

STAT 341 Probability and Statistics
Spring 2010, MWF 10:10-11:00, Math 211

Instructor: David Patterson, Math 208, 243-6748, david.patterson@umontana.edu

Textbook: *Understanding Probability*, 2nd ed., by Henk Tijms

Prerequisites: Math 153 (Calculus II) or Math 150 (Applied Calculus)

Course Webpage: <http://web.math.umt.edu/patterson/341/>

Office Hours: Will be posted on web page

Grading (+/- grading will be used):

Homework, quizzes: 35%

Two midterm exams: 20% each

Final Exam (10:10-12:10, Mon, May 10): 25%

Email: I will use your official University email address if I need to get a message to the class. You can choose to have mail to this address forwarded to another email address through your Cyberbear account.

Catalog description

Probability, probability models and simulation, random variables, density functions, special distributions, and a brief survey of estimation and hypothesis testing. Computer use integrated throughout. Prerequisite: Math 153 or Math 150.

Learning Goals:

- To learn the basics of exploratory data analysis, including graphical and numerical displays of a single variable and the relationship between two variables.
- To understand basic probability, counting and combinatorial methods, and Bayes' Theorem.
- To understand and use the Law of Large Numbers and the Central Limit Theorem.
- To learn about models for discrete and continuous random phenomena and to apply these models to real problems.
- To learn to use R for data analysis and simulation.

Software: R is a free program which can be downloaded from <http://www.r-project.org/>. It is also available in the Math 206 and LA 240 computer labs. R is a high-level statistical programming language which is especially good for data analysis and simulations.

Midterm Exams: Tentative dates are Fri, Feb. 26; Fri, Apr. 9. Makeups are given at instructor's discretion and only in cases of emergency or other important circumstances. If you cannot make it to an exam, you must let me know BEFORE the exam is given.

Final Exam (required): Mon., May 10, 10:10-12:10

Students with disabilities are welcome to discuss accommodations with me.

Comments

We will spend 3-4 weeks on exploratory data analysis and the design of studies, working from notes I will provide.

We will then cover topics from Chapters 1-6 in the text plus selected additional material from Chapters 7-10. The Appendix also contains some important material.

This text is different from most introductory probability texts (and introductory mathematics texts, generally). Chapters 1-6 attempt to give an intuitive introduction to the important ideas of probability without a lot of emphasis on formulas and notation. Chapters 7-14 contain a more formal introduction to probability.

Quizzes: Quizzes will be announced in advance; there are no makeups on quizzes for any reason, but I will drop your 2 lowest quiz scores.

Homework: Homework is due by midnight of the due date. If it is not handed in in class, it may be handed in to the department office (generally closes about 4 pm) or emailed to me by midnight. I will accept late homework if it is handed in by the beginning of the next class period subject to the following: I will accept one late HW during the semester without penalty; there will be a 50% penalty after that.

As on the tests and quizzes, answers by themselves are not adequate without clearly indicating your reasoning. In a 300-level course, you are expected to write a neat, coherent solution. If the problem involves using R, then you are expected to include a copy of the script you wrote with output; however, R output by itself is not an acceptable answer to a problem. You are to summarize what you found and include the R output at the end. You are allowed and even encouraged to work with others on the homework as long as the solutions you present are your own. However, if you simply rely on me or others to direct you on every problem, then you will not improve your problem-solving skills.

Holidays

President's Day: Mon., Feb. 15

Spring break: Mar. 29-Apr 2

Important deadlines:

Feb. 12, 4:30 pm – last day to drop/add, change grading option by Cyberbear

Apr. 5, 4:30 pm – last day to drop or change grading option by paper form (may be signed by Math office staff in my place).

After Apr. 5, drops and changes to grading option may only be made by petition for circumstances beyond the student's control (see catalog, p. 19); written documentation is required. Please note that this applies to changing to Credit/No Credit as well as to dropping the course.

Incompletes are given at the discretion of the instructor and are only considered in cases where (p. 21 of catalog)

- a. the student has been in attendance and doing passing work up to three weeks before the end of the semester, **and**
- b. for reasons beyond the student's control and which are acceptable to the instructor, the student has been unable to complete the requirements of the course on time.
Negligence and indifference are **not** acceptable reasons.

Academic Honesty

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary action by the University.

All students need to be familiar with the Student Conduct Code. You can find it in the A-Z index on the UM home page.