MIT, Department of Economics
Tu, Th 9:00-10:30, E51-151

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14.381 Statistical Methods in Economics

The primary objective of this course is to provide an introduction to mathematical statistics necessary for the subsequent study of econometrics and economic theory. No prior preparation in probability and statistics is required, but familiarity with linear algebra and multivariate calculus is assumed. Students familiar with statistical theory and/or econometric theory are strongly encouraged to waive the course requirement by taking the waiver exam.

The class will meet Tuesday & Thursday, 9:00-10:30, in E51-151. In addition, weekly sections will be conducted Friday, 9:00-10:30, in E51-151. My office hours are Tuesday, 10:30-12:00, in E52-262F.

Grading will be based on performance on the problem sets (20%), the mid-term exam (30%), and the final exam (50%). The mid-term exam will be held in class on Thursday, October 28, and the final exam will be held in the final exam week. Any time conflicts should be discussed with the instructor well before the exam date. It is essential to attempt all problems in order to understand the material covered in this course.

The required text for the class is:

- Casella, G. and R.L. Berger, *Statistical Inference, Second Edition.* Duxbury Press, 2002 (cited as "Casella and Berger").

Other useful references are:

- Cox, D.R. and D.V. Hinkley, *Theoretical Statistics.* CRC Press, 1974.
- DeGroot, M.H. and M.J. Schervish, *Probability and Statistics, Third Edition.* Addison-Wesley, 2002.

TENTATIVE COURSE OUTLINE:

1. **Probability spaces and random variables**
   Casella and Berger, Chapter 1.

2. **Transformations and expectations**
   Casella and Berger, Chapter 2.

3. **Univariate distributions**
   Casella and Berger, Chapter 3.

4. **Multiple random variables**
   Casella and Berger, Chapter 4.

5. **Random sampling**
   Casella and Berger, Chapter 5.

6. **Point estimation**
   Casella and Berger, Chapter 7.

7. **Hypothesis testing**
   Casella and Berger, Chapter 8.

8. **Interval estimation**
   Casella and Berger, Chapter 9.

9. **Large sample theory**
   Casella and Berger, Chapter 10.