

Math 352                      Mathematical Statistics                      Spring 2005  
TuTh 10:00 – 11:15 am, Glatfelter 212      <http://www.gettysburg.edu/~bdoytchi/math352.html>

**Bogdan Doytchinov**      Glatfelter 214      **bdoytchi@gettysburg.edu**      337-6625

**Office Hours:** MoWeFr 1:30 – 3:30pm, Tu 11:15am – 1:00pm, also by appointment.

---

**TEXT.** *All of Statistics: A Concise Course in Statistical Inference*, by Larry Wasserman. ISBN 0-387-40272-1

**CALCULATOR.** You will need a calculator for this course. If you have been using a graphing calculator for your Calculus courses, it will be adequate for this course as well.

**COURSE CONTENTS.** Expectation, special probability distributions and densities, bivariate and multivariate distributions, sampling distributions, theory and applications of estimation, hypothesis testing, regression, correlation, analysis of variance, and nonparametric methods.

See the schedule below for more details.

**LECTURES.** There are two lectures per week, conducted in Glatfelter 212, on Tu, Th, 10:00–11:15pm.

You are supposed to attend all lectures. If you miss a class, it is your responsibility to make a copy of the classnotes from another student and make sure you learn what you have missed.

**ATTENDANCE AND PARTICIPATION.** You are expected to actively participate in class by asking questions, making comments, working on the assignments, and sharing your insights with others. As part of your class participation grade, you are required to attend three of the math department colloquia during the semester. Information regarding these colloquia is on the bulletin board outside Glatfelter 212.

**HOMEWORK.** Homework is assigned for each section of the book covered. Homework is a required component of the course. Working the exercises will help you learn, and give you some perspective on your progress. You are encouraged to discuss homework problems with each other, however you must individually write your own solution (see the Honor Code section below).

### **TESTS, EXAMS, PROJECTS, GRADING POLICY.**

You can always check your grades via the BlackBoard site  
<http://courses.gettysburg.edu/>

There will be four in-class tests, on FEBRUARY 3, FEBRUARY 24, MARCH 17, and APRIL 14. There will be a three-hour Final exam on Saturday, MAY 7, 8:30–11:30am.

There will be one computer project, due April 28 by 10:00am. Details will be announced later.

Grades will be determined according to the following table.

Homework	15%
Lowest Test Score	5%
Remaining Test Scores	15% each
Computational Project	10%
Final Exam	25%

**HONOR CODE.** As you already know, Gettysburg College operates under an Honor Code. Here are some specific details about the ways the honor code applies to this course:

1. Homework

- (a) The purpose of the homework is for you to actively engage in learning the methods, techniques, and problem-solving skills in the course.
- (b) It is acceptable (and actually encouraged) to discuss the course material and to work on homework problems with other students. However, each student must individually write up his or her own solution.
- (c) It is a violation of the Honor Code to copy a homework solution from other people or other sources (such as a solutions manual).
- (d) You are encouraged to check the final results of your problem-solving work by looking at the answers at the back of the textbook. If your final answer is not correct, you should reexamine your calculations and possibly reconsider your approach to solving the problem. Your written solution to any problem should show fully and clearly your work and methods to solve the problem. It is a violation of the Honor Code to simply copy the final answer from the back of the textbook.

2. Tests and Exams

- (a) All quizzes, tests, and exams must be taken in your classroom or in the specific area designated by your instructor.
- (b) All quizzes, tests, and exams are closed-book with no notes available (either in writing or in electronic form).
- (c) Calculation with graphing calculators is permitted, and in most occasions necessary.

3. All Graded Work

- (a) You must write out a complete, honest, and detailed acknowledgement of all assistance you received and all resources you used (including other people) on all written work submitted for a grade. There is no specific format you must use.
- (b) Ask your instructor if you are uncertain. When in doubt, write it out.
- (c) You must write out the Honor Pledge by hand and sign it.

**SCHEDULE.** The following schedule is tentative. It is expected that we will follow it rather closely, but there will be some minor deviations from time to time.

**MA 352, Mathematical Statistics**

**SCHEDULE**

Day	Date	Topic	Chapter
Tu	01/18	Review of Probability	2,5
Th	01/20	Preview of Statistics	6,7
Tu	01/25	Point Estimation. Method of Moments. MLE.	9
Th	01/27	Properties of MLE	9
Tu	02/01	Doing it with technology	LAB
Th	02/03	TEST 1	
Tu	02/08	Hypothesis Testing	10
Th	02/10	Hypothesis Testing	10
Tu	02/15	$p$ -values and Confidence Intervals	10
Th	02/17	$\chi^2$ -test: Multinomial, Goodness of Fit	10
Tu	02/22	Doing it with technology	LAB
Th	02/24	TEST 2	
Tu	03/01	Linear Regression	13
Th	03/03	Linear and Logistic Regression	13
Tu	03/08	Multivariate Models	14
Th	03/10	Multivariate Models and ANOVA	14
Tu	03/15	Doing it with technology	LAB
Th	03/17	TEST 3	
Tu	03/29	Inference about Independence	15
Th	03/31	Causal Inference	16
Tu	04/05	Overview of Non-parametric Methods	various
Th	04/07	More Non-parametric Methods	various
Tu	04/12	Doing it with technology	LAB
Th	04/14	TEST 4	
Tu	04/19	Bayesian Inference	11
Th	04/21	Statistical Decision Theory	12
Tu	04/26	Time Series	21
Th	04/28	Review	
Sa	05/07	FINAL EXAM (8:30-11:30 am)	