



Statistics and Data Analysis Methods

1HY013, fall 2015

Course Introduction

Dr. Claudia Teutschbein

claudia.teutschbein@geo.uu.se

(course responsible)



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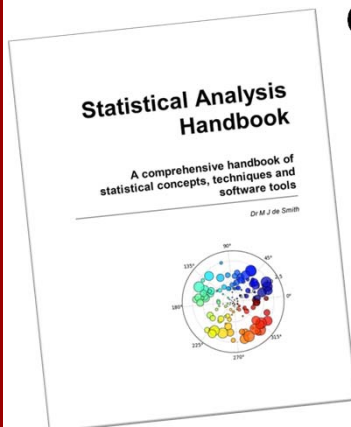
- Teachers
- Course literature
- Course goals
- Course activities
- Requirements to pass the course
- Previous course evaluation
- Schedule

Teachers

- Claudia Teutschbein
(lectures, exercises)
- Christian Zdanowicz
(lectures, exercises, projects)
- Nino Amvroziadi
(projects, exercises)
- Thomas Grabs
(substitute)



Course Literature



Online textbook:

“Statistical Analysis Handbook”

by Dr M J de Smith (mandatory)


- available online: <http://www.statsref.com>
- can also be bought as non-printable (GBP£9.95) or printable ebook file (GBP£19.95)

Course Goals

- After completion of the course, you should be able to:
 - Explain basic statistical terms and concepts
 - Identify statistical methods that are suitable for exploring, describing and analyzing earth science data
 - Summarize and visualize earth science data with computing software
 - Compare, relate and predict hydrological and geographical data in time and space

Course Activities

- Lectures
- Reading Assignments
- Exercises
- Project



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Course Activities

- Lectures
- Reading Assignments
- Exercises
- Project

- 5 lectures
- cover 5 topics of the text book
- attendance not mandatory, but recommended

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Course Activities

- Lectures
- Reading Assignments
- Exercises
- Project

- 1 reading task after every lecture
- appropriate amount of "self-tuition" time is designated in the schedule
- you are required to read the specified chapters in the course textbook → part of the exam

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Course Activities

- Lectures
- Reading Assignments
- Exercises
- Project

- 5 exercises (related to a lecture)
- solved in computer labs
- attendance not mandatory
- for each attended exercise, you will raise your final grade by 1 %-point (max +5 %-points)

Course Activities

- Lectures
- Reading Assignments
- Exercises
- Project

- 1 final project
- you can choose out of 2 topics based on your specialization
- you have ~70 h for the project
- final project report must be submitted prior the deadline
- oral presentation of your findings

Requirements to pass the course

- The following are obligatory activities to pass the course:
 - Passing the exam with grade C or higher
 - Submission of final project report prior deadline
 - must be completed with grade C or higher
 - Presentation of project in front of the class
 - must be passed with grade C or higher

Requirements to pass the course

- Written report and oral presentation:

- Grading:

Grade (letter)	Grade (words)	Grade (percentage)
A	Excellent	87 - 100
B	Very Good	70 - <87
C	Good	50 - <70
F	Fail	<50

Requirements to pass the course

■ Exam:

- exam after lectures/exercises, before project
- A re-exam will be offered in April

■ Grading:

Grade (letter)	Grade (words)	Grade (percentage)	Requirements
A	Excellent	87 - 100	At least 87% correct answers.
B	Very Good	70 - <87	At least 70% correct answers.
C	Good	50 - <70	At least 50% correct answers.
F	Fail	<50	Less than 50% correct answers.

Requirements to pass the course

■ Final Grade Weights:

- 40% exam
- 50% written report
- 10% oral presentation

Grade (letter)	Grade (words)	Grade (percentage)
A	Excellent	87 - 100
B	Very Good	70 - <87
C	Good	50 - <70
F	Fail	<50

Example:

exam: B (75%), report: A (88%), oral: A (87%)

$$\text{final grade} = 0.4 * 75 + 0.5 * 88 + 0.1 * 87 = 82.7\% = B$$

$$+ 5\% \text{ bonus for 5 attended exercises} = 87.7\% = A$$

Previous Course Evaluation

- **My overall opinion about the course is:**
 - “4.1” of 5 (“rather satisfied”)
- **What in the course was particularly good?**
 - “Labs in Matlab/Final Project”
 - “Very useful, especially because it is applied to earth sciences”
 - “Practical use of Matlab”
- **What in the course can be improved?**
 - “Don’t change the course!”
 - “more help during the exercises”

Schedule

Modules	Topic	Lectures	Reading	Exercises	Teacher
	Course Introduction	Lecture 0			Claudia
1	Basic concepts in statistics	Lecture 1	Reading 1	Exercise 1	Claudia
2	Descriptive Statistics and Data Exploration	Lecture 2	Reading 2	Exercise 2	Claudia
3	Probability Distributions and Transformations	Lecture 3	Reading 3	Exercise 3	Christian
4	Confidence Intervals and Hypothesis Testing	Lecture 4	Reading 4	Exercise 4	Christian
5	Correlation, Regression and Smoothing	Lecture 6	Reading 6	Exercise 6	Christian
Final Project					Christian, Claudia