Faculty of Health, Science and Technology
Geo-Science

Syllabus

Basic Engineering Surveying

Course Code:	NGGA26
Course Title:	Basic Engineering Surveying *Grundläggande geodetisk mätningsteknik*
Credits:	15
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

Major Field of Study:
MAT (Surveying and Mapping)
NGA (Physical Geography)

Course Approval
The syllabus was approved by the Faculty of Health, Science and Technology 2016-03-02, and is valid from the Autumn semester 2016 at Karlstad University.

Prerequisites
The course Introductory Mathematics MAGA09, 7.5 ECTS cr or MAGA44 (Mathematics for Engineering I) 7.5 ECTS cr or equivalent

Learning Outcomes
Upon completion of the course, students should be able to:
- calibrate and use common geodetic measuring instruments,
- plan and carry out all the elements in a staking project,
- plan and apply basic scaling methods,
- independently perform geodetic calculations of coordinates and heights,
- perform basic computations of measurement data in computation software for geodetic measurements.
- evaluate the quality of measured data and computed result.

Content
Instruction is in the form of lectures, calculation exercises, computer exercises and mandatory measuring practice outdoors.

The course covers level measuring with regard to height systems, familiarity with instruments, point surveying, adjustment and measuring methods..

The level measuring component includes angular measurement and longimetry with total station.

Students practise handling instruments, point surveying, calibration and measuring simple control

points network and detail surveying

Measurement guidelines and the effects of mistakes will be discussed.

The cartography component deals with coordinate systems, construction of control point network, point and detail surveying and calculation methods.

The course also covers dimension measurement with control point surveying on construction sites and horizontal and vertical staking. The staking component includes interpretation, choice of appropriate methods of measurement and reporting.

Finally, the course covers registration, analysis, quality evaluation and marking of collected data.

Reading List
See separate document.

Examination
Assessment is based on individual hand-in assignments, independent computing exercises, measuring exercises in groups and a written exam.

Grades
One of the grades Pass with Distinction (5), Pass not without 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 evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

Course Certificate
A course certificate will be provided upon request.

Additional information
The course NGGA26 cannot be included in the same degree programme as the course NGGA24.
The local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.

Required course for the surveying and cartography engineering programme.