

## NGEA20, Physical Geography:Hydrology, 15 credits

*Naturgeografi: Hydrologi, 15 högskolepoäng*

First Cycle / Grundnivå

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### Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2014-12-04 and was valid from 2014-12-04 , autumn semester 2015.

### General Information

The course is given as a recommended elective course for first-cycle studies for Bachelor of Science with a focus on physical geography and ecosystem science. The course is also given as a freestanding course.

*Language of instruction:* English

#### *Main field of studies*

Physical Geography and Ecosystem Analysis

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#### *Depth of study relative to the degree requirements*

G2F, First cycle, has at least 60 credits in first-cycle course/s as entry requirements

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### Learning outcomes

Water is a driving factor in most processes in the bio-geosphere, both organic and inorganic. Water is a necessity for whole ecosystems and access to water resources of good quality, and in sufficient quantities, becomes an increasingly important issue all over our planet. The general aim of the course is to provide the student with hydrological knowledge from different perspectives. This implies that the student should master the water cycle in nature and how man influences this in various ways. The course intends to give the student understanding in how surface, soil and groundwater is formed and move. Knowledge of theories of different hydrological processes and certain knowledge of how different tools 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 agreements and regulatory frameworks that handle water issues nationally and internationally. 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**

The student should on completion of the course be able to:

- account for and detailed describe the water cycle
- explain processes and factors controlling the formation of surface, soil and groundwater
- understand 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**

The student should on completion of the course be able to:

- handle various types of data for runoff, evaporation, precipitation that is relevant to hydrological applications
- carry out various types of calculations that are used within hydrology and water resources management, such as run-off coefficient, lag-time, infiltration capacity and evapotranspiration
- independent or in groups carry out shorter project work on different water themes
- analyse and draw relevant conclusions of analyses of water related data
- evaluate policy and decision from a hydrological perspective

### **Judgement and approach**

The student should on completion of the course be able to:

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

### **Course content**

Course contains a number of different modules that should give student an image of complexity within the subject of hydrology by understanding 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 such as aquifer, groundwater formation, water holding capacity, saturated and unsaturated zones, surface run-off, flash floods and inundations and 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. At the same time, there are parts in the course that see more to the influence man has on the water balance. In the course, fieldwork and study visits are included.

## **Course design**

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

## **Assessment**

Examination takes place through written exam and via written assignments and presentations during the course. An opportunity to re-sit the examination is given according to prevalent rules.

*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, attendance on all compulsory parts, passed written assignments and approved exam are required.

## **Entry requirements**

General entry requirements and 60 credits scientific studies.

## **Further information**

Recommended courses are NGEA01 Introduction to the environments of the Earth, NGEA04 Ecosystem analysis, NGEA21 Climate system and NGEA07 Physical geography theory and methodology.

## Subcourses in NGEA20, Physical Geography:Hydrology

Applies from V19

- 1901 Exercises, 7,5 hp  
Grading scale: Fail, Pass
- 1902 Exam, 7,5 hp  
Grading scale: Fail, Pass, Pass with distinction

Applies from H15

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