



Faculty of Arts and Social Sciences  
Geo-Science

### Syllabus

#### **Course Approval**

The syllabus was approved by the Faculty Board of Arts and Social Sciences on 30 June 2014, and is valid from the Spring semester of 2015 at Karlstad University. It replaces the former syllabus GGI306.

**Course Code:** NGGC66

**Geodesy and GIS, 7.5 ECTS Credits**  
(Geodesi för GIS, 7.5 Swedish credit points)

**Degree Level:** Bachelor

**Progressive Specialisation:** G1F (First cycle, has less than 60 credits in first-cycle course/s as entry requirements)

#### **Language of Instruction**

Swedish

#### **Prerequisites**

Completed 60 ECTS cr on the Surveying Technology and Geographical IT Programme 120 ECTS cr, or Surveying and Cartography Programme 120 ECTS cr, including one of the courses NGGA24 Geodesy 7.5 ECTS cr or NGGA26 Fundamental Geodetic Surveying Techniques

#### **Major Field of Study**

MAT (Surveying and Mapping), NGA (Physical Geography)

#### **Learning Outcomes**

Upon completion of the course, the students should be able to:

- give an account of Gauss-Kruger projection and its impact on geodetic surveying,
- apply coordinate transformation connections between local, regional, national, and global reference systems,
- compute parameters for coordinate transformation according to Helmert,
- identify and analyse deformations of geodetic control point networks,
- explain how the application of Global Navigation Satellite Systems impacts on work done with the help of older geodetic reference systems,
- use transformation software to establish a correct relationship between geographic data in different reference systems.

#### **Content and Form of Instruction**

Instruction is in the form of lectures and lab work.

The course covers map projection, primarily Transversal Mercator and its impact on geodetic surveying. An important part of the course includes coordinate transformations in two and three dimensions in order to merge geographic data from different reference systems.

The course includes deformation analyses of geodetic control point networks and problem correction models.

The consequences of using satellite-based navigation systems in existing geodetic control point networks are treated.

Instruction is in the form of lectures and laboratory sessions. The course includes a large amount of computation exercises in which students learn to use software for coordinate transformations in order to merge data from different reference systems.

#### Reading List

See separate document.

#### Examination

Assessment of learning outcomes is based on individual hand-in assignments and an individual written report, presented and discussed at a seminar.

#### Grades

One of the grades Pass with Distinction (5), Pass with Some Distinction (4), Pass (3), or Fail (U) is awarded in the examination of the course.

#### Quality Assurance

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course assessment is based on student views and experiences as reported in written course evaluations and/or group discussions. Students will be informed of the result of the evaluation and of the measures to be taken.

#### Course Certificate

A course certificate will be provided upon request.

#### Additional Information

Students who enrolled before 1 July 2007 will complete their studies in accordance with the requirements of the earlier admission. Upon completion students may request degree and course certificates to be issued under the current ordinance if they meet its requirements.

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

Required course for the Surveying and Cartography Programme

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