



UNIVERSITY of  
FLORIDA

STA 6167

Summer 2017 (section 4331)

Statistical Methods in Research II

MTWRF 2nd period 09:30-10:45, FLO 100

**Instructor:** Demetris Athienitis

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**Course Website:** e-Learning

**Course Communication:**

- Piazza Q&A discussion forum, ([piazza.com/ufl/summer2016/sta6167](http://piazza.com/ufl/summer2016/sta6167). Adjust your email notification settings)
- Office hours (posted on Canvas). There will be no office hours during holidays.
- E-mail for questions regarding course policies. (Ensure that **6167** is in the subject line. Failure to do so may result in a non-response.)

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussion and chats. Please refer to expected class netiquette.

The instructor reserves the right to update any parts of this syllabus as necessary.  
Students will promptly be notified of any changes.

**Required Text(s):** *Applied Statistical Methods*, 2009

**Author(s):** Larry Winner

**Supplemental material:**

- **Book:** *An Introduction to Statistical Methods and Data Analysis*, 7<sup>th</sup> Edition  
**Author(s):** R. Lyman Ott, Michael T. Longnecker, **ISBN-13:** 9780495017585
- **Book:** *A First Course in Design and Analysis of Experiments*,  
**Author(s):** Gary W. Oehlert, **ISBN-10:** 0716735105

**Course Description:** This course deals with concepts and methods corresponding to several areas of inferential statistics: Analysis of covariance and general linear model. Factorial, nested, split-plot, and incomplete block designs. Analysis of count data.

This class assumes that you have taken STA 6166 or an equivalent class, where you covered most of the basic statistical topics (z-test, t-test, F-test, chi-square test, ANOVA, basic experimental designs and linear regression). The course will assume that those topics are well known.

**Prerequisite(s):** STA 6f66 (or equivalent)

**Credit Hours:** 3

**Software:** You will **need a computer** for the in-class exams, and you will need to use software for homework/quiz assignments. There will not be any lessons on how to use software, but questions are welcomed especially in office hours. The main software used in class will be R <http://www.r-project.org/> although you can use any other software you wish that yield similar results: Minitab is a user-friendly alternative, SPSS, SAS, JMP etc. For more help visit <http://www.stat.uci.edu/~athienit/software.html>

**Purpose of Course:** Train graduate students in advanced statistical tools associated with linear models, with emphasis in design and analysis of experiments. The aim is to promote sound scientific research and experimentation based on good statistical thinking and practice.

**Course Goals and Objectives:**

At the completion of this course, students will be able to:

1. Access, manipulate and analyse data using statistical software.
2. Produce appropriate graphs and descriptive statistics for one and two variables.
3. Comprehend the difference between fixed and random effects.
4. Carry out and interpret statistical models using generalized linear models and analysis of variance.
5. Create adequate multiple comparison procedures.

## **Course Policies**

### **Assignments**

#### **Homework/Quizzes**

There will be homework assigned on a regular basis as *suggested homework* containing data analysis problems and/or book exercises. Information will be provided on the class website.

Twice a week, a **random subset of questions will be chosen (from the suggested homework and potentially altered slightly)** as a *timed* homework/quiz assignment that may be a closed notes quiz or a homework submission. These assignments may be

- In-class (closed notes).
- Online (Only 1 attempt. It is highly encouraged to use a **reliable device** with a **reliable wired ethernet internet connection**. Being disconnected means that you are no longer supervised which could potentially mean that your exam will not be graded.)

For the best preparation students are encouraged to complete the full suggested homework set.

## Exams

There will be three (3) in-class exams. The exams will be open book, open notes, and use of internet and statistical software is allowed. The exams will be comprised of

- conceptual questions testing the student's understanding on the topics
- data analysis problems that require the use of statistical software

Computer output must be provided. It is usually easier to submit the data analysis in an electronic document.

## General

- Students are expected to work independently, unless otherwise specified. **Offering** and **accepting** solutions from others is an act. of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the Academic Honesty Policy.** Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor or teaching assistant.
- **No late assignments will be accepted under any circumstances.**
- Students are expected to show and explain how the answers were obtained.
- All electronically **submitted work must be in pdf format.**

## Important dates:

Exam #1	.....	July 12, 2016
Exam #2	.....	July 26, 2016
Exam $\phi B$	.....	August 3, 2016

## Grading

**Change of grade:** Grades will be changed only when an error has been made by the instructor.

## Grade distribution:

Exams 1, 2 and 3      75% (15% lowest, 30% other two)  
Homework/Quizzes 25% (lowest 2 scores are dropped)

## Letter grade distribution:

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

There will be *no rounding up* of scores. To view the result of the letter grades to your GPA please visit UF registrar

### Make-up policy:

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor directly prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. The instructor must be contacted directly by midnight of the day of the assignment/exam. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- Additional Note: Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the Academic Calendar

**Incomplete:** An incomplete grade may be assigned at the discretion of the instructor as an interim grade for a course in which the student has completed a major portion of the course with a passing grade, been unable to complete course requirements before the end of the term because of extenuating circumstances, and obtained agreement from the instructor and arranged for resolution of the incomplete grade in the next term. Instructors are not required to assign incomplete grades. For complete details please visit the registrar's course policies

### Getting help

For issues with technical difficulties for e-learning in Canvas, please contact the UF Help desk at:

- <https://lss.at.ufl.edu/help.shtml> or <http://helpdesk.ufl.edu/>
- 352-392-4357 - select option 2
- e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

Any requests for make-ups due to technical issues MUST be accompanied by the **ticket number** received from LSS when the problem is reported to them. The ticket number will document the time and date of the problem. You MUST contact your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

**Complaints/Praises:** Should you have any complaints/praises with your experience in this course you can always address them to the instructor at [athienit@ufl.edu](mailto:athienit@ufl.edu), or you may contact Ms. Tina Greenly [t.greenly@ufl.edu](mailto:t.greenly@ufl.edu) of the Department of Statistics to submit a complaint. You may submit anonymous e-mail using:

- <http://anonymouse.org/anonemail.html> (No reply option, there is a time delay)
- <https://anonymousemail.me/> (Has optional reply option. Requires entry in the **From** field so put a fake address, e.g. [fake@fake.com](mailto:fake@fake.com))

Both of these sites have been tested and no personal information or IP addresses are available. Feel free to test them.

For complaints that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are encouraged to review the UF Complaints Policy.

## UF Policies

**Accommodating Students with Disabilities:** Students requesting accommodation for disabilities must first register with the Dean of Students Office. The Dean of Students will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

**Academic Misconduct:** Students are held accountable to the UF Honor Code.

## Tentative Course Outline

The class material is broken down into 3 main parts.

Week	Content
Part. 1	<ul style="list-style-type: none"><li>• Review of Regression, C.R.D. and R.B.D. (from STA 6166)</li><li>• Latin Squares Design</li><li>• Factorial Designs (Fixed, Random and Mixed Effects)</li><li>• Contrasts</li></ul>
Part. 2	<ul style="list-style-type: none"><li>• Nested Designs</li><li>• Split-Plot Designs</li><li>• Repeated Measures Designs</li><li>• Introduction to Missing Data, and Unbalanced Designs</li></ul>
Part. 3	<ul style="list-style-type: none"><li>• Logistic Regression</li><li>• Poisson Regression</li><li>• Non-linear Regression (time permitting)</li><li>• Introduction to Survival Analysis</li></ul>