

**STAT 4710/7710: Introduction to Mathematical Statistics  
Fall Semester 2009**

**Time:** 9:30 am – 10:45 am, Tuesdays and Thursdays  
**Location:** Middlebush Hall 13

**Instructor:** Fei Liu  
**Office:** 134K Middlebush Hall  
**Office Hours:** Monday 6:00 p.m. – 8:00 p.m. or by appointment  
**Email:** liufei@missouri.edu

**Text**

- Introduction to Probability and Statistics by J. Susan Milton and Jesse C. Arnold, 4<sup>th</sup> edition (required).
- Workbook available at MU Bookstore (optional).

**Prerequisites:** MATH 2300 or permission of instructor

**Course website:** <https://blackboard.missouri.edu/>

*Important:* Please log in to the Blackboard website regularly for important announcements, homework assignments and their solutions after the due dates.

**Graduate students:** To receive graduate credit for this course, a student must enroll in STAT 7710. In cross-leveled courses where both undergraduate and graduate students are enrolled, University policy requires that graduate students do something beyond the undergraduate requirements. Because of this, graduate students will be assigned some additional problems in some homework.

## Tentative schedule

| Week | Sections           | Topics  |
|------|--------------------|---|
| 1    | 1.1-1.3            | Overview of probability & statistics, sample spaces, events, permutations & combinations  |
| 2    | 2.1-2.4 & 3.1      | Axioms & properties of probability, conditional probability, multiplicative rule, independence, Bayes theorem, random variables   |
| 3    | 3.2-3.5            | Discrete probability densities, expectations, geometric, mgfs, binomial   |
| 4    | 3.5, 3.8, 4.1, 4.2 | Binomial cont., Poisson, pdfs, expectations. <i>Reading assignment: Section 3.7 hypergeometric &amp; uniform, p. 27 of workbook</i>   |
| 5    | 4.3-4.4            | Gamma, exponential, chi-square, normal  |
| 6    | 4.5-4.7 & 5.1      | Normal probability rule, normal approximation to binomial, Weibull, joint densities   |
| 7    | 5.1-5.4            | Joint densities cont., expectations, correlation, conditional dist.s  |
| 8    | 6.1-6.4            | Random sampling, graphical & numerical summaries, boxplots optional, <i>Reading assignment: Stem-and-leaf diagrams.</i>   |
| 9    | 7.1-7.4 & 8.1      | Estimation, distribution of sample mean, central limit theorem, interval estimates, interval estimates of $\sigma^2$ , mles optional  |
| 10   | 8.2-8.5            | Interval estimates of $\mu$ , t-distribution, hypothesis testing, significance testing, tests about $\mu$   |
| 11   | 8.6,8.7,9.1        | Tests about $\sigma^2$ , nonparametric methods, estimating proportions  |
| 12   | 9.2,9.4,10.1       | Tests for one and two proportions, estimating the difference of two means. <i>Reading assignment: Section 9.3 confidence intervals for the difference of two proportions.</i> |
| 13   | 10.2-10.6          | Comparing variances, comparing means with equal variances, with unequal variances, paired t, nonparametric procedures.  |
| 14   | 11.1-11.3, 11.6    | Regression and correlation.   |

## Homework

- Homework assignments will typically be due on Tuesdays and be assigned a week in advance.
- Start working on homework problems as early as possible. Do not wait until the last minute.
- **No late homework will be accepted.**
- In calculating your overall grade, your lowest 2 homework scores will be dropped.
- When submitted your homework:
  - Clearly write your name, course name, section number and assignment number on the top of the first page.
  - Show all your work to get full credit.
  - Homework should be submitted on standard-size paper (8.5" by 11").

## Exams

- There will be 2 midterm exams and a comprehensive final exam
- The dates for the exams are as follows:
  - Midterm I: September 22
  - Midterm II: October 29
  - Final Exam: Monday, December 14, 1:00pm – 3:00pm.
- The midterm exams will be given in the same location and times as regular lectures
- If you miss an exam without prior approval, you may be given a grade of zero. If you must miss an exam, please see me as soon as possible. All approved reasons require that documentation be presented in advance. If you miss an exam for a medical reason, you must present a physician's note. Travel is not an approved reason for missing an exam.
- All exams are closed book. However, you are allowed an 8.5" by 11" page of notes (both sides) for each midterm exam, and three such sheets for the final exam.

## **Grading**

Your grade will be based on a weighted average of your midterms scores (25% each), homework average (20%) and final exam score (30%).

## **Academic honesty**

Academic integrity is fundamental to the activities and principles of a university. All members of the academic community must be confident that each person's work has been responsibly and honorably acquired, developed, and presented. Any effort to gain an advantage not given to all students is dishonest whether or not the effort is successful. The academic community regards breaches of the academic integrity rules as extremely serious matters. Sanctions for such a breach may include academic sanctions from the instructor, including failing the course for any violation, to disciplinary sanctions ranging from probation to expulsion. When in doubt about plagiarism, paraphrasing, quoting, collaboration, or any other form of cheating, consult the course instructor.

## **Academic accommodations**

If you need accommodations because of a disability, if you have emergency medical information to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class, or at my office. To request academic accommodations (for example, a notetaker), students must also register with the Office of Disability Services, S5 Memorial Union, 882-4696. It is the campus office responsible for reviewing documentation provided by students requesting academic accommodations, and for accommodations planning in cooperation with students and instructors, as needed and consistent with course requirements. For other MU resources for students with disabilities, click on "Disability Resources" on the MU homepage.