Preliminary Course Outline

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Class homepage: `http://www.math.chalmers.se/Stat/Grundutb/GU/MSG500/A15/`

Week	Topics	Chapters	Excersises
w45	Introduction, Basic Stats, Linear models Diagnostics and matrix formulation	1:1-7,9. 11, 12:1-4	MiniAnalysis1
w46	Multiple regression. Diagnostics and testing	2, 3, 4, (6), 11, 12, 13.1	Lab1
w47	Dummy variables, ANCOVA. Model selection and testing.	9 + notes	MiniAnalysis2
w48	Model Selection	7, 13 + notes.	Lab2
w49	Bootstrap. Cross-validation.	7 + notes.	MiniAnalysis 3
w50	Regularized regression	13 + notes.	Lab3
w51	Weighted least squares, non-linear model, GLM In-class presentations	8, 10, 12, 15	MiniAnalysis4

Labs and MiniAnalysis tasks make up 10 % of the final grade.
The final makes up 60 %.
The project and in-class presentation is worth 30 % of the final grade.

Text: J.O. Rawlings, S.G. Pantula, D.A. Dickey. Applied Regression Analysis (available online).
Software: R. R is free - download for windows, linux and mac available. I will write the labs for R, but the data sets we will work with will be available in tab-del files so you can use another software package if you want. However, I strongly urge you to use R since I will be providing demo codes from the lectures using this language.

Linear Statistical Models   **LP2 2015**

Project - Project Proposal

The project proposal is due December 1. However, the sooner you get a proposal to me, the sooner I can give you feedback on it. Don't wait until the last minute.

The proposal should contain the following;

a) a brief description of the data you intend to analyze.

b) an indication of the source of the data set.

c) the objectives of your investigation.

d) an overview of the analyses you *anticipate* completing.

Note, this is a regression class. Choose a data set that fits with the class syllabus. There are data set repositories on the web (see e.g. `http://lib.stat.cmu.edu/`, `http://www.statsci.org/datasets.html`). Some data sets will not be accepted: these include the "body fat data", and "the boston housing data".

Lab reports

Lab reports should be typed! Unless the lab contains an analytical problem, do not hand in handwritten material.

The report should contain the following;

a) Description of the methods used. Be brief - don't repeat what's in the text, just the key elements.

b) Discuss your results. Results without discussion are not graded.

c) Include only the crucial plots and graphs, don't go for quantity.

d) Label all plots and graphs.

e) Conclusions: what is the take-home message.

f) You can discuss programming problems with your fellow classmates, but do all the work yourselves.

For help with computing; Modern applied statistics with Splus (Venables and Ripley) is a good text.

Some
online tutorials are available at `http://www.uga.edu/strata/software/pdf/RTutorial.pdf`, `http://cran.r-project.org/doc/manuals/R-intro.html` or google for more....

I use RStudio - highly recommended!

MiniAnalysis

Labs are data analysis tasks where you have to do some coding yourself and write a report. MiniAnalysis is a lab where I provide most of the code and the main purpose of the task is for you to apply the methods and discuss and interpret the results.

You don't have to hand in a report for MiniAnalysis BUT a random set of students will be asked to present the results to class. If don't attend class you will be required to write a report (which is a lot more work!).

Don't think of MiniAnalysis as an exam or a test. The idea is for you and the rest of the class to focus on results and interpretation and to get a discussion going.