

STA 6166, Spring 2023
Statistical Methods in Research I
MWF 2nd Period (8:30-9:20) FLO 0100

Instructor: Dr. Larry Winner
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Office Hours: TBA (Will be posted on CANVAS)

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Course Objective: Train graduate students in the sciences to plan and conduct experiments and data analysis.

Course Notes: Introduction to Applied Statistical Methods on Canvas and Class Website

Optional Textbook: Ott and Longnecker, 2015. *An Introduction to Statistical Methods & Data Analysis*, 7th Ed., Cengage. (6th Edition also)

Other Materials: Datasets, assignments, and overheads available on class website.

Web Site: UF Canvas and <http://www.stat.ufl.edu/~winner/>

Homework and Exams:

1. **Homework Assignments:** There will be approximately 5 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.
2. **Exams:** There will be 3 REQUIRED in-class exams. Each will be worth 100 points.
3. **Grading:** Grades will be based on the total of 400 points from homework and exams. Grades are not negotiable (unless a mis-calculation is made in totaling points).
4. **Exams are Closed Book.** You may write formulas/notes on back of tables that will be available on class website.
5. **Missed Exams:** Any exams that will be missed must be confirmed as soon as possible, **before** the time of the exam. Documentation of conferences must be provided.

6. **Late Homework:** Will not be accepted and will receive a grade of 0. All homework must be uploaded to CANVAS. No e-mail will be accepted.

Prerequisites and Computing:

1. STA 6166 has a pre-requisite of an introductory statistical course. The course begins with (very brief) introductory material and then covers a wide range of topics.
2. You will need a computer for homework assignments. In this course we will make use of the R programming language.

Tentative Schedule (May go through earlier topics more quickly):

Topics	Sections
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

Exam Dates:

- **Exam 1: February 6**
- **Exam 2: March 10**
- **Exam 3: April 26**

R can be downloaded for free from the website:

<http://cran.r-project.org/bin/windows/base/>

Notes:

- Homework projects will be posted on class website and will be taken up and graded. Projects must be handed in (hard copy), e-mail will not be accepted.
- Exams are 1-hour. You may bring a copy of the t, χ^2, F table with hand written notes (8.5x11")
- Homework will count 25% of your course grade, each exam will be 25%
- Grades are not negotiable.
- You may request problems to be worked out in upcoming class via e-mail. I will not give detailed solutions via e-mail.

Course Grade (Minimal) Cut-offs:

A	A-	B+	B	B-	C+	C	C-	D	E
93	88	84	70	60					

Attendance/Exam/Assignment Policies: While attendance is not taken, students are expected to attend lectures and participate in class. Make-up exams will only be considered with documented medical event or conference attendance (graduate students). Early exams will be given under no circumstances. Assignments are to be handed in during class on the date the assignment is due in paper format. Electronic submission of assignments will not be accepted. Turn off cell phones during classes.

Academic Accommodations: If you have a documented disability and wish to discuss academic accommodations with me, please contact me as soon as possible.

University Grading Points:

A	A-	B+	B	B-	C+	C	C-	D	E
4	3.67	3.33	3	2.67	2.33	2	1.67	1	0

Online Course Evaluations: The University has an online course evaluation system. Late in each semester (after final withdrawal date), students can go to the GATORRATER portal and evaluate courses. The website is located at: <https://evaluations.ufl.edu/evals/Default.aspx>.

University Policies:

Academic Dishonesty: All members of the University Community share the responsibility to challenge and make known acts of apparent academic dishonesty. Acts of academic dishonesty will not be tolerated and will be referred to the Student Honor Council.

Campus Resources:

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/>

Academic Resources: <http://www.ufl.edu/academics/resources/>

Disability Resource Center: <https://www.dso.ufl.edu/drc/>

Student Health Care Center: <http://shcc.ufl.edu/>