

University of Florida  
Department of Geography  
**GEO 3162c** (section #4700) / **GEO 6160** (section DEPT)  
**INTRODUCTION TO QUANTITATIVE METHODS**  
**Fall 2008**

**Instructor:** Dr. Timothy J. Fik, Associate Professor

**Time:** Tuesday (T): Periods 2-3 -- 8:30-10:25AM; and

Thursday (R): Period 3 -- 9:35-10:25AM

**Location:** TUR 3012; **credit hours:** **(4)** undergraduates; **(3)** graduate students

**Instructor's Office:** 3137 Turlington Hall, PO Box 117315; Geography Dept. UF  
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**Office Hours:** Tuesdays 2:00–4:15PM; Thursdays 2:00–4:15PM

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**Prerequisites:** None (although it is highly recommended that students complete an introductory statistics course prior to enrolling in this course)

### **Course Objectives**

GEO 3162c/6938, "Introduction to Quantitative Methods", is designed to provide students with a working knowledge of various statistical techniques that are commonly used in social science research. Moreover, the course highlights various quantitative methods for spatial data analysis.

Lectures and reading assignments cover such topics as data measurement and presentation, descriptive statistics, probability distributions, samples and populations, hypothesis testing, and statistical inference.

This course is designed to ensure that students gain a fundamental understanding of how to apply the scientific method by employing a structured approach to descriptive and inferential data analysis. It will emphasize the proper use of quantitative methods (and is useful before proceeding to study intermediate or advanced topics such as multivariate statistical modeling and spatial statistics).

Note that this course is the first in a sequence of several quantitative methods courses offered by our department. After completing "Intro Quantitative Methods" students may choose to expand their knowledge of the subject by taking Intermediate Quantitative Methods during the Spring semester (highly recommended for graduate students).

### **Textbooks/Reading Material**

Elementary Statistics for Geographers, J.E. Burt & G.M. Barber (1996, Guilford Press).

## Student Performance Evaluation and Grades

Your overall performance in the course will be determined by the total points earned out of a possible 300 points (see below) → 90% or higher = A; 88-89% = B+; 80-87% = B; 78-79% = C+; 70-77% = C; 68-69% = D+; 60-67% = D; 0-59% = E. Note: no curves will be applied to lab scores or exam grades. **No extra credit and no make-ups.**

Component	points	
5 Take-Home Labs (20 points each)	100	(distribution and due dates TBA)
Mid-Term Examination (In-Class Exam)	50	(TBA)
Mid-Term Examination (Take-Home)	50	(due date TBA)
Comprehensive Final Examination	100	(TBA)

## Course Policies

Late lab assignments or late take-home exams **WILL NOT** be accepted for any reason. *No exceptions.* Any lab or take-home exam that is "passed due" will be assigned a grade of zero (0/E). Labs and Take-home exams **WILL NOT** be accepted in electronic or digital formats -- labs and take-home exams **WILL NOT** be accepted on floppy disks, flash drives, mini (hard) disks, or CDs, etc., nor will they be accepted via FAX, e-mail, or as an e-mail attachment.

Make-up exams **WILL NOT** be given for any reason. If you miss an exam you will receive a grade of 0/E for that exam. Incompletes (i.e., grades of "I") will not be given out for any reason. Note: A final grade of A, B+, B, C+, C, D+, D, or E will be assigned to each student registering for this course. *There are no exceptions to the course policies* highlighted above.

A Note on Collaboration: Collaboration between individuals or groups of students in a class such as this is unavoidable. Hence, let us work together to make this a positive experience. I, therefore, encourage you to find a partner or group with whom you can cooperate and work productively. Working in small groups can be a valuable and rewarding experience (but be careful not to get stuck with someone who will take advantage of you or the group). Do not abuse this privilege and insult our intelligence by taking collaboration a step too far. Work together on the technical aspects of the problems (assigned in the labs/take-home assignments), but retreat to individual work when writing up the results and presenting discussions of those results. Evidence of cheating or excessive collaboration will result in a grade of 0 (E) for all parties concerned (for the lab or exam in question, and possibly for the course).

Required materials, notes, and miscellaneous information:

As a requirement, each student must bring four sharpened #2 pencils, a pen, and a working calculator to each in-class exam. Laptop computers may not be used during in-class exams. I'd suggest completing the in-class examinations in pencil (with final answers circled in ink, with all work shown) as it is common to go back and erase mistakes or miscalculations. Scratch paper will not be provided.

**Note: In-class examinations are open-book / open-note format.**

Suggested computer software: **NCSS Number Crunching Statistical Software** (highly recommended). Note: You may use any statistics software package to assist you in this course if you do not wish to use or purchase NCSS (e.g., Minitab, SPSS, SAS, Stata, Systat, etc). Student versions of NCSS are available at a reasonable price.

Note: This is not a course on how to use computers or computer software. You must pick up computer and software skills on your own time. Again, this is a course in quantitative methods... not learning computer software! The computer software programs are tools that help us with calculations...they are not the focus of this course.

Note: All calculations and labs (for this course) can be done without the use of a computer... though I would recommend having a good calculator.

NCSS will also be used quite extensively for the multi-variate regression and diagnostic components of the Intermediate Quantitative Methods course that is typically taught during the Spring semester. So, it would be a good idea to familiarize yourself with this (or another) statistics package if you are considering taking GEO 4167/6938 as a follow-up to this introductory course.

Be prepared to keep up during lecture. The lectures are designed to cover a fair amount of material over the course of the semester, and the pace will be fast and furious at times.

**Photocopies of the instructor's lecture notes WILL NOT be available for any reason.**

No exceptions. If you miss class, or fall behind, I recommend that you get a copy of the notes from one of your peers; and this is one of the reasons why I highly recommend working in a group setting.

Note: Copies of this syllabus are accessible on-line only, in an attempt to save on paper (due to limit department resources and tight photocopying budgets). It is highly recommended that you go to the Geography Department's Website, and click on "Course Syllabus" and find the syllabus for this course. Carefully read the syllabus before e-mailing the instructor with questions. The syllabus will be available on-line throughout the entire semester. It is your responsibility to read the syllabus and understand course policies. Continuing on in this course means that you have tacitly agreed to the policies outlined within this syllabus.

Note: If you have a problem with policies, material, instructor, or the pace at which material is presented during the lectures, by all means... feel free to drop the course.

**List of Topics:**

Terminology and Notation: Statistics & Quantitative Methods  
The Scientific Method: Deductive Approach versus Inductive Approach  
Data and Levels of Data Measurement  
Classification Methods  
Samples, Populations, and Sampling  
Classic Descriptive Statistics  
Descriptive Statistics for Spatial Distributions  
Graphical Tools and Techniques  
Introduction to Probability Theory  
Selected Theoretical Probability Distributions  
Statistical Inference  
Sample Size Determination  
Simple and Complex Hypothesis Testing  
Confidence Intervals  
Equality of Means Testing  
Analysis of Variance (ANOVA)  
Goodness-of-Fit Measures  
Correlation and Statistical Association  
Parametric and Non-parametric Methods  
Directional Statistics  
Measures of Inequality and Concentration

**Reading Assignments / Schedule:**

Weeks 1-3: Chapters 1, 2, 3, and 5 (Burt & Barber)  
4-5: Chapters 6 and 7 (Burt & Barber)  
6-10: Chapters 8, 9, and 10 (Burt & Barber)  
11-15: Chapters 11, 12, and 13 (Burt & Barber)

Note: Students are responsible for all assigned material covered in the lecture and the readings. Supplemental reading materials, labs, etc. may be distributed periodically (typically at the start of lecture). It is your responsibility to acquire and assimilate these materials. Furthermore, it is your responsibility to obtain copies of all handouts... including take-home labs and exam(s).

While class roll will not be formally called, it is highly recommended that you attend class on a regular basis so you do not fall behind in your studies... also as a way to keep up with assignments, handouts, news and scheduling changes, important dates, etc. Nevertheless, attendance sheets will be circulated intermittently to document those who are attending class on a regular basis. These sheets are typically circulated on days when attendance is "sparse" (so you have been forewarned). Medical excuses must be validated.