

SPRING 2015 Statistical Theory (STAT 467/667) 3 credits
OSN 203, MWF 12:00-12:50pm

Instructor: Deena Schmidt, **Office:** DMSC 219

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Office Hours: Wed 1-2:30pm, Thurs 2-3pm, and by appointment

Course Website: <http://wolfweb.unr.edu/~drschi/Sp15>

- **Course Description:** Introduction to classical mathematical statistics. Multivariate probability distributions; sampling distributions related to the normal distribution; interval and point estimation; sufficiency, unbiasedness, and information inequality; Bayesian estimation; testing hypotheses; likelihood ratio tests; power calculations; linear models.
- **Prerequisites:** Math 283, Math 330, and either Math/Stat 352 or Math 461.
- **Required Textbook:** *An Introduction to Mathematical Statistics and Its Applications* by R.J. Larsen and M.L. Marx, 4th edition, Prentice Hall.
- **Course Content:** Selected sections from Chapters 3, 5-7, 9, 11.
- **Exams:** There will be two in class exams and a comprehensive final exam. Tentatively, Exam 1 will be on Friday March 6 and Exam 2 on Wednesday April 15.
- **Final Exam:** Friday May 8, 2015 12:30-2:30pm
- **Homework:** Homework will be assigned weekly and collected at the beginning of class on Fridays.
- **Grading:** Homework: 20%, Exams: 25% each, Final Exam: 30%.
- **You will be assigned at least an**
 - A if your score is between 90% and 100%;
 - B if your score is between 80% and 89%;
 - C if your score is between 70% and 79%;
 - D if your score is between 60% and 69%;
 - F if your score is below 60%.
- **General Rules:** All students in this class are expected to respect each other and the instructor. Any form of disruption or disrespect to other students or to the instructor will not be tolerated. Please be on time. All electronic devices need to be turned off (or silent) during class. If found reading, texting, or browsing on a computer during lecture, you will be asked to leave.
- **Undergraduate vs. Graduate Work:** Homework assignments/exams for undergraduate and graduate students will not differ in their quantity, and the same criteria will be used to evaluate the correctness of the solutions submitted by undergraduate and graduate students. However, assignments/exams for graduate students will include more advanced questions that require deeper understanding of the material, and a higher level of maturity in the presentation will be expected from them.
- **Academic Integrity:** Cheating will not be tolerated. Any student caught attempting to cheat, cheating or helping another student cheat will receive a grade of F for the course. All students in this course are expected to abide by the academic standards and policies of UNR. Please see <http://www.unr.edu/stsv/acdisp.html>.
- **Disability Resources:** If you are a student with a disability that requires academic adjustments or accommodations, please notify me or the Disability Resource Center (Thompson Building, Suite 101) as soon as possible to arrange for appropriate accommodations.

We will cover the following topics:

- **Estimation:** looking for parameters of distributions/populations.
- **Hypothesis testing:** using data to check if a statement is true.
- **Special distributions:** Normal (review), t, F, χ^2 . These come up in hypothesis testing.
- **Two sample problems:** Comparing populations.
- **Regression:** Working with two dimensional data, assessing linear association.

Student Learning Outcomes: Upon successful completion of STAT 467/667 students will be able to:

- Explain and apply the maximum likelihood estimation process.
- Explain and apply Bayesian estimation.
- Explain and apply hypothesis testing for one and two sample problems.
- Explain and apply linear regression techniques.