



# SLUkurs

## Syllabus

**PNG0045 Geographic Information Systems and Geographic Analysis,  
7.5 credits**

## Syllabus approved

2012-10-23

## Subjects

Biometry

## Education cycle

Third cycle

## Grading scale

Pass / Failed

The requirements for attaining different grades are described in the course assessment criteria which are contained in a supplement to the course syllabus. Current information on assessment criteria shall be made available at the start of the course.

## Language

English

## Prior knowledge

At least bachelors degree within any discipline that deals with geographic data, whether it is physically, culturally or socially oriented. No previous explicit GIS studies are required.

## **Objective, including learning outcomes**

After completed course, the students will be able to:

- master the ArcGIS software at ArcInfo level
- apply basic GIS principles of geographic representation, geodesy, data capture, database design, and cartography for producing maps and map-like presentations
- creating, editing, and managing geo-databases
- apply 2D and 3D spatial analysis to vectorised as well as rasterised geographic information
- utilise the Visual Basic programming language for automation of GIS workflow
- utilise Arc-Modeller for automation and documentation of GIS workflow
- practically design and implement projects of geographic analysis and/or map production
- effectively present practically performed projects of geographic analysis and/or map production

## **Content**

While starting at the basic level, the course advances the usage of geographical information systems (GIS) as a tool for planning, implementing, and presenting projects of spatial dimensions no matter their disciplinary residence. The course sets out from systems and processes that may be referenced to the earth, to provide a platform for assessment of interdisciplinary systems and processes. Upon analysing such systems and processes, it comprises inferential techniques in addition to basic GIS usage. Applied on vector as well as raster information, the course contains elements of cartography, geodesy, database techniques, international map-base standards, international GIS law, spatial analysis, and spatial modelling.

The course is principally problem based (CASE-based), with geographic analysis being taught within the context of group-wise performed project studies. The projects will address current issues within adequate disciplines of free choice, and stimulate students to work with all the necessary steps from data collection to geographic analysis and map-based presentation of project reports. The students will also be taught to critically evaluate the possibilities and limitations of computer-based geographic analysis.

## **Requirements for examination**

Written presentation as well as oral presentation and opposition of GIS project. Proof regarding the completion of computer exercises. The course will be examined with marking scale Passed or Failed.

**Additional information**

The course will mainly be given at self-study basis, providing a series of lectures, computer exercises, and project workshops in the MVM-centre at SLU Ultuna. If required, the series of lectures may be broadcasted via video link. With a student's copy of ArcGIS installed at a suitable machine, studies may be performed anywhere, leaving workshops as a forum for synergetic interaction with fellow participants. In order to support continuous interaction in-between workshop occasions, a web-based Fronter workspace will also be set up. In practice, the Fronter workspace will constitute the backbone of educational communication throughout the course. In parallel with the series of lectures and computer exercises, course participants are required to invent, execute, and present some group-wise performed GIS project, and to use the workshop series as a forum for advancing the project in collaboration with workshop fellows. In lack of a suitable project, course administration will provide the necessary materials.

The course is given in collaboration with, and under financial support of, the research schools Domestic Animals in a Changing World and Sustainable Management and Utilisation of Forests.

**Responsible department**

Department of Energy and Technology