STA6166/PHHC6937 Statistical Method in Research I
Fall 2007

Instructor	Teaching assistant
Yongsung Joo HPNP #3117 Phone: 273-5822 Email: yjoo@phhp.ufl.edu	N/A N/A N/A N/A

Course Webpage
http://www.phhp.ufl.edu/~yjoo/STA6166/STA6166.htm
All students should read this webpage every Tuesday.

Course Description
This is a introductory course in statistical methods for graduate students in the biological and physical sciences. It assumes the student has very little previous knowledge of statistics but has some knowledge of college algebra. From basic probability concepts and statistical distributions, we proceed through simple hypothesis testing through simple and multiple regression to one- and two-way analysis of variance in experimental design. A lot of material is covered in this course in a fairly short time placing high demands on the student to keep up with the readings and assignments. This is a 3 credit course and will require on average 12 to 16 hours of work on the material per week. Also, note that **all** students in this STA6166 section will be asked to learn SAS skills. There will not be any exception on this policy because there will be quizzes and exams on SAS programming.

Course Objectives
1. Summarize data using descriptive statistics.
2. Develop appropriate graphical and/or tabular displays of data.
3. Use statistical software for performing basic statistical analyses.
4. Choose statistical methods, based on the type of data and/or measurement scale.
5. Describe alternative statistical methods when assumptions of standard methods are not met.
6. Explain contribution of biostatisticians in management and basic analysis of health science data.
7. Describe populations, parameters and distributions.
8. Apply large and small sample methods for means and proportions.
9. Apply large and small sample methods for comparing two means or proportions.
10. Use completely randomized, randomized block and Latin square designs.
11. Apply comparison-wise and experiment-wise error rates.
12. Apply normal linear regression and correlation.
13. Learn SAS skills.

Prerequisite
None

Class hours and Classroom
MWF 1st period (7:25-8:15am). Classroom locations are changed as follows:
- Mon and Wed: G301 @ HPNP building
- Fri: G103 @ HPNP building

Office hours
Yongsung Joo: TBA
TA: TBA

Required Textbook
An Introduction to Statistical Methods and Data Analysis, Fifth Edition, 2001, Lyman Ott and Michael Longnecker, Duxbury-Thompson Learning, Pacific Grove, CA. [ISBN 0-534-25122-6].
A database of all exercise and example data from the book can be obtained in various formats from the book database site:
http://www.duxbury.com/cgi-brookscole/course_products_bc.pl?fid=M67&discipline_number=17

Easy SAS books (possibly not in campus store)
- Applied Statistics and the SAS Programming Language (5th Edition) by Ron P. Cody and Jeffrey K. Smith (Paperback - Mar 30, 2005)
- The Little SAS Book: A Primer, Third Edition by Lora D. Delwiche and Susan J. Slaughter (Paperback - Nov 2003)
- If you do a search in internet bookshops, you will find many different SAS books that might be worth ordering.

Statistical Software (required)
All students should have SAS in his/her laptop. You will have exams and quizzes using your laptop. Mac is NOT recommended. SAS stopped updating Mac version SAS about 15 years ago. Instructor will use SAS 8.0 or higher primarily. See http://software.ufl.edu/sas/ for SAS program purchase and online documents. If you are registered as a student in an approved program at the University of Florida, you can get a CD of the SAS system and a one-year user's license from the bookstore (392-0194) of the Florida Bookstore for around $35. You may have to collect this in person.

Grading
The course grade will be based on homeworks + quizzes (25%), two midterm exams (20%+20%) and a term project (35%). Quizzes will be given whenever necessary. ***Some portion of in-class midterm exams and in-class quizzes will be given to examine your SAS skills. You must use SAS in your own laptop***. In my opinion, the expectation on SAS skills is not high. But, SAS skills will be a ***very*** important part of your grade. If you don't like learning basic computer programming, I suggest taking other STA6166 section.
To obtain the full points in exams, homework, quizzes and project, students are required to show how he/she gets the final answer. *Points will be given only for good reasoning.* You will get A with 90-100 out of 100, B+ with 85-89.99, B with 80-84.99, C with 75-79.99, etc.

Tentative schedule for exams, project and quizzes
- Midterm 1: in-class or evening exam on 10/17
- Midterm 2: evening exam on 12/3
- Project proposal: 11/5
- Poster session and project manuscript: 12/5
- Quiz: dates will be announced at least 2 days earlier.

Homework and quizzes
New homework will be announced in class and posted on the class web page. No late homework will be accepted. Everyone is expected to do every problem. Each homework and quiz will have the same weight in calculating your total grade. If your answer in homework is almost or exactly same as other student's, you can be asked to redo homework anytime after homework is turned in. When computer

analyses are due, please submit a complete write-up of the assignment and documented programming code used to analyze the dataset.

Project
This is a two-people team project. Students should collect their own data or use student's research project data. The proposal (outline description) for this project will be due about a month before the last day of class. The term project is to be a complete analysis of a dataset. Students are required to turn in a final report, which will be shared with the class on the last day as poster presentations. The material to be handed in for the final report includes 1) a full manuscript, 2) a small-font version of your poster, and 3) documented computer code. The grade for the project will depend on "manuscript", presentation, and the correctness and adequacy of the analysis. Students are encouraged to apply various statistical techniques to their own data set. In addition, students will be asked to write brief critics on others' project during poster session.

Class announcement
Important class announcements will be announced in class. Some of them will be posted on the web also. All students should read this webpage every Tuesday.

Class attendance
All students are required to attend all classes.

Course Outline

READING	TOPICS
3.1-3.8	Visualization, Computing
4.1-4.15	Probability and Distributions
5.1-5.9	Inferences about Population Mean, One Sample z and t tests.
6.1-6.7	Inferences Comparing Two Population Means, Two sample z and t tests.
7.1-7.5	Inference about Population Variances
8.1-8.10	Inferences about More Than Two Population Means
9.1-9.7	Multiple Comparisons
10.1-10.9	Categorical Data
11.1-11.8	Linear Regression and Correlation
12.1-12.10	Multiple Regression and the General Linear Model

13.1-13.4	Model Selection in Multiple Regression
14.1-14.7	Design Concepts for Experiments and Studies
15.1-15.8	Analysis of Variance for Standard Designs
16.1-16.5	Analysis of Covariance

Statement of University Honesty Policy (cheating and use of copyrighted materials)
Academic Integrity: Students are expected to act in accordance with the University of Florida policy on academic integrity (see Graduate Student Handbook for details). Cheating or plagiarism in any form is unacceptable and inexcusable behavior.

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

Policy Related to Class Attendance
Students are required to attend all classes.

Policy Related to Make-up Homework and Exams
Neither make-up homework nor make-up exam is allowed, unless there is a very reasonable justification, such as student's illness.