

## **GIS and Statistical Analysis 7.5 higher education credits**

### **1. Basic information**

This syllabus is ratified by the Education Committee of the Faculty of Science 2012. The syllabus is valid from 2012-09-01. The course is at the advanced level (A1N).

### **2. General information**

The course is part of the main field of study in Physical Geography and Ecosystems Science at the Faculty of Science. The course is an elective course on advanced level for a Master's degree in Geographical Information Science, Faculty of Science, Lund University, Sweden. The course is also given as a single subject course. The language of instruction is English. The course is given as distance learning over the Internet.

### **3. Learning outcomes**

The aim of the course is that students, after having successfully completed the course, should have acquired the following knowledge, understanding and skills:

#### Knowledge and understanding

After the course the student is expected to be able to:

- thoroughly interpret and discuss geographical data from a statistical perspective,
- understand correlation theory and regression analysis,
- explain hypothesis testing for geographical data,
- synoptically describe error propagation in a geographical analysis,
- understand spatial autocorrelation,
- exemplify uses of regional variable theory.

#### Proficiency and skills

After the course the student is expected to be able to:

- use and explain statistical measures,
- independently implement analyses and interpret results from correlation and regression analyses,
- understand and apply specific spatial methods on applicable data,
- plan and conduct a hypothesis test,
- apply a geo-statistical analysis by utilization of regional variable theory.

#### Attitude and ability to appraise

After the course the student is expected to be able to:

- independently act on both spatial and normal statistical methods and measures,
- evaluate the credibility in analysis conducted with various statistical methods.

### **4. Course contents**

The course consists of the following parts:

- Descriptive statistics
- Quantities and populations
- Correlation analysis
- Linear regression
- Multiple regression analysis and trend surfaces
- Spatial regression
- Spatial distributions and cluster
- Hypothesis testing
- Regionalized variable theory
- Error propagation

## **5. Teaching and assessment**

Teaching consists of lectures, practical and theoretical exercises and seminars. Exercises and seminars are compulsory. We highly encourage students to attend lectures.

The course is fully based on distance learning, with all material distributed over the Internet. It is flexible in the sense that students can study full time (100%), half time (50%), or with a 25% study tempo.

Examination is in the form of a written exam, and through approved individual exercises.

For students who fail the regular exam, a resit is offered within a month.

## **6. Grades**

Students are graded for the course according to the following levels: High Pass (distinction), Passed, and Failed.

In order to pass the course the student is required to have passed the exam, all compulsory exercises, and to have participated in all compulsory course elements.

The final grade for the course is determined by the result of the written exam.

## **7. Entrance qualifications**

The following are required for admission to the course: Basic admission requirements of Lund University, and at least 1.5 years full time studies at university level, including half a year (30 higher education credits) basic GIS, corresponding to GISA01, GISA02 and GISA11.

## **8. Literature**

According to a list established by the department, available at least five weeks before the start of the course.

## **9. Other information**

The course can not be credited in a degree together with the following courses:

NGE603 Naturgeografisk teori och systemmetodik, 10 poäng,

NGEA07 Naturgeografisk teori och metodik, 15 högskolepoäng.