Reg No: HS 2013/13

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 12 February 2013 , and is valid from the Autumn semester of 2013 at Karlstad University.

Course Code: NGGA29
Remote Sensing and Digital Photogrammetry, 7.5 ECTS Credits
(Fjärranalys och digital fotogrammetri, 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
The course NGGA23 Geographic Information Systems I, 7.5 ECTS cr

Major Field of Study
MÄT (Surveying and Mapping), NGA (Physical Geography)

Learning Outcomes

Upon completion of the course, students should be able to:
- describe methods of distance analysis and give examples of applications,
- give a basic account of the level of the physical properties of the atmosphere relevant to distance analysis and of the spectral qualities of different objects,
- describe the underlying technique of airborne laser scanning and give examples of applications,
- give an account of the theoretical foundations of photogrammetry,
- describe application areas for photogrammetric products,
- give an account of digital image processing techniques in photogrammetry for producing ortophotos and height models, and
- assess the pros and cons of photogrammetric methods in mapping and surveying.

Content and Form of Instruction

Students acquire knowledge of the electromagnetic spectrum, atmospheric physical properties and the spectral qualities of different object for an understanding of the potentials and limitations of the distance analysis technique. Different techniques for registering and producing digital images are treated, such as IR-termography, multispectral scanning, radar and laser.

Digital images with several information layers are processed in computer programmes in laboratory sessions. Methods of image enhancing and image classification, including accuracy score asessment, are studied. The accessibility of istance analysis data are treated, along with the integration of raster data from distance analysis as one of several data sources in GIS.

Following on an overview of analogue and analytical photogrammetry up till the development of digital photogrammetry, the following components are treated:
- data sources and planning photogrammetric projects
- the qualities of digital images registered from planes or satellites
- methods for producing digital height models and ortophotos
- accuracy score assessment in photogrammetry applications
- alternative or supplementary methods for collecting data such as airborne laser scanning.

Instruction is in the form of lectures and laboratory work.

Reading List

See separate document.

Examination

Assessment is based on a written exam and hand-in assignment. Laboratory sessions are mandatory.

Grades

One of the grades 5 (pass with distinction), 4 (pass not without distinction), 3 (pass, or U (Fail) 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.

Mandatory course for the engineering programme in surveying and mapping. Mandatory laboratory sessions.

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