STA 250: Statistics

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Lectures: Tu-Th 1:25-2:40, Old Chem 116
Labs: Wed 10:05-11:20 (Old Chem 101), 11:45-1:00 (Old Chem 101)
Office Hours (Instructor): Tu, Th 4:30-5:30 (or by appointment), Old Chem 223A

- Description

The focus of this course is statistical inference - concepts and procedures. A statistician views inference in the face of uncertainty to conclude about the unknown/unseen from what is observed. The two dominating approaches to statistical inference are the classical approach based on sampling theory and the Bayesian approach based upon Bayes' Theorem. Both are discussed through a diverse set of data analysis contexts. Emphasis is placed on learning inference concepts as well as on mastering the mathematical/computing tools needed to apply them. Basic training in computation is handled in the labs using the statistical package R.

- Text

Probability and Statistics (3rd/4th Ed) by Morris H DeGroot and Mark J Schervish. Check out the author webpage (http://lib.stat.cmu.edu/ mark/degroot/) for additional information.

- Syllabus

The syllabus is derived from the text. A very ambitious version (with judicious deletions and some additions) will cover:
Chapter 7: 7.1-7.6
Chapter 8: 8.1-8.8
Chapter 9: 9.1-9.8
Chapter 10: 10.1-10.4
Chapter 11: 11.1-11.5
Chapter 12: 12.1-12.4
We will do as much of this material as time permits.

- Prerequisites

Proficiency in calculus based probability at the level of STA 230(104)/MATH 230(135) and some knowledge of linear algebra at the level of MATH 221(104). Familiarity with the

general content of chapters 1-6 in DeGroot and Schervish is assumed.

- Resources

Handouts, homework/lab assignments and grades will all be posted on Sakai. Daily, walk-in help sessions are available from the Statistical Education Center at Old Chem 211A (http://www.stat.duke.edu/courses/sec-schedule). R is installed on the university computers and is also freely available from http: //cran.r-project.org/. Grades will be maintained on Sakai (https://sakai.duke.edu).

A useful website is that of Prof. Surya Tokdar who has taught this course previously and has posted lots of material. See https://stat.duke.edu/ st118/

- Assessment

Course grade based upon bi-weekly homework assignments (20%), weekly lab work (5%), two in-class exams (20% each) and a final exam (35%). **Discussion is allowed, plagiarism is not!**

- Policies

NO CELL PHONES ARE ALLOWED TO BE ON IN CLASS

Strict adherence to Duke Community Standard is observed. Missing homework and lab should be notified and make-up should be requested (via appropriate official forms; see course webpage) ASAP. Missed mid-terms cannot be made up. Missed final results in an Incomplete grade.