

Syllabus for STAT 220: Basic Statistics

Spring quarter 2007

1 General information

- Instructor: Marloes Maathuis, Padelford B-307, marloes@u.washington.edu
Office hours: Wednesday 1:30pm-3:30pm in the Tutor & Study Center
(see Section 4 about the Tutor & Study Center)
- TA for AA/AB: Linqiu Wu, Padelford A-314, wulinqiu@u.washington.edu
Office hours: Tuesday 10:30am-12:30am in the Tutor & Study Center
- TA for AC/AD: Jonathan Gruhl, Padelford C-24, gruhlj@stat.washington.edu
Office hours: Monday 1:30pm-3:30pm in the Tutor & Study Center
- TA for AE/AF: Lee Barr, Padelford B-211, barrl@u.washington.edu
Office hours: Wednesday 11:30am-1:20pm in the Tutor & Study Center
- Lecture times: MWF 8:30am-9:20am, Savery 239
- Section times: AA: TTh 8:30am-9:20am, Savery 316
AB: TTh 9:30am-10:20am, Denny 314
AC: TTh 8:30am-9:20am, Thomson 202
AD: TTh 9:30am-10:20am, Savery 313
AE: TTh 8:30am-9:20am, Thomson 211
AF: TTh 9:30am-10:20am, Savery 317
- Course material: The textbook is “Statistics” *4th edition*, by Freedman, Pisani and Purves. It will be on reserve in the library. The main difference between the 3rd and the 4th edition is in the data that is used in the text and in the exercises. You can use the 3rd edition to learn the concepts, but the homework is based on exercises from the 4th edition.
- Additional class notes will be posted online. We will *not* provide a printed version of these notes. You should print them yourself and bring them to lecture, so that you can add your own notes.
- You also need a basic calculator.
- Class website: <http://www.stat.washington.edu/marloes/teaching/stat220>
- Prerequisites: No formal prerequisites, but you should have some basic math skills that will be reviewed in the first quiz section. Ch 7 of the textbook is considered known.
- Exams: Quiz 1: Thursday April 12, in your quiz section
Midterm: Friday April 27, 8:30-9:20am
Quiz 2: Thursday May 10, in your quiz section
Quiz 3: Thursday May 24, in your quiz section
Final: Tuesday June 5, 8:30-10:20am

2 Course description

In today's society there are enormous amounts of data available, for example from the census, election polls, medical and social studies, and DNA analysis. If you don't know how to interpret such data, then you miss out on a lot of information. So the goal of STAT 220 is to enable you to make sense of this information and to ask intelligent questions about it. For this reason, the course is sometimes called a "statistical literacy" course.

We will discuss the collection, analysis, and interpretation of data. We stress an understanding of the basic ideas and concepts, and also point out limitations of the methods. At the end of the course, you should be able to interpret and critique newspaper and journal articles that involve data analyses.

You should expect to spend about 10 hours per week on this class, outside of the lectures and quiz sections (so 15 hours in total). We will go through 2 to 3 chapters of the textbook each week, skipping Chapters 6, 7, 15, 24 and 25. Chapter 7 (about plotting points and lines) is considered known. We also include some material that is not in the textbook. The tentative schedule is as follows:

Week	Topic	Readings
1	Introduction to class, controlled experiments, observational studies	Ch 1, 2
2	Sample surveys, histogram	Ch 19, 3
3	Average, standard deviation, normal approximation	Ch 4, 5
4	Correlation, regression	Ch 8, 9
5	More regression, midterm review	Ch 10
6	RMS error for regression, regression line	Ch 11, 12
7	Law of averages, expected value, standard error	Ch 16, 17
8	Normal approximation, chance errors in sampling	Ch 18, 20
9	Accuracy of percentages and averages	Ch 21, 23
10	Hypothesis tests	Ch 26, 27
11	More hypothesis tests	Ch 29

3 Overloading and add-codes

If you would like to take this class but you were unable to enroll, then please write the following information on a piece of paper: your name, your major, your student status (regular or non-matriculated), your email address, and the section(s) you would like to get into. You can give me this information after the first class, or you can give it to your TA in your first quiz section. Similarly, in case you would like to switch sections, you should write me a note with the same information, plus the reason why you would like to switch.

4 Statistics Tutor & Study Center

The instructor and TAs will hold their office hours in the Statistics Tutor & Study Center, located in the McCarty Hall Library. The tutoring center is also a comfortable place to study by yourself or with your classmates, and to get free help from statistics graduate students. For more information, see: <http://www.stat.washington.edu/www/tutorcenter/>.

5 Students with disabilities

To request academic accommodations due to a disability, please contact Disabled Student Services: 448 Schmitz, 206-543-8924 (V/TTY). If you have a letter from DSS indicating that you have a disability which requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in the class.

6 Class website

The class website contains: (i) this syllabus, (ii) the class schedule filled in as we go, with links to lecture notes and other handouts, (iii) homework assignments and exam information, (iv) Epost (discussion board), (v) Umail (anonymous email), and (vi) relevant links.

You are encouraged to use the discussion board to discuss homework problems, ask questions, and respond to questions to others (explaining something is one of the best ways to learn!). If you post a question, please put the chapter and problem number in the subject line, so that others who are stuck on the same problem can easily find the posting. It is *not* allowed to post homework solutions. If you have a question that requires you to give away most of the answer, please don't use the discussion board, and email your TA instead. The TAs will moderate the board and respond to any unanswered questions.

You can use Umail to send anonymous email to me. I welcome any feedback on the course, and suggestions for improvement.

7 Homework, exams and grading

Learning by working with the material:

Like many subjects, statistics is learned best when you work with the material. Therefore, while working through a chapter, I encourage you to try about every other problem from the exercise sets that are spaced throughout the text. You should not hand in these exercises, but you can check the answers in the back of the book. If you don't understand how they got the answer, then please ask. The homeworks mostly consist of review exercises. These cover material of the current and previous chapters. Please don't view the homeworks as a test, but as an opportunity to learn and to get feedback on how well you understand various parts of the material.

Homework schedule:

Homework is announced at section each Thursday. It is due at the *beginning* of your section the following Thursday. Homeworks turned in after the beginning of section are considered late, and will receive a grade of zero. *Homework submission by email is not allowed, unless you have been given prior permission to do so. Such a permission should be given at least 2 days before the homework is due.* Graded homeworks are returned to you in section the following Thursday, and the common mistakes are discussed. We do not give out homework solutions.

Homework format:

An assignment is only considered for credit if it satisfies all of the following:

- it is handed in on time
- it is legible, and has the problems numbered and in order
- it has your name, section and TA written on the top right corner of the front page
- it is stapled together at the top left corner
- it is written on letter sized paper

Explain your answers:

When writing up your solutions for homeworks and exams, you must always explain your answer, also when this is not explicitly asked. Show all reasonable steps and also comment on the result. It is your responsibility to convince the grader that you understand how to solve the problem. If you just give the answer without explanation, then you receive no points.

Collaboration on homework:

You are encouraged to discuss the homework problems with others, since this is often a good way to learn. However, you must write up your own solutions, and what you turn in should reflect your own understanding of the material. If two or more student papers appear to be copies, all will receive a zero grade.

Exams:

There are three types of exams:

- Quizzes: There will be three quizzes. They will take 20 minutes each, and will be straight-forward. If you have done and understood the homeworks of the preceding two weeks, you should have no problem with the quiz. The quizzes will only cover recent material.
- Midterm: The midterm will take 50 minutes, and will cover the material of the first 4.5 weeks of the quarter. It is a closed-book exam.
- Final exam: The final will take 110 minutes, and will cover the material of the entire quarter. It is a closed-book exam.

You must bring a picture ID to all quizzes, the midterm and the final exam.

Grading:

Your course score is determined as follows:

- Homeworks: 20% (all homeworks are of equal weight, your lowest score will be dropped)
- Quizzes: 25% (all quizzes are of equal weight, your lowest score will be dropped)
- Midterm exam: 25%
- Final exam: 30%

There will be no make-up quizzes, midterms or final exams. Unexcused absence from a quiz/midterm will result in a grade of zero for the given quiz/midterm. Unexcused absence from the final exam will result in a course grade of zero. If you must miss a quiz or exam due to documented serious illness or a documented personal emergency of which you have notified me *in advance*, then I will make a suitable adjustment to the grading scheme.

Grade complaints:

Generally, your homework scores stand as determined by the grader. Requests for an extra point here and there will not be considered. Only if something is clearly graded wrongly, you can complain by handing in your paper to your TA within three working days, with a note attached that explains what is wrong. Similarly, complaints about the grading of quizzes and exams must be in writing, and within three working days.

Academic integrity:

Cheating will not be tolerated. Students suspected of cheating at the exams will be reported to the Vice President for Student Affairs, who will then investigate the case and determine appropriate sanctions. See also the section ‘Collaboration on homework’ (above).

8 Miscellaneous remarks

Attendance:

Attendance in lectures and sections is not mandatory, but hopefully you will find it useful! Some class meetings (in addition to the quizzes and exams) may involve in-class work that will form part of a homework assignment. In addition, announcements may be made in class, such as modifications of assignments or due dates. It is your responsibility to be aware of such announcements. Ignorance cannot be used as an excuse.

Participation in class:

Asking and responding to questions during lecture or section is strongly encouraged. If something is unclear to you, then it is probably unclear to many of your classmates as well, so please ask about it. All students benefit when each student actively participates in class.

Resources for help:

It is very important that you keep up with the course, because once you get behind, it is hard to catch up. So if anything is unclear to you, you should resolve this right away, either by figuring it out yourself, discussing it with your classmates, coming to office hours, or coming to the Tutor & Study Center where you can get free help from statistics graduate students. You can also post your questions on the discussion board, or email your TA or me with questions/concerns. If you are struggling in the class, please let me know as soon as possible, and I will do my best to help you.