematics B and Science B.)

## Expected learning outcomes

This course is expected to develop students' learning profession, with special emphasis on knowledge and skills in Natural Science and Technology for teaching in the primary school years and early years of the compulsory school system.

Having completed the course the student is expected to:

- be able to analyze the view on and quality of knowledge expressed in the guiding documents
- know about theoretical and practical implementation of natural science and technology in society
- independently be able to utilize didactical approaches to natural science and technology in learning situations so that all children and pupils learn and develop
- be able to implement natural scientific and technological work methods
- be able to identify and emphasize natural scientific and technological phenomena from different subject approaches in order to promote a general understanding
- understand natural science and technology in relation to questions about environment and ethics, as well as from historical- and global perspectives

- be able to have knowledge about natural science and technology and the importance for each individual's participation in a democratic society
- independently be able to examine and assess the pupils' learning in natural science and technology
- know about the importance of equality in education and in presenting subjects in relation to teaching natural science and technology
- demonstrate further development of a scientific approach to knowledge and information through understanding how to search, critically assess, value and gather information, and be able to transmit this knowledge unto others
- utilize skills regarding presentation- and communication techniques
- independently and in collaboration with other be able to plan, conduct, evaluate and develop teaching.

## Content

- prerequisites for life on earth
- the system and organization of organisms
- mechanical- and thermal concepts
- chemistry in everyday life
- basic technological concepts and principals
- thematic project work linked together with practice

This sub course includes biology 3.75 ECTS credits, physics 3.75 ECTS credits, chemistry 3.75 ECTS credits, and technology 3.75 ECTS credits.

Forms of documentation: Digital portfolio

IKT: The courses utilize a web based conference system as a means of communication.

Computer searches are also utilized to a great extent.

The scientific approach of the students is further developed through writing reports and presentations of projects. The orientation emphasizes a social-constructive work method .

## Type of Instruction

Lectures, laboratory work/practical assignments, seminars and field trips. All examinations, seminars, laboratory work session, and the work field training are obligatory.

## Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

Written and/or verbal tests and/or presentations of obligatory assignments. The main form of examination is decided at the start of the course.

Students who do not pass the regular examinations are offered a new chance in close connection to time of the regular examination.

On request, students may have their credits translated to ECTS-marks. Such a request must be sent to the examiner before the grading process starts.

## Course Evaluation

A course evaluation will be carried out at the end of the course in accordance with the guidelines of the University. The result of the course evaluation will be filed at the department.

## Other

A field trip is scheduled together with the students. Some expenses are paid for by the student.

## Required Reading and Additional Study Material

### Required reading

Hewitt, P, Suchocki, J & Hewitt, L,*Physical Science Explorations*, 1st Ed.  
Addison Wesley, 2003.Pages 370 (780).  
Campbell, N, Reece, J & Simon,E,*Essential Biology with Physiology*,Pearson,  
2004.Pages 200 (650).  
Harlen, W,*Våga språnget*, 1:a uppl.Almqvist & Wiksell, 2000.Pages 142 (142).  
Nordlab (WWW)  
Andersson, B,*Elevers tänkande och skolans naturvetenskap*,(www.skolverket.se)  
DFM,*Stencils*,Linnæus University,current year. Pages ca 200.

### **Reference Literature**

Flora of your own choice, a book about birds  
and a book about fungi  
Jakobsson, G,*Vardagskemi*,Studentlitteratur 2003.Pages 206.