Faculty of Science

NGEA20, Physical Geography:Hydrology, 15 credits

Naturgeografi: Hydrologi, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2014-12-04 and was last revised on 2019-02-21. The revised syllabus applies from 2019-02-21, spring semester 2019.

General Information

The course is given as a recommended elective course at undergraduate level for a degree of Bachelor of Science with a specialisation in physical geography and ecosystem science.

Language of instruction: English

Main field of studies	*Depth of study relative to the degree requirements*
Physical Geography and Ecosystem Analysis	G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

Learning outcomes

Water is a key component in most processes in the bio-geosphere, both organic and inorganic. Access to water is a necessity for all ecosystems and access to water resources of good quality and in sufficient quantities, becomes increasingly importanct all over the planet Earth. The general the aim of the course is to provide the student with hydrological knowledge from different perspectives. This implies that the student should master the understanding of the hydrological cycle in nature and how man influences this in various ways. The course intends to give the student an understanding in how surface water, soil water and groundwater is formed and move. The course also gives knowledge of theories of different hydrological processes and knowledge of how different tools such as hydrological models function and how they can be used to study vattenrelaterade problems. Furthermore, the student is given the opportunity to specialise in local, regional and global water related problems. The course also intends to give an introduction to national and international agreements and regulatory frameworks that handle water issues. The

aim is to show, with a perspective from physical geography and ecosystem science, how the knowledge acquired during the course can be applied in different situations.

Knowledge and understanding
On completion of the course, the student should be able to:

- describe the hydrological cycle in detail
- explain processes and factors controlling the formation of surface water, soil water and groundwater
- have understanding of the processes that are described with hydrological modelling
- explain hydrological processes and their interaction with other ecosystem processes in natural and anthropogenic environments
- describe and illustrate human influence on different components in the hydrological cycle
- at a general level describe man's need of water and how water resources are managed in different climate regions

Competence and skills
On completion of the course, the student should be able to:

- be able to handle different types of data regarding runoff, evaporation, precipitation, etc that are relevant for hydrological applications
- carry out different types of calculations that are used in hydrology and water resource management, such as run-off coefficient, base flow, infiltration capacity and evapotranspiration
- independent or in groups carry out shorter project work with on different water themes
- analyse and draw relevant conclusions of analyses of water related data
- evaluate policies and decisions from a hydrological perspective

Judgement and approach
On completion of the course, the student should be able to:

- discuss and evaluate the importance of water issues in a global, regional and local perspectives
- critically review data, analyses or statements that relate to water and insert these in a further perspective
- evaluate results from simple hydrological models and other types of water related analyses

Course content

The course contains a number of different modules that should give the student an image of the complexity of the hydrology topic by highlighting different processes that are active in a hydrological system. Important components are the relation soil-water- vegetation, surface water movements, infiltration and water movements in the soil. Concept as aquifer, groundwater formation, water retention capacity, saturated and unsaturated soil water zones, surface run-off, storm surge and floods as well as their causes are central in the course. The student works with both theoretical

concepts and practical exercises to increase the understanding of different processes and how these can be analysed. furthermore, there are components in the course that treat the influence of humankind on the water balance. In the course, fieldwork and study visits are included. The course is divided into two examinating modules. Written assignments and project work stand for 7.5 credits and a written examination for 7.5 credits.

Course design

The teaching consists of lectures, laboratory sessions and exercises, individual or in groups, oral and written presentations and joint discussions as well as field trips. All parts except lectures are compulsory.

Assessment

Examination takes place through written exam at the end of the course and via written assignments and presentations of project work during the course. For students not passing the regular exam, an additional exam event is offered in close proximity.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

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 whole course, attendance on all compulsory components, passed written assignments and project work as well as approved exam are required.

Grades for the written exam are Failed, Passed and Passed with distinction. Grades on exercises and written assignments are Failed and Passed.

The final grade are decided through a weighing of the results of the parts that is included in the examination.

Entry requirements

General entry requirements as well as 60 credits scientific studies, also see recommended courses during "Other".

Further information

Recommended courses to have achieved before this course are NGEA01 Introduction to the environment of the Earth as well as NGEA07 Theories and methods in physical geography or the equivalent.

Subcourses in NGEA20, Physical Geography:Hydrology

Applies from V19

1901 Exercises, 7,5 hp
Grading scale: Fail, Pass
Exercises, project work and written assignments
1902 Exam, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
Written exam

Applies from H15

1401 Hydrology, 15,0 hp
Grading scale: Fail, Pass, Pass with distinction