

10/36-705 – Intermediate Statistics
Fall 2013

Instructor and Teaching Assistants

	Office	Email	Office Hours
Jing Lei	BH 132C	jinglei@andrew.cmu.edu	Mo 1:30-2:30 or by appointment
Wanjie Wang	Wean 8119	wanjiew@andrew.cmu.edu	Tu 1-3 in Wean 8110
Yen-Chi Chen	Wean 8117	ga014528@gmail.com	Wed 4:30-5:30 & Th 2-3 in Wean 8110

Lecture MWF 12:30 PM – 1:20 PM Baker Hall A51

Textbook *Statistical Inference* (2nd Edition)
G. Casella & R. L. Berger (ISBN 978-0-534-24312-8)

Optional Text *All of Statistics: A Concise Course in Statistical Inference*
L. Wasserman (ISBN 978-0387402727)

Web Site <http://www.cmu.edu/blackboard>

Prerequisite Basic knowledge of probability
(e.g., Ch. 1-4 of Casella & Berger, or equivalence of 36-225)

Intermediates Statistics covers the fundamentals of theoretical statistics. I will start from useful results in probability theory and move on to cover topics like data reduction, point estimation, hypothesis testing, nonparametric inference, bootstrap, and Bayesian inference. This course focuses on both concepts and techniques, and is good preparation for further studying statistics and machine learning.

List of topics:

1. Review of probability; Inequalities. (3-4 lectures)
2. VC theory. (1-2 lectures)
3. Probabilistic convergence. (3-4 lectures)
4. Data reduction: sufficiency and likelihood (2 lectures)
5. Point estimation, minimax theory, and asymptotics (5-6 lectures)
6. Hypothesis testing and confidence intervals. (5-6 lectures)
7. Nonparametric inference and the bootstrap. (4 lectures)
8. Bayesian inference and Markov Chain Monte Carlo (2-3 lectures)
9. Other topics: prediction, model selection, and causal inference (6 lectures)

Administrative Remarks

Lectures

Lecture Notes. Notes in PDF format are provided by courtesy of Professor Larry Wasserman. A given set of notes may cover more than one lecture. Notes will be posted on Blackboard as needed, no later than 5:00 PM on the day before they are needed. **It is your responsibility to print out lecture notes.**

Textbook. The textbook is meant to supplement the lectures, and for most lectures there will be assigned reading. Some homework problems will be chosen from the textbook.

Homework and Tests

Homework. Homework assignments will be posted on Wednesdays on the Blackboard site, and will be due one week later. You may hand them to me in Baker Hall A51 at the beginning of class, or give them to me in BH 132C by 11:59 AM. **It is your responsibility to make your homework readable.** Homework assignments that are turned in late will not be graded.

Tests. All tests including the final are closed book and closed notes. The test dates are given below. Each in-semester test covers only the material presented since the previous exam (about 3-4 weeks of material), while the final is cumulative.

If you cannot take a test at its scheduled time, please let me know **at least one week beforehand** and we can attempt to come to a scheduling accommodation. If you miss a test, it cannot be made up. **Please do not schedule travel before the end of finals (Tuesday, December 18) until you know when all your finals will be held!**

Grading		Important Dates		
TEST #1	20%	Week	Date	What's Happening
TEST #2	20%	2	2 Sep (Mon)	No Class: Labor Day
TEST #3	20%	3	13 Sep (Fri)	Test #1
		7	11 Oct (Fri)	Test #2
FINAL	20%	8	18 Oct (Fri)	No Class: Mid-Sem Break
		11	8 Nov (Fri)	Test #3
HOMEWORK	20%	14	27 Nov (Wed)	No Class: Thanksgiving
		14	29 Nov (Fri)	No Class: Thanksgiving

Graduate students with considerable teaching experience may receive Instructor-G appointments. These appointments are given only to more advanced students of proven teaching ability. The rate of compensation for teaching assistants is determined by the Dean of the School within guidelines approved by the Academic Council. Graduate students holding teaching assistant appointments must register as full time resident students and are charged full tuition during the period of appointment. The TA appointment comprises a monthly stipend as well as a tuition scholarship which is credited directly to Teaching Assistants. Instructors who are not marked as Visible in the course, but who do have permissions checked for Q&A will display with a Teaching Assistant designation whenever they reply to student questions in the course Q&A. The Teaching Assistant designation is intended to give students additional context about these co-instructors, since they are not otherwise visible in the course. Removing a Co-Instructor. Co-instructors can be removed from a course by clicking the Trash Bin icon in the far right column of the Instructors list.