



# AH1815 Introduction to GPS 7.5 credits

## Introduktion till GPS

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for AH1815 valid from Autumn 2011

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

Completed and documented upper secondary education together with documented proficiency in English B or equivalent (TOEFL, IELTS eg), Mathematics B and physics B

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

After completing this course, students should be able to

- Identify which observations towards the satellite can be used for positioning and explain how they can be used for the computation of position and velocity of a receiver
- Identify the components of the GPS and explain their function
- Plan, carry out and process the GPS observations, using advanced geodetic receivers, for the purpose of establishment of geodetic control networks, detail surveying, staking out and trajectory determination
- Evaluate the quality of the coordinates determined by GPS
- Transform the coordinates into any given reference system
- Combine the GPS and terrestrial observations

## Course contents

- Basic principles of positioning with help of satellites
- Components of the satellite positioning systems and their functions: satellites, control stations, receivers
- GPS positioning and surveying techniques
- Error sources and the way of their elimination
- Differential GPS, RTK, DGPS
- Detail surveying and setting out with GPS
- Establishment of geodetic control networks
- Combination of terrestrial and GPS measurements
- Transformations: connecting GPS measurements to local reference systems

## Disposition

Lectures: 20 h

Laboration: 40 h

## Course literature

B. Hofmann-Wellenhof, H. Lichtenegger, J. Collins (2001). GPS, Theory and Practice, Springer. Wien, New York.

## Examination

- LAB1 - Laboratory work, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Other requirements for final grade

Written exam (TEN1; 4,5c)

Approved laboration (LAB1; 3c)

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.