Sveriges lantbruksuniversitet
Swedish University of Agricultural Sciences

SLUkurs

Syllabus

PFS0105 Introduction to efficient analysis of large data sets using Matlab, 2.5 credits

Syllabus approved

2013-10-31

Subjects

Mathematic Statistics

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

None

Objective, including learning outcomes

This course will introduce the methods of efficient handling and analyzing of large data sets using the Matlab software with the goal that the students can apply

these skills to process, analyze, and graphically display comprehensive data sets. The course will be worth 2.5 credits and based on lectures (week 1), assignments (week 1 & week 2) and a final project (week 2). On completion of the course the students shall be able to:

- understand the concepts of working with variables, scalars, vectors, and matrices
- recognize common methods to process, explore, and graphically display comprehensive data sets by means of the Matlab computer software
- write program scripts and functions in Matlab that facilitate efficient analysis of large data sets
- conduct simple statistical analysis of large data sets using Matlab
- select and apply appropriate methods to process and explore a large data set from their own research project

Content

The course consists of a combination of lectures, home assignments and a final project. The lectures introduce the students to the basic concepts and methods of working with variables, scalars, vectors, and matrices to explore and process large data sets. The lectures will contain several work examples based on sample data sets to illustrate the concepts and methods. Lectures will cover basics in writing program scripts and functions introducing the students to working with Loops and If's statements with the goal to make analysis of large data sets more time efficient. The assignments aim to reinforce the lecture material, in addition to providing students with practice of comprehensive data analysis. Written reports of the assignments provide the basis for examination of the first part of the course (week 1). The software package Matlab will be used in this course for all computer labs and exercises.

In the second part of the course the students will apply the knowledge gained during the course for analyzing a specific data set of their own. The students should then continue working individually with the project for a period of one week (week 2). Supervision via e-mail and office hours will be given during that week. At the end of the course, the students will give an oral presentation and provide a written report of their final project which includes analysis objectives, their self-written program code with its function files, and graphical presentation of their data which altogether will serve as the second examination criteria of the course.

Requirements for examination

Assignments (week 1), written and oral presentation of the final project (week 2)

Additional information

People not living in Umeå could participate and have supervision via Skype/Video connection

Responsible department

Department of Forest Ecology and Management