

Elements of Statistics

Math 106

Fall 2010

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Office Hours Monday 1:00 – 2:00

Tuesday 9:00 – 11:00

Wednesday 1:00 - 2:00

Also by appointment; please don't hesitate to ask for help.

Course Goals

Develop statistical thinking and quantitative reasoning skills

Become familiar with statistical methods and software

Apply statistical perspectives to everyday and more technical problems

Required Text

Peck, R. and Devore, J. (2008), [*Statistics: The Exploration and Analysis of Data*](#), 6th Edition, Pacific Grove: Brooks/Cole.

Course Outline and Calendar (subject to change and revision)

Week	Dates	Topics / Assignments	Readings
0	8/27	Course Intro / Role of Statistics	
1	8/30 – 9/3	Exploratory Data Analysis	Ch. 1, 3
2	9/6 – 9/10	Statistical models of data	Ch. 4, 5
3	9/13 – 9/17	Observational sampling and experimental design	Ch. 5, 2
4	9/20 – 9/24	Randomization and data collection	Ch. 2, 6
5	9/27 – 10/1	Probability models Exam 1 (Ch. 1 - 5)	Ch. 6, Ap. A
6	10/4 – 10/8	Random variables, expectation, and estimation Friday 10/8: FALL BREAK	Ch. 7
7	10/11 – 10/15	Sampling distributions, normality and CLT	Ch. 8
8	10/18 – 10/22	Confidence intervals	Ch. 9
9	10/25 – 10/29	Inference for distributions,	Ch. 10
10	11/1 – 11/5	Inference for means and proportions, Exam 2 (Ch. 6-10)	Ch. 10
11	11/8 – 11/12	Inference for two samples	Ch. 11
12	11/15 – 11/19	Chi-square, categorical inference	Ch. 12
13	11/22 – 11/26	THANKSGIVING BREAK	
14	11/29 – 12/3	Regression inference	Ch. 13
15	12/6 – 12/10	ANOVA and multiple samples	Ch. 15
	5/10	Final Exam: 12/14 8:30 AM (Ch. 1 – 13, 15)	

Statistical Package

MINITAB is available on campus computers and will be used throughout the course. While we will utilize MINITAB in nearly every class, I will assume you have no prior experience with statistical software.

Data sets and MINITAB worksheets will be placed in P:\Data\Math\STATS. Proper maintenance of computer accounts, files, etc. is your responsibility. I recommend that you back up your data sets and MINITAB worksheets on a regular basis.

Grades

You earn your grade in this course based on the following distribution:

Participation (10%)
Homework, Quizzes, and Class Exercises (25%)
Reports (15%)
Exam 1 (15%)
Exam 2 (15%)
Final Exam (20%)

Assignments and course announcements will be sent to you via e-mail or posted on the Moodle page. Stay up to date.

Participation & Absences

Class attendance is mandatory, but participation involves more than just showing up. Engagement with course discussions and exercises, and appropriate classroom behavior are expected.

Absences: Please contact me via email or voicemail as soon as you know you will miss a class meeting, preferably well in advance. **More than two unexcused absences will strongly impact your grade.** Furthermore, in class work missed due to unexcused absences may not be made up.

If you are an athlete or a member of another organization that travels, it is **your responsibility** (not your coach's or advisor's) to make arrangements with me concerning missed classes **in advance, and by September 10th at the latest.** Failure to do so will result in unexcused absences. Please contact me as soon as you know your travel schedule.

Homework, Quizzes and Class Exercises

Because this is a course in statistical problem solving, practice is critical to performing well on the exams. Quizzes (which may be given unannounced) and both in-class and take-home exercises will be used both to assess progress and provide practice and feedback. Homework problems will be assigned approximately weekly. In-class exercises missed due to unexcused absences

cannot be made up. Late homework will be reduced by half a grade, i.e., 5%, per day.

All work turned in must meet the following guidelines:

- It should be legible, organized and neat, with your name, the problem numbers, any graphical and statistical output, and the final solutions clearly marked.
- Multipage assignments must be paginated and stapled.
- Written explanations, descriptions, inferences, and conclusions must be written in complete sentences.

Work that does not meet these standards will be handed back for revision without a grade, and will thus be considered late.

Most of the data sets from the textbook are available on P:\Data\MATH\Peck-Devore-Data\.

Reports

At least two short written assignments (2-4 pages) will be given during the semester. These assignments are to assess your ability to interpret and communicate statistical findings, whether by working and summarizing problems or critiquing published research. Reports will be evaluated both for statistical content (i.e., appropriate test selection and relevant summaries and graphics) and the quality of the writing (i.e., clarity, grammar, spelling).

Exams

Exams will cover concepts from lecture and the text and will involve the use of Minitab to address statistical questions using real data. The format will generally be short response, but some matching or multiple choice questions may be used. Sample exams will be posted beforehand for study. **You may bring one 8.5X11" note sheet to each exam, to be turned in with your work.**

Final Exam (1/3 New, 2/3 Comprehensive) – December 14, 8:30 - 11:30 am

Late Policy

Assignments must be turned in at the beginning of the class period on the assigned due date. **Late assignments will lose ½ grade (5%) per day.** If for any reason you cannot turn in your paper on the assigned date, you must contact me before class. If you are unable to visit me in person, you can leave a message via voicemail (5734) or e-mail (kerkhoffa@kenyon.edu).

Academic Honesty

Acquaint yourself with Kenyon's policy on academic honesty, printed in the *Student Handbook*. I encourage you to discuss the concepts, readings, and problem solving techniques presented in class with other students, and we will frequently work in pairs or small groups. However, **all homework problems, labs, and reports must be written up and turned in independently.** For paired or small group exercises, all forms of collaboration and sharing of

information must be explicitly acknowledged. Adherence to standards of academic honesty is the responsibility of the student. If you have any questions or are unsure of appropriate conduct, please contact me.

Accommodating Disabilities

If you feel that you may have need for some type of accommodation(s) in order to participate fully in this class or to take exams, please feel free to discuss your concerns with me in private. Also identify yourself to Erin Salva, Coordinator of Disability Services at PBX 5453 or via e-mail at salvae@kenyon.edu. All information is confidential.

Statistics Clinic and Other Course Resources

Tutors will likely be available during several evenings on a weekly basis. I will share exact hours when I get them. They will help you with technical software questions or general questions about the course material, but they **will not** solve your homework problems. I also have a lead on a very competent statistics tutor, if you are interested.