

University of Florida
College of Public Health and Health Professions and College of Medicine
GMS 6861: Introduction to Biostatistics I
Fall 2014

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Class Schedule: Thursday 8:30-11:30am @ CTRB Room 5235

NO CLASS ON THURSDAY, Sept. 18, 2014

Office Hours: By appointment

Course Webpage: <https://lss.at.ufl.edu/>

I will post the lecture slides, homework assignments, data sets and other material on the course web site in Canvas (e-learning: <https://lss.at.ufl.edu/>). The lecture slides will be posted before 5 pm on Wednesday so you can print copies for class if you want.

COURSE DESCRIPTION AND GOALS

This course covers basic probability and distribution concepts and statistical analysis methods, including descriptive measures, point estimation, hypothesis testing (e.g., t test, analysis of variance, chi-square test etc.), confidence intervals, simple linear regression and some nonparametric methods. SPSS will be introduced for basic statistical analyses.

This is an introductory course for researchers in the Health Science Center who require a familiarity with statistics to plan experiments and analyze data in their research. At the end of the class, students are expected to master basic statistical concepts and methods, be able to use appropriate methods for various real problems, and interpret statistical results.

DESCRIPTION OF COURSE CONTENT

Topical Outline and Course Schedule

| Week | Date | Topics |
|------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Aug. 28 | Basic concepts and vocabulary of statistics |
| 2 | Sept. 4 | Classification of variables, basic summary statistics and graphs |
| 3 | Sept. 11 | Basic probability theory, binomial distributions |
| 4 | Sept. 18 | <i>No class</i> |
| 5 | Sept. 25 | Normal distribution, sampling distribution, CLT |
| 6 | Oct. 2 | CLT, confidence intervals (CI) for mean and sample size (SS) calculation |
| 7 | Oct. 9 | hypothesis testing for a single mean and SS calculation |
| 8 | Oct. 16 | Midterm exam |
| 9 | Oct. 23 | Hypothesis testing for two independent/dependent means and SS calculation |
| 10 | Oct. 30 | Analysis of categorical variable: binary variable and 2×2 contingency table, Project proposal due by 11:59 pm on Wednesday Oct. 29. |
| 11 | Nov. 6 | Analysis of categorical variable: 2×2 contingency table(s), ANOVA |
| 12 | Nov. 13 | Correlation/regression analysis for continuous outcome, non-parametric methods |
| 13 | Nov. 20 | Basic survival analysis |
| 14 | Nov. 27 | <i>Thanksgiving</i> |
| 15 | Dec. 4 | Presentation day |
| 16 | Dec. 12 | Final written report due by 11:59 pm |

COURSE MATERIALS

Required: Introductory Applied Biostatistics (with CD-ROM) by Ralph D'Agostino Sr., Lisa Sullivan, and Alexa Beiser (Hardcover - Mar 16, 2005). I'll assign homework from this book, so you must have access to a copy.

Recommended: Fundamentals of Biostatistics, 6th Edition by Bernard Rosner, Duxbury Publications, 2006. Belmont, California. This book is similar to the required text but treats the topics in more detail. I will use examples from it in class and assign homework from it, but I will post these problems on the web site, so you will not need the book to do the homework.

Software: You will need access to a basic statistical software package to do much of the homework for this class and to complete your final project. You can use any package you like, but I will demonstrate how to use SPSS in class. You can lease SPSS for 6 months at <http://www.onthehub.com/spss/> (and other web sites).

COURSE REQUIREMENTS

Homework: Homework will be assigned approximately once a week. Homeworks will contain both analytical problems and data analysis problems. Students are encouraged to consult one another on homework problems, but everyone should turn in their own homework, and no “blind copying” permitted.

Homework must be submitted online via Canvas or email **before 11:59 pm on the due date**. It should be **neat, all work should be shown, and no late homework accepted unless**

prearranged with the instructor at least 48 hours in advance. There will be no exceptions to this policy.

Midterm Exam: We will have a midterm exam during this semester. It is tentatively scheduled on October 16, 2014 and will be an **in-class** and closed book test.

Final Project: For your final project, you will conceive of some form of statistical study, gather data, analyze it, present your findings to the class and turn in a written report. You can work in teams of up to 2 people, or you can work alone.

Topics are wide open. The point is to use statistical methods you have learned in class to draw conclusions from a set of real data. If you are currently doing research, or have data from a past experiment that has not been analyzed, you can use this material for your final project. If you do not have such data, you can devise a small project in your field (or outside your field), collect some data and analyze it. Alternatively, you can find a publicly available data source, come up with a set of hypotheses and use that data to test them. For example, the National Health and Nutrition Examination Survey (NHANES, <http://www.cdc.gov/nchs/nhanes.htm>) has a wealth of free clinical data. The National Inpatient Sample (NIS, <http://www.hcup-us.ahrq.gov/nisoverview.jsp>), is also fertile ground if your department has purchased access to it. If you need help coming up with a topic, I will be happy to talk with you about it.

Project proposal due by 11:59pm on October 29, 2014: In a one-page summary of your project, include the names of the members of your group, your research questions, a description of your data, and your proposed statistical analysis methods.

Final presentation: All groups will present their projects in class on December 4, 2014.

Written report due by 11:59 pm on Dec. 12, 2014: Turn in the final report by email.

GRADING

All homework and exams will be graded on a scale of 0-100. A numerical final score on this scale will be determined according to the following breakdown:

| | |
|--------------|-----|
| Homework | 50% |
| Midterm Exam | 25% |
| Final Exam | 25% |

The numerical project score will be converted to the letter grades according to the following scale:

| | | |
|-------------|--------------|--------------|
| 93-100 = A | 90-92.9 = A- | 87-89.9 = B+ |
| 83-86.9 = B | 80-82.9 = B- | 75-79.9 = C+ |
| 70-74.9 = C | | |

Score below 70 will be handled on a case-by-case basis

Depending on overall class performance, these ranges may be adjusted (but only downward – criteria will only become easier, not harder).

ATTENDANCE POLICY

Students are required to attend the classes. It is understandable if you have to skip one or two classes to attend the conferences or meetings of your interest. But be sure to notify me in advance. If you have difficulty in catching up with the missed materials, feel free to contact me and we can make appointments to discuss them.

MAKE-UP POLICY

Make-up Policy: No late assignments or tests will be allowed, except for urgent need.

ACADEMIC INTEGRITY

Students are expected to act in accordance with the University of Florida policy on academic integrity. As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge:

“We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.”

You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied:

“On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For additional information regarding Academic Integrity, please see Student Conduct and Honor Code or the Graduate Student Website for additional details:

<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

<http://gradschool.ufl.edu/students/introduction.html>

Please remember cheating, lying, misrepresentation, or plagiarism in any form is unacceptable and inexcusable behavior.

ONLINE FACULTY COURSE EVALUATION PROCESS OPTIONAL IN UF TEMPLATE

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu> so make sure you include a statement regarding the value and expectation for student participation in course evaluations. We suggest you include a comment regarding how you will use the evaluations (e.g. to make specific improvements to the course and teaching style, assignments, etc.). It is also important to make some statement regarding the direct influence they have on faculty tenure and promotion, so your

input is valuable. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

SUPPORT SERVICES

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

If you require classroom accommodation because of a disability, you must register with the Dean of Students Office <http://www.dso.ufl.edu> within the first week of class. The Dean of Students Office will provide documentation to you, which you then give to the instructor when requesting accommodation. The College is committed to providing reasonable accommodations to assist students in their coursework.

COUNSELING AND STUDENT HEALTH OPTIONAL IN UF TEMPLATE

Students sometimes experience stress from academic expectations and/or personal and interpersonal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing issues that have the potential to or are already negatively affecting your coursework, you are encouraged to talk with an instructor and/or seek help through University resources available to you.

- The Counseling and Wellness Center 352-392-1575 offers a variety of support services such as psychological assessment and intervention and assistance for math and test anxiety. Visit their web site for more information: <http://www.counseling.ufl.edu>. On line and in person assistance is available.
- You Matter We Care website: <http://www.umatter.ufl.edu/>. If you are feeling overwhelmed or stressed, you can reach out for help through the You Matter We Care website, which is staffed by Dean of Students and Counseling Center personnel.
- The Student Health Care Center at Shands is a satellite clinic of the main Student Health Care Center located on Fletcher Drive on campus. Student Health at Shands offers a variety of clinical services. The clinic is located on the second floor of the Dental Tower in the Health Science Center. For more information, contact the clinic at 392-0627 or check out the web site at: <https://shcc.ufl.edu/>
- Crisis intervention is always available 24/7 from: Alachua County Crisis Center: (352) 264-6789

<http://www.alachuacounty.us/DEPTS/CSS/CRISISCENTER/Pages/CrisisCenter.aspx>

BUT – Do not wait until you reach a crisis to come in and talk with us. We have helped many students through stressful situations impacting their academic performance. You are not alone so do not be afraid to ask for assistance.