STA 6166, Spring 2021
Statistical Methods in Research I
Section 13F8

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Course Objective: Train graduate students in the sciences to interpret statistical results, plan and conduct experiments, and perform reproducible data analysis with R.

Textbook (optional): *An Introduction to Statistical Methods & Data Analysis, 7th Ed.*
Authors: R. Lyman Ott, Michael T. Longnecker, ISBN-13: 9780495017585

Other Materials: Course notes, videos, datasets, and homework assignments will be available on the class website e-learning.

Software: You will need a computer for the homework assignments. The software used in class will be R. We will have a few labs on how to install and use R.

Homeworks: There will be approximately 5-6 assignments. You will have at least one week to hand them in from the time they are posted on the website. Assignments will total 100 points. Assignments are to be submitted electronically in e-learning. *Late homework will not be accepted and will receive a grade of 0.*

Grading: Homework assignments will count as 100% of your course grade, split evenly among the 5-6 assignments.

Letter grade distribution

	A 91 to 100	A- 87 to < 91
B+ 84 to < 87	B 80 to < 84	B- 77 to < 80
C+ 74 to < 77	C 70 to < 74	C- 67 to < 70
D+ 64 to < 67	D 60 to < 64	D- 55 to < 60
E < 55		

Tentative schedule (may go through earlier topics more quickly):

Topic	Textbook Section
Introduction, Data Collection/Summaries, Populations/Samples	1.1-3.9
Probability, Random Variables, Graphical Representation	4.1-4.10
Sampling and Sampling Distributions, Estimating a Mean	4.11-4.16, 5.1-5.3
Statistical Tests for a Mean and Median	5.4-5.9
Comparing Two Population Means and Medians	6.1-6.6
Introduction to F, χ^2 Distributions, Inference on Variances	7.1-7.4
Introduction to Analysis of Variance and Experimental Design	8.1-8.3
1-Way ANOVA: Assumptions, Rank-Based Tests, Post-hoc tests	8.4-8.6, 9.1-9.5
Randomized Complete Block Design	15.1-15.5
Categorical Data Analysis: Estimating and Comparing Proportions	10.1-10.3
Contingency Tables, χ^2-Tests, Odds Ratios	10.4-10.8
Introduction to Linear Regression	11.1-11.5
Correlation and ANOVA intro to Multiple Regression	11.6, 12.1-12.2
Multiple Linear Regression	12.1-12.7