Faculty of Science

NGEA22, 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 2021-05-24 to be valid from 2021-05-24, spring semester 2022.

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

Learning outcomes

Water is a driving component in most processes in the bio-geosphere, both organic and inorganic. Access to water is a necessity for the whole ecosystem and water resources of good quality and in sufficient quantities, increase in importance all over the planet. 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 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 water related 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, how the knowledge obtained during the course can be applied in different situations with a physical

geography and ecosystem sciences perspective.

Knowledge and understanding

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

- describe the hydrological cycle in detail
- explain processes active in the formation of surface, soil and groundwater
- give an account 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 parts of the hydrological cycle
- describe human water needs and handling of water resources in different climate regions at a general level.

Competence and skills

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

- handle different types of data for run-off, 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 on different water related issues
- analyse water related data and draw relevant conclusions thereof
- evaluate policy decisions from a hydrological perspective.

Judgement and approach

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

- discuss and evaluate the importance of water issues in global, regional and local perspectives
- review data, analyses and statements that relate to water critically and put in these in a wider geographic or societal context
- evaluate result of simple hydrological models and other types of water related analyses.

Course content

The course is divided into two components that are assessed in two modules where written assignments and project work stand for 7.5 credits and an examination for 7.5 credits. The course also includes fieldwork and study visits.

The course contains a number of different modules that should give the student an image of the complexity in hydrology by highlighting the different processes that are active in the hydrological system. Important components are the relation soil - water - vegetation, surface water movements, infiltration and water movements in the soil. Concepts as aquifer, groundwater formation, water retention capacity, saturated and unsaturated zones, run-off, flash-floods, inundations and related processes 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, the course covers human influence on the water balance.

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 written in the form of an examination at the end of the course and form of written assignments and presentations of project work during the course. Students who do not pass an assessment will be offered another opportunity for assessment soon thereafter.

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 is decided through a joint assessment of the results of the examinating components and the project report in proportion to their extent (see appendix).

Entry requirements

Entry to the course requires general entry requirements, English 6/B and 30 credits scientific studies.

Further information

The course cannot be included in qualification together with NGEA20 Hydrology,15 credit.

Subcourses in NGEA22, Physical Geography: Hydrology

Applies from V22

2201 Exam, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
2202 Exercises and projects, 7,5 hp
Grading scale: Fail, Pass