

## Probability and Mathematical Statistics II

**Meeting Time** T: 5:30-8:20 pm.  
**Location** SH 308

**Instructor** Prof. Zheyang Wu  
Stratton Hall 101  
zheyangwu@wpi.edu

**Office Hours**  
TH : 12:00-1:00 pm  
or by appointment

### Course Description and Objectives

This course is designed to provide background in principles of statistics. Topics covered include estimation criteria: method of moments, maximum likelihood, least squares, Bayes, point and interval estimation, Fisher's information, Cramer-Rao lower bound, sufficiency, unbiasedness, and completeness, Rao-Blackwell Theorem, efficiency, consistency, interval estimation pivotal quantities, Neyman-Person Lemma, uniformly most powerful tests, unbiased, invariant and similar tests, likelihood ratio tests, convex loss functions, risk functions, admissibility and minimaxity, Bayes decision rules.

### Prerequisite

Knowledge of the material in MA 540 is assumed.

### Textbook

The course will roughly cover Chapters 6–10 of the textbook, following the class notes.

- Textbook: Casella and Berger, *Statistical Inference, 2nd Edition*, Duxbury.

### Course Website

The password protected course site in myWPI is the main platform through which this course will be managed.

### Homework

Homework assignments will be announced on myWPI. The due time will be specified; no delay allowed. Please make sure your answers are clearly written / typed in order to avoid confusing and potential removal of credit. Homework is individual work. NO discussion among students is allowed. Getting solutions from anywhere or anyone is forbidden.

## In Class Tests

There will be two in-class, closed-book, cumulative exams. You can use a scientific calculator in exams, but it is usually not necessary. The tentative dates for the exams are :

- **Midterm : Tuesday, March 17.**
- **Final : Tuesday, May 5.**

No makeup exam will be given unless it is approved for a student at least one week ahead of the exam. Time conflict with other courses is not a legitimate excuse for getting a makeup of this course. Makeup exams could be harder than the original exams.

## Grading

| Source   | Percentage |
|----------|------------|
| Midterm  | 30%        |
| Final    | 35%        |
| Homework | 35%        |
| Total    | 100%       |

## Academic Honesty

Each student is expected to familiarize himself/herself with WPI's Academic Honesty policies which can be found at (<http://www.wpi.edu/offices/policies/honesty>). All acts of fabrication, plagiarism, cheating, and facilitation will be prosecuted according to the university's policy. If you are ever unsure as to whether your intended actions are considered academically honest or not, please see me.

## Students with Disabilities

Students with disabilities who believe that they may need accommodations in this class are encouraged to contact the Disability Services Office (DSO) as soon as possible to ensure that such accommodations are implemented in a timely fashion. The DSO is located in the Student Development and Counseling Center and the phone number is 508-831-4908, e-mail is DSO@WPI.EDU (Reference : **Aaron Ferguson**, Director of Disability Services). If you are eligible for course adaptations or accommodations because of a disability (whether or not you choose to use these accommodations), or if you have medical information that I should know about please make an appointment with me immediately.