

College of Public Health & Health Professions and Medicine
Course Syllabus

GMS6841: Design and Analysis of Translational Research in Biomedical Sciences

Spring 2015

Time: Wednesday, Periods 10 -11, 5:10 – 7:05 PM

Location: HPNP G108

Course Website: UF e-Learning site

Instructor Information

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Course Overview

Translational research requires appropriate study design and statistical analysis. This course introduces the needed techniques. The student will be able to use what they learn both in their own research and in evaluating the work of the others.

The course includes introduction and applications of common statistical methods and experimental designs including study design, hypothesis testing, confidence intervals, multiple regression, logistic regression, Kaplan-Meier estimates, proportional hazards models, randomization, and power analysis. The use of appropriate computer packages will be illustrated. The class will use examples from the literature in fields related to students' interests.

Prerequisites

This course is intended for graduate students in the health sciences and assumes knowledge of college algebra.

Course Objectives

Upon completion of the course, students will be able to:

- 1) Understand many statistical methods used by biomedical science researchers in daily life.
- 2) Choose appropriate methods, models, parameters and hypotheses for a variety of problems related to estimation and hypothesis testing for population means or proportions, linear regression, and survival analysis.
- 3) Understand many statistical designs and identify practical and computational issues regarding their analysis.
- 4) Interpret output from statistical analysis programs.
- 5) Critically evaluate statistical content in the literature in their field.

Grading:

Grades will be based on the homework assignments (45%), examination (15%), course project and presentation (30%) and attendance and participation in class (10%). **All students are required to perform all work independently.** The student can only receive assistance from the instructor on these assignments. The students may be asked to give their pledge in writing that this was indeed the case. Violation of this pledge will result in an Honor Code violation and will be reported as such.

Homework assignments should be handed in on the day they are due. Late homework assignments will be penalized.

The final grade will be assigned according to the following scale: A (93 or higher), A- (90-92), B+ (87-89), B (83-86), B- (80-82), C+ (77-79), C (73-76), C- (70-72), D (60-69), and E (<59).

Course Materials

Required textbook:

Statistics in Medicine by Robert H. Riffenburgh, Third Edition,
Academic Press, 2012.

Tentative schedule:

Class	Date	Topics Covered
1	Jan 7	Introduction – Translational research Planning a study, planning an analysis [1,2]
2	Jan 14	Probabilities, distributions, descriptive statistics [3,4,5]
3	Jan 21	Confidence intervals and testing [7,8]
4	Jan 28	Differences between groups, t-tests [12,13]
5	Feb 4	ANOVA, nonparametric approaches [11]
6	Feb 11	Modeling, regression, correlation [19, 21]

7	Feb 18	Multiple regression [22]
8	Feb 25	Exam
	Mar 4	Spring Break
9	Mar 11	Rates and proportions [9,10]
10	Mar 18	Logistic regression [23]
11	Mar 25	Power and sample size [18]
12	Apr 1	Survival analysis [23]
13	Apr 8	Misc., summary
14	Apr 15	Presentations
15	Apr 22	Presentations

[Indicates chapter in Statistics in Medicine]

Statement of University's Honesty Policy (cheating, plagiarism, etc.)

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students 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.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor of this class.”

Policy Related to Class Attendance and Late or Missed Assignments:

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:
<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Accommodations for Students with Disabilities

Students with disabilities requesting accommodations should first register with Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Counseling and Student Health

Students may occasionally have personal issues that arise in the course of pursuing higher education or that may interfere with their academic performance. If you find yourself facing problems affecting your coursework, you are encouraged to talk with the instructor and to seek confidential assistance at the Counseling and Wellness Center.

For more information, contact the center at 392-1575 or visit their web site at
<http://www.counseling.ufl.edu/cwc/Default.aspx>

Class Demeanor Expected by the Professor (late to class, cell phones) :

Students are expected to show up for class prepared and on time. Cell phones are to be silenced during class unless there is an emergency, in which case please inform the instructor.

Online Course Evaluation Process

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. 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/>.