

## EDA 381P, Fall 2008

### Quantitative Research Design and Analysis

Instructor

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Teaching Assistant

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Doctoral Student, EPP

Meeting Times: Wednesdays from 7-10pm (08/27/07 - 12/03/07)

1<sup>st</sup> Half of Class: SZB 380

2<sup>nd</sup> Half of Class: 4<sup>th</sup> Floor PC Lab (SZB 439C)

Office Hours: Wednesdays from 4:30-6:30pm (or by appointment as necessary), SZB 310Q  
TA Office Hours (TBD)

### Introduction and Course Description:

Welcome to Quantitative Research Design and Analysis (EDA 381P). This course is designed to give you an introduction to the workings of research and quantitative methods necessary to support research. The emphasis is on *introduction*, as many students enter this course with very limited experience in quantitative research. Students enrolled in this course should already have acquired basic knowledge in mathematical concepts such as linear algebra and descriptive statistical methods.

When you leave this course, you should have gained a solid introductory knowledge base in quantitative research. You should be competent in conducting and understanding simple forms of quantitative research, with enough background to learn more if you choose. Concepts, tools and methods we will learn include, but are not limited to: understanding varied types of data and research, measures of central tendency (i.e., mean, median, mode), t-tests, ANOVA, regression, correlation, confidence intervals, and hypothesis testing.

**SPSS** is the software tool we will use for learning and practicing these methods. The aim of the course is not to teach you SPSS, but computer proficiency is necessary for becoming competent in quantitative methods. The more you learn how to use SPSS, the better quantitative researcher you can become. I encourage you to purchase SPSS for your personal computer. You can purchase it through UT ITS for \$135. Visit their website for more info:

<http://www.utexas.edu/its/products/spss/>.

Beginning with the second week of class, the first half of class will meet in SZB 380, and the second half of class will meet in the 4<sup>th</sup> floor PC Lab. Students will be responsible for checking their email and the course blackboard site everyday for newly uploaded assignments, instructions, announcements, etc.

**Course Objectives:**

1. Become familiar with basic concepts of scientific inquiry and quantitative research.
2. Become familiar with basic statistical concepts and tools necessary to understand and conduct such research in the social sciences.
3. Gain a knowledge base that makes subsequent quantitative learning efficient and useful.

**Required Course Text:** Gravetter, F. J., & Wallnau, L. B. (2006). *Statistics for the Behavioral Sciences*. Seventh edition, Thomson Wadsworth.

In their classic introductory statistics text, Gravetter and Wallnau explore the logic and process behind many popular analytic approaches used in today's social science research. I chose this text for its accessibility and because it will also be used in the next more advanced stats course (Professor Wayman). *Statistics for the Behavioral Sciences* was written for the novice user of formal statistics; however, this text is comprehensive enough to serve as a permanent desk reference for your future research endeavors.

The course textbook is available through the University Co-op. An optional Study Guide is also available through amazon.com, but it is not required. Supplementary material is also available online (included with text purchase) through the publisher, at <http://psychology.wadsworth.com>. Students are permitted to bring calculators to all class sessions and to use them for take-home examinations. Basic non-programmable scientific calculators will be sufficient for use in this course. Students are expected to learn, independent of the course, how to use their calculators; we will not offer instruction in calculator use.

**Grading**

Your grade will be computed from a total of overall points earned in several different ways:

- 1) Eight (8) homework assignments throughout the semester. These will be worth approximately 5 points apiece towards your final course grade for a total of 40 points.
- 2) Three comprehensive take-home exams throughout the semester. These will each be worth 15 points for a total of 45 points. These will be comprehensive exams covering all material covered in this course up to that point. Anything we cover is fair game (see course calendar).
  - Take-Home Exam #1: Post on Blackboard by 9/19/08, Due on 9/24/08, by 7pm.
  - Take-Home Exam #2: Post on Blackboard by 10/24/08, Due on 10/29/08, by 7pm.
  - Take-Home Exam #3: Post on Blackboard by 12/05/08, Due on 12/10/08, by 5pm.
- 3) Small Group Research Project (10 points). *See details on page 4 of syllabus.*
- 4) Class and Lab participation will be worth five (5) points total. It is imperative that you follow along in the readings and you not get behind in your HW assignments. Please don't fall behind. These final five (5) points will be partly at instructor's discretion and will be based on the amount of commitment, engagement, and self-directedness you demonstrate throughout the course. See professor expectations for more information.

Total Points=	Eight HW assignments	(40pts) +	
	Three exams	(45pts) +	
	<b>**Small Group Research Project</b>	<b>(10 pts) +</b>	
	Class participation/Instructor grade	(5pts) =	100 Total Points

I will use a 90-80-70 breakdown for A-B-C, and I do not use +/- grading. The cutoff for an A will be 90.00, with NO ROUNDING!! Sorry, but we have to draw the line somewhere.

A=100.00 to 90.00

B=89.99 to 80.00

C=79.99 to 70.00

D/F=?

### UT Honor Code

**The core values of the University of Texas at Austin are learning, discovery, freedom, leadership, individual opportunity, and responsibility. Each member of the University is expected to uphold these values through integrity, honesty, trust, fairness, and respect toward peers and community.**

### Homework/Course Assignments

Because this is a progressive, skill-building course, your grade will depend heavily on your ability to demonstrate the statistical skills you have learned. Thus, you must be able to show that you can use the methods and formulae that we learn in order to derive answers to research questions. The homework assigned each week will give you an opportunity to practice these skills prior to having to demonstrate them on a take-home exam.

There will be ten (10) homework assignments throughout the semester (refer to course calendar). Only the top eight grades will count towards your final grade (two lowest HW grades will be dropped). Please note that **HW#9 and HW#10 are required** and will count towards your final grade. You should anticipate that each homework assignment will take about 2 to 3 hours to complete, on average, and you are strongly encouraged to use SPSS when appropriate, but please do not rely on SPSS to do all of your homework for you. Please keep the following in mind when doing the homework:

- **Show all of your work.** Do not simply report the final answer for a problem. Show the computations that produced that answer. If it turns out that your final answer is incorrect, it may still be possible for you to earn partial credit for the problem if some parts of it are done correctly. This can happen, however, only if you have shown all of your work, so that all of the intermediate steps can be traced.
- **Don't rely too much on SPSS for your HW assignment outputs.** SPSS is a handy tool, but if your homework assignments are not adequately labeled, explained, etc., full credit may not be given.
- **Neatness is important.** Please show all your work, and be sure it is legible and presented in an organized fashion so that it can follow a step-by-step logical sequence.

Most HW assignments will be discussed in class, but some might be posted to Blackboard at odd times. You're expected to check Blackboard every day or so to see if anything has been added.

**\*\* Small Group Research Project (10 pts towards your final grade):**

This project will be applying what you learned in class and from your homework within a small-group setting. The project will consist of a paper that includes the following elements:

- 1) Statement of the Problem (1 paragraph)
- 2) Hypothesis (1 sentence)
- 3) Description of the data (1-4 paragraphs)
- 4) Description of the methodology (1-2 paragraphs)
- 5) Literature review (1/2 to 1 page)
- 6) Results (1-3 paragraphs)
- 7) Discussion (1-3 paragraphs)

This paper may not exceed six pages (excluding graphs) and should be double-spaced, times new roman or similar font, with 1 inch margins. You may use any type of statistics covered in the course up to this point in time to complete this assignment. This paper essentially replicates an AERA or UCEA proposal (I can provide samples copies if needed). For those of you intending to enter academia, you should plan on writing a UCEA proposal for the May submission deadline next year or for AERA next August.

The project paper is due in class on December 3<sup>rd</sup>, 2008. Each group will also present their work to the rest of the class on that day.

### Graduate Level Work Standards

In order to acknowledge achievements and monitor student progress, a realistic and meaningful system for grading performance needs to be established and communicated. In general, I award "A" grades to acknowledge achievements that go beyond specified course requirements and criteria. By its very nature, this type of performance cannot always be spelled out clearly in advance. A's are reserved for *special* efforts that *clearly exceed graduate-level expectations*, that demonstrate exceptional creativity, boldness, self-directedness, commitment, engagement, and/or ingenuity. The following descriptions provide parameters for each grade level:

#### A (Excellent work, 90.00 and higher)

- Class Participation
  - a. Attends all course lectures and labs
  - b. Fully participates in class discussions and labs
  - c. Attends office hours regularly
- Graduate Level Writing
  - a. Demonstrates excellent writing skills in a cogent and organized manner
  - b. Effectively supports the main points of the critique with relevant research literature
- Exam Performance
  - a. Demonstrates a clear and in-depth understanding of the course materials
  - b. Effectively conveys key points in a clear and concise manner
- Course Assignments
  - a. Submits all assignments on time and complete
  - b. Submits neat work with great attention to detail

#### B (Good work, 80.00 to 89.99)

- Class Participation
  - a. Attends most course lectures
  - b. Participates in the class discussions and labs
  - c. Attends some office hours
- Graduate Level Writing
  - a. Demonstrates strong writing skills in a cogent and organized manner
  - b. Supports the main points of the critique with relevant research literature
- Exam Performance
  - a. Demonstrates a strong understanding of the course materials
  - b. Conveys key points in a clear and concise manner
- Course Assignments
  - a. Submits most assignments on time
  - b. Submits unpolished assignments
  - c. Submits neat work with some attention to detail

#### C (Average work, 70.00 to 79.99)

- Class Participation
  - a. Occasionally attends the course
  - b. Does not engage in class discussions or labs
  - c. Rarely attends office hours
- Graduate Level Writing
  - a. Demonstrates average writing skills in a cogent and organized manner
  - b. Superficially supports the main points of the critique with relevant research literature
- Exam Performance
  - a. Demonstrates an average understanding of the course materials
  - b. Conveys some points in a unclear and convoluted manner
- Course Assignments
  - a. Submits few assignments on time
  - b. Submits incomplete assignments
  - c. Submits work with little attention to detail

#### D (Below average work, 60.00 to 69.99)

- Class Participation
  - a. Does not attend the course or labs regularly
  - b. Does not participate in the class discussions or labs
  - c. Does not attend office hours
- Graduate Level Writing
  - a. Demonstrates average writing skills in a cogent and organized manner
  - b. Rarely supports the main points of the critique with relevant research literature
- Exam Performance
  - a. Demonstrates a below average understanding of the course materials
  - b. Conveys some points in a unclear and convoluted manner
- Course Assignments
  - a. Submits few assignments on time
  - b. Submits incomplete assignments
  - c. Submits work with no care or attention to detail

#### F (Unacceptable work, below 60.00)

- This level of work demonstrates no competencies in writing or in completing the assigned coursework.
- If you are a graduate student at UT-Austin, you should not be failing this course or any course, period!

## Helpful Tips for this Course

***There is no such thing as a stupid question, only the one that isn't asked.*** Don't be afraid to ask questions or seek clarification from the instructor or TA. If some concept or process is unclear for you, chances are it's unclear for someone else, too. Others will appreciate and benefit from your initiative.

***Engage in others' questions.*** At times, the instructor may ask questions of the class, or may redirect students' questions back to the class. Do your best to develop a response, and try to become involved in the discussion. Often, there is more than one way to look at a problem or more than one 'simple' solution – everyone benefits from hearing how you answer a question.

***Work through all problems, even if they're "easy".*** In lecture and in tutorial, we will work through a number of applied problems. Some problems will be easy for you; some problems will seem difficult. If you get in the practice of working through every problem, the class discussions will be more meaningful and you'll gain experience that will benefit you at examination time.

***Always bring your calculator and textbook to class.*** You'll need your calculator and textbook to work through problems in class. We will refer to tables in the *Appendices* of the text throughout the course.

***Keep up.*** The material in this course is progressive – if something is unclear, gain clarification as soon as possible. Each lecture / text chapter builds on previous material.

***Study with buddies.*** Studying with a buddy is a great way to catch those silly (habit-forming) computational mistakes. Also, try 'explaining' concepts to each other – you'll benefit from thinking about how you would *explain* or *teach* a concept to a peer.

***Stay for all lab sections.*** This will give you an opportunity to begin working on the following week's homework assignments and ask questions!

I'm glad you're here! This will be fun and you'll learn a lot if you keep up. I promise.

Week	Date	Reading Assignments	Assignment Due Dates
1	8/27/2008	Introductions (Course objectives, syllabus, 1st class assessment)	
2	9/3/2008	Ch 1: Introduction to Statistics Ch 2: Frequency Distributions	HW#1 (will do in class)
3	9/10/2008	Ch 3: Central Tendency Ch 4: Variability	HW#2
4	9/17/2008	Ch 5: z-Scores: Location of Scores and Standardized Distributions	HW#3
5	9/24/2008	Ch 6: Probability	Comprehensive Take-Home Exam #1
6	10/1/2008	Ch 7: Probability and Samples: The Distribution of Sample Means	HW#4
7	10/8/2008	Ch 8: Introduction to Hypothesis Testing	HW#5
8	10/15/2008	Ch 9: Introduction to the t-Statistic Ch 10: The t-Test for Two Independent Samples	HW#6
9	10/22/2008	Ch 11: The t-Test for Two Related Samples	HW#7
10	10/29/2008	Ch 13: Introduction to Analysis of Variance	Comprehensive Take-Home Exam #2
11	11/5/2008	Ch 14: Repeated Measures Ch 15: Two-Factor Analysis of Variance (ANOVA)	HW#8
12	11/12/2008	Ch. 16: Correlation Ch. 17: Introduction to Regression Ch 18: The Chi-Square Statistic: Tests for Goodness of Fit and Independence	HW#9
13	11/19/2008	No Class - Thanksgiving	
14	11/26/2008	(Ch 16/17/18 continued)	HW#10 -- Freebee
15	12/3/2008	<b>GROUP Research Project Presentations</b>	<b>GROUP Research Project DUE</b>
	12/10/2008	Final Exam	Comprehensive Take-Home Exam #3

**\* Eight (8) HW assignments will be counted towards your final grade, lowest two grades will be dropped.**