

## Spring 2020, Stat 453/553: Statistical Inference

**Instructor:** Dr. Yan Lu, [yanlu@unm.edu](mailto:yanlu@unm.edu)

<https://math.unm.edu/~luyan/stat55320/stat55320.html>

**Office hours:** MWF 10:00am-10:40am, or by appointment, Science Math Learning Center (SMLC) 316

**Class Time/Place:** 11:00am-11:50am, MWF, SMLC 120

**Prerequisites:** Stat 461/561: Probability (offered in the Fall). \*If have not taken this class before, you are not ready to be enrolled in Stat 453/553\*.

**Text:** Casella, G. y Berger, R.L. (2001) Statistical Inference. 2ed. Duxbury Press.

**Reference:** Lee Bain and Max Engelhardt (2000) Introduction to Probability and Mathematical Statistics. 2ed. Duxbury Press.

**Description of the Course:** The goal of this course is to give an introduction to the theory of statistical inference. The first part of the course will discuss topics on random sampling, likelihood, convergence and sufficiency. The second part will focus on point estimation and hypothesis testing. The final part of the course will discuss confidence intervals and a brief introduction to asymptotic evaluations.

### **Topics:**

Chapter 5: Random samples and related concepts, convergence and generating random samples.

Chapter 6: Sufficiency, ancillary and completeness. The likelihood principle.

Chapter 7: Point estimation: Methods and properties of estimators.

Chapter 8: Hypothesis Testing: Methods for finding and evaluating tests.

Chapter 9: Interval estimation: Methods for finding and evaluating interval estimators.

Chapter 10: Asymptotic Evaluations.

### **Computing:**

R, or Rstudio will be occasionally used in this class.

*R:*

<http://cran.r-project.org>

*Rstudio:*

<https://www.rstudio.com/products/rstudio/download>

To see how to install R and Rstudio in windows, visit

<https://www.youtube.com/watch?v=eD07NznguA4>

for Mac

<https://www.youtube.com/watch?v=GFImMj11MRI>

**Grading:** Grading will be based on homework assignments (30%), two midterm exams (20% each), and a final exam (30%). Homework assignment consists two parts: (1) one part is from textbook exercises, which will be collected but not graded (you will need to do the problems first, then use solution manual to correct any mistake). Completion of the textbook exercises counts for 10%; (2) another part is more like a take home quiz to evaluate your understanding of the materials we have studied. This part will be graded and is worth 20%. Final exam is comprehensive and is scheduled on Wednesday, May 13th from 10:00am - 12:00pm.

**Note:** No late homework will be accepted. Makeup exams are given at the discretion of the instructor and, in any case, only for verified medical or other emergency, which must be documented. The instructor must be contacted before the test is given. Final exam can not be rescheduled.

	Stat 553	Stat 453
A	90%-100%	85%-100%
B	80%-89%	70%-84%
C	65%-79%	60%-69%
D	under 64%	under 60%