

Math2200: Elementary Probability and Statistics

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General information

Textbook: *OpenIntro Statistics*, 3rd Edition is a free textbook that can be downloaded at https://www.openintro.org/stat/textbook.php?stat_book=os Hard copies of the book are available at the campus bookstore.

Class webpage: All homework assignments, handouts, and other information will be available on Blackboard (<http://bb.wustl.edu/>). Students should check the class webpage frequently for updates.

Course Description

This introductory course for probability and statistics covers topics including data summary (descriptive statistics and graphics), sampling and experiments, elementary probability theory, sampling distribution, confidence interval, hypothesis testing, linear regression, and analysis of variance (if time allows). The goal is to provide students with a basic sense of statistical modeling and inference as well as the ability to perform basic statistical analysis of real data.

Note that this is not a course for Math majors or minors. If you have taken Math 132 or Math 233 and plan to take 400-level statistics classes, you should take Math3200 instead. In this course, math formulae will often be presented in class without proofs.

Prerequisite

Math 131 or equivalent.

Computing

Statistical analysis of real data is practical only in the context of computer statistical packages. We will introduce the statistical software R (<https://cran.r-project.org/>) in this class. Previous familiarity with R is not assumed and sample R programs will be provided. R is available in the Arts&Sci computer labs.

Students will need a calculator for exams, but a graphing calculator with statistical distribution functions (such as the TI-83) is not required.

Homework, Exams and Grades

There will be weekly homework assignments. Homework grading will be done through Crowdmark (<https://crowdmark.com/>). In the first week of class, you will receive an email inviting you to the Crowdmark system. When a homework set is assigned, an email containing due date and homework submission link would be sent out to you from Crowdmark. You will need to use the link provided in the email to upload your scanned solution. After graders finish grading, you will also receive an email with a link to view your graded homework and scores. The lowest homework score will be dropped in the calculation of the overall homework score.

There will be four exams, including the final exam (i.e. Exam 4). Exam problems are mostly multiple-choice questions and also include a few hand-graded ones. The first three exams will be held during at 6:30-8:30pm on Sept 20, Oct 10 and Nov 14. Students shall check the schedule at <https://registrar.wustl.edu/student-records/registration/evening-exam-schedule/> for potential conflicts with other courses and report to the instructor. The final exam is **accumulative** and will be held at 3:30-5:30pm on December 13, 2018.

Your course grade depends on your performance on the homework and the exams. The percentage grade is first calculated using the following formula.

$$\text{Percentage grade} = 10\% * \text{Homework} + 90\% * \frac{1}{4}[E_1 + E_2 + E_3 + 2E_4 - \min(E_1, E_2, E_3, E_4)],$$

where E_1, E_2, E_3, E_4 represent your scores on the four exams, each with a full score of 100 points. Then the final letter grade is given according to the following scale. (If you are registered pass/fail, you must average at least 70 to pass.)

[95, 100]	A+	[80, 85)	B+	[65, 70)	C+	[50, 55)	D
[90, 95)	A	[75, 80)	B	[60, 65)	C	[0, 50)	Fail
[85, 90)	A-	[70, 75)	B-	[55, 60)	C-		

The grading scale is fixed, and no curving will be performed.

Helping Resources

- Students with questions can come to my office during office hours. If the schedule doesn't work for you, you can make an appointment with me by sending an email.
- There are two sections of math2200 this semester. The two sections will have similar coverage and progress. Students who can not come to the office hours of their registered section can also try to visit the office hours for the other section.
- Graduate student TAs hold office hours in the Calculus help room. A list of TAs that are able to help with R programming and Math2200 can be found at <https://www.math.wustl.edu/~blake/calculus/>.
- Students are strongly encouraged to work on more exercise problems to gain better understanding to the class materials. For most odd-numbered exercise problems in the textbook, the solution is available in Appendix A of the textbook. Meanwhile, instructors may sometimes suggest some problems using Webwork (link is available in Blackboard), and these practice problems will not be graded.
- Math2200 exams from previous semesters can be found at <https://wumath.wustl.edu/exams/old-exams/math2200>. There is no guarantee that exams this semester are similar to these older exams, but students can use them as useful resources for practice.

- Prof. Brian Blank has very good notes prepared for math2200 in previous semesters. Students can use them as reading materials to supplement the textbook. The notes can be found at <https://www.math.wustl.edu/~brian/stats/index.html>.

Learning Tips

1. Try to show up in all the lectures. Make good notes.
2. Ask questions in class. Your questions may be others' as well. No questions are too elementary, and all deserve to be answered.
3. Discuss with your classmates about your questions. It is perfectly acceptable to work together on homework assignments.
4. Finish homework in time.

Class Policies

1. **Attendance:** Although attendance is not a grading component of this class, students who do not maintain regular attendance tend to fall behind in their work.
2. **Collaboration:** I encourage discussion of homework in broad conceptual terms where one student is trying to educate another without giving away the answer, but students must be able to independently solve the problem after discussion, which is expected in the exams.
3. **Academic Integrity:** All students are expected to adhere to the university's academic integrity policy. Any student who is found to have cheated on an exam will receive a zero score for that work, regardless of the extent of the offense.

Exam policies

Exam Attendance

Attendance at each of the three in-semester exams and at the final exam is required. Excused absences can be granted in cases of illness, bereavement, and, occasionally, circumstances beyond a student's control. In general, students must bring the matter to the instructor's attention at least one week before the exam, so that you can be excused from it. Students must justify the absence with justified evidence, such as a doctor's note. No make-up exams will be offered.

- If you are not present for an exam and that absence is not excused by the instructor, you will receive a score of 0.
- If you are not present for one midterm exam and that absence has been excused, the other three exams will be reweighed in the calculation of the final grade. Without loss of generality, assume Exam 2 is missed. The percentage grade is then calculated using the following formula.

$$\text{Percentage grade} = 10\% * \text{Homework} + 90\% * \frac{1}{3}[E_1 + E_3 + 2E_4 - \min(E_1, E_3, E_4)].$$

- Students who either miss two out of the four exams, or the final exam, no matter for what reason, will be given a grade of 'Incomplete'.

By registering in this course and not withdrawing in a timely fashion, you agree to take the final exam on the date and at the time stated above.

Exam Rules - Seating and Booklets

Seating is preassigned. You can find it out at <https://www.math.wustl.edu/seatlookup/> on the day of the exam. If there is a problem with your assigned seat, then ask a proctor to relocate you. All calculations are to be done in the examination booklet provided. The booklet has your name on it. If for some reason there is no booklet with your name on it, then you will be given one that is marked EXTRA EXAM. If so, write your name on the booklet. Answers are marked on scan cards. Work in the examination booklet is NOT graded. Enter your answers carefully and check each one. Verify that you have not omitted any lines and that you have not filled in two choices on one line.

Scratch paper is NOT permitted. The cover page of your examination booklet states that all work is to be done in the booklet. Other mathematics classes will be taking their exams at the same time as you take yours. It is possible that scratch paper is allowed and distributed to students in those other classes. However, you may not ask for or accept scratch paper.

Exam Rules - Aids

On each exam, ONE “cheat sheet” in the form of a 4” x 6” note card will be permitted on each of the four exams. Both sides may be used.

Any calculator will be permitted. A sophisticated, statistics-enabled calculator (such as the TI-83) is not required. Familiarity with a more advanced statistics calculator may provide a slight time advantage, however, that time advantage should not be crucial. Probability calculations in the exam are required to be based on the attached probability distribution tables instead of from the statistics functions of the calculator.

Violations of exam policies will be referred to the Academic Integrity Committee (and the same goes for copying answers, of course).