STA 6166
Statistical Methods in Research I

Fall 2012
Sections 3155, 4731, 4737, 6269

PREREQUISITE   STA 2023 or equivalent

INSTRUCTOR   Dr. Salvador A. Gezan
Office: 363 Newins-Ziegler Hall
Phone: (352) 846-0133
E-mail: sgezan@ufl.edu
Office hours: Tuesday 3:00 pm - 5:00 pm (or by appointment).

TEACHING ASSISTANT   Melissa Pisaroglo de Carvalho
Office: 363 Newins-Ziegler Hall
E-mail: melissapisaroglo@ufl.edu

Yeon Hee Park
E-mail: yeonhee@stat.ufl.edu

Mengyao Liang
E-mail: nicoleliag@stat.ufl.edu
Office: TBA
Office hours: TBA

LECTURE TIME   Tuesday: Period 7 (1:55 pm – 2:45 pm)
Thursday: Periods 7-8 (1:55 pm – 3:50 pm)

COMPUTING LABS   You should plan to attend to ONE of the following sessions weekly
(lab is located at McCarty Hall B 3086):

Tuesday: Period 3 (9:35 am – 10:25 am) - Section 3155
Tuesday: Period 6 (12:50 pm – 1:40 pm) - Section 4731
Tuesday: Period 8 (3:00 pm – 3:50 pm) - Section 4737
Wednesday: Period 3 (9:35 am – 10:25 am) - Section 6269

CLASS WEBSITE   https://elearning.courses.ufl.edu/webct/

COURSE DESCRIPTION   Statistical methods based on t, F, and Chi^2 tests. Analysis of
variance for basic experimental designs. Factorial experiments.
Regression analysis and analysis of covariance.

COURSE OBJECTIVES Train graduate students in basic statistical tools with the aim of promoting sound scientific research based on good statistical thinking and practice.

REQUIRED TEXTBOOK McClave, J.T. and Sinich, T. 2012. *Statistics plus MyStatLab Student Access kit*, 12th Edition. Pearson Prentice Hall. ISBN 9780321837745. (11th Edition is very similar but with some differences in exercise problems, you can opt for this edition but at YOUR OWN RISK).

EXAMS There will be 3 exams. No final exam will be required, but exams will be cumulative with greater emphasis in later/newer material. Exams 1 and 2 will be worth 100 points, and Exam 3 will be worth 120 points. Exams 1 and 2 will be implemented on Thursday classes from 1:55 to 3:50 pm. Exam 3 will be outside of normal hours on the last day of classes. Exams are closed book and you will need a calculator. *No make up exams will be given under ANY circumstance!*

EXAM DATES Exam 1 (1:55-3:50 pm) - September 20 (80 points) – On Class
Exam 2 (1:55-3:50 pm) - October 25 (100 points) – On Class
Exam 3 (5:10-7:10 pm) - December 5 (120 points) - TBA

HOMEWORK There will be 7 assignments. Each will be worth 20 points, and only the best 6 will considered for grading. Therefore, there is a total of 120 points. Homework is due at 2:00 pm on Tuesdays (right before class) and should be presented ON PAPER (i.e. not electronically). *Late homework will NOT be accepted!* Homework assignments can be worked and presented on pairs (no trios). Statistical analyses need to be worked in any statistical software (R and SAS preferred, no Excell!!). Data exploration, manipulation and graphs can be done in Excel.

ATTENDANCE Lecture and laboratory attendance is not obligatory, but success in the class (together with eligibility of bonus points and/or curving) depends, and it will depend, on attendance. In addition, some topics relevant for exams and homework, that are not included in slides, will be presented during class.

GRADING Grades will be based on a total of 400 points, with 280 points from the exams and 120 points from homework. The following are the letter grades considered and their corresponding ranges

A (381-400)   A- (361-380)
B+ (347-360)   B (334-346)   B- (321-333)
C+ (307-320)   C (294-306)   C- (281-293)
D+ (267-280)   D (254-266)   D- (241-253)
E (0-240)

SOFTWARE   You will need a computer for some of the homework assignments. The main software used will be R (The R project for Statistical Computing). This statistical package is free and it can be downloaded from: www.r-project.org. Additional statistical software might be used during class to illustrate some other aspects, and this could include SAS and/or JMP. All of these packages are installed in the IFAS laboratory (McCarty Hall B 3086). It is YOUR RESPONSABILITY to make sure that you have access to a statistical package.

COMPUTER USE   You will need a computer for most of the homework assignments. Other software will be available on the IFAS laboratory (McCarty Hall B 3086).

WARNING   This class assumes that you have a basic level of mathematics and statistics (as a basic undergraduate statistic class) where some of the topics were forgotten and/or not well understood. In this class we will review/clarify/explain/expand these basic topics; however, we will be stopping only BRIEFLY in mathematical details as they are assumed to be known. If you consider that your prior statistical background is very weak then we recommend you to not take this class and first register for an undergraduate class (e.g. STA2023) to avoid some future struggle (i.e. a C or D grade). However, regardless of your background, if you are willing to dedicate time by doing the suggested exercises and by assisting to classes, then you are likely to do well in this class. In addition, we assume that you are self motivated and an independent graduate student that will be performing/reading statistical analysis in the future (dissertation, research papers).

Respect the formal learning environment. This includes arriving and leaving on time, shutting off cell phones and other electronic devices while in class, being open to the opinions and ideas of others, and working effectively and professionally in the field.

OUTLINE OF TOPICS

Week	Topics	Chapter
1	Statistics, Data, and Statistical Thinking #	1
2	Methods for Describing Sets of Data / Probability #	2, 3
3	Discrete and Continuous Random Variables #	4, 5
3, 4	Sampling Distributions	6
4, 5	Inferences Based on a Single Sample: Estimation with Confidence	7
5	Inferences Based on a Single Sample: Tests of Hypothesis	8
6	Inferences Based on a Two Samples: Confidence Intervals	9

7	Inferences Based on a Two Samples: Hypothesis	9
8	Analysis of Variance: Basics	10
9	Analysis of Variance: Design of Experiments	10
10	Simple Linear Regression	11
11	Multiple Regression and Model Building	12
12	Categorical Data Analysis	13
13	Nonparametric Statistics	14 +
13, 14	Logistic Regression	$\times$
14, 15	Introduction to Multivariate Statistics	$\times$
16	Review and Final Exam	-

Topics that assume prior statistical knowledge.
+ Chapter included in additional CD of required textbook.
$\times$ Additional material not presented in required textbook.

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.

Software use: All faculty, staff and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against the University policies and rules, disciplinary action will be taken as appropriate.

University support services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals which interfere with their academic performance. These resources include:

1. University Counseling Center, 301 Peabody Hall, 392-1575, personal and career counseling
2. Student Mental Health, Student Health Care Center, 392-1171, personal counseling
3. Sexual Assault Recovery Services, Student Health Care Center, 392-1161, sexual counseling
4. Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling

Accommodations for students with disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. If you have a documented disability and wish to discuss academic accommodations, please CONTACT ME as soon as possible.