



Faculty of Health, Science and Technology  
Geo-Science

# Syllabus

## Geographic Information Systems - raster

<b>Course Code:</b>	NGGB45
<b>Course Title:</b>	Geographic Information Systems - raster <i>RasterGIS</i>
<b>Credits:</b>	7.5
<b>Degree Level:</b>	Undergraduate level
<b>Progressive Specialisation:</b>	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

**Major Field of Study:**  
NGA (Physical Geography)

### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2023-08-28, and is valid from the Spring semester 2024 at Karlstad University.

### Prerequisites

60 ECTS credits completed in the Surveying Technology and Geographical IT Engineering programme or 60 ECTS credits completed in the Surveying and Mapping programme, including Geographical Information Systems I, 7.5 ECTS credits, and registered for Scientific Methods in Geomatics, 7.5 ECTS credits, or equivalent

### Learning Outcomes

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

- describe applications of raster-based Geographical Information Systems (GIS) within a specified focus area,
- independently identify, formulate, and handle issues pertaining to GIS,
- carry out a project with attention to questions of sustainability, based on their own time plan,
- critically review and assess their own work and that of others,

- model, simulate, and evaluate the processes of geographical analysis,
- give written and oral accounts of and discuss information, problems, and solutions in dialogue with different groups,
- explain and use methods for spatial analysis and modeling using raster-based data in GIS, and
- search for relevant information in reports and articles.

### **Content**

The course covers methods for processing geographic information in raster format by means of GIS software. The main focus is on data layers in vector and raster format as well as spatial analysis of the collected data.

Students complete a GIS project, including project planning, data collection, analysis, and presentation of results. The course includes a series of lectures, and students collect their own background information about the area in which the analyses are carried out and compile their results in a project report to be presented in a seminar.

In the course, students use GIS raster analysis to assess the risk of flooding in a geographically delimited area which can be affected by high flows in a watershed. Methods are needed to predict and assess the consequences of floods. This is the kind of method that will be developed in the course, and the results could be used in flood prevention and as operational support in the event of a flood.

### **Reading List**

See separate document.

### **Examination**

Assessment is based on individual written hand-in assignments, a group project presented orally and in writing, and individual peer review of the project of another group. Submissions for assessment must clearly indicate individual contributions.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

### **Grades**

One of the grades 5 (Pass with Distinction), 4 (Pass with Some 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 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 local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.