

PSYC 5405

Advanced Statistics I

Fall 2007

Instructor: Angela Liegey Dougall, PhD
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Course Website: Please go to WebCT at <http://www.uta.edu/webct/index.htm>

Office Hours: Tuesday & Thursday 2:00-3:00 PM and by appointment

Time and Place of Class Meetings:

Lecture: 428 Life Science; Tuesday & Thursday 3:30-4:50 PM
Lab: 04 University Hall; Wednesday 4:00-6:50 PM

Lab Teaching Assistant:

Coordinator: Kathryn Rollings
Office Location 301 Life Science
Office Telephone Number: N/A
Email Address: krollings@uta.edu
Office Hours: Monday and Wednesday 11:00 AM - 12:00 PM

Description of Course Content: PSYC5405- ADVANCED STATISTICS I 4 hours credit

Statistical hypothesis testing, Bayesian inference, decision theory, linear regression and correlation; analysis of variance; distribution-free techniques.

Student Learning Outcomes: This course consists of learning a variety of procedures commonly used to test hypotheses in psychological research, and learning how to examine and analyze the data accordingly and to communicate the research results to the scientific community. Specific learning outcomes are listed below.

1. Learn how to **create a database and how to properly code and screen data** by using SPSS or another statistical software package for data management and database creation and by conducting appropriate data screening procedures and writing sections describing data screening for assignments, take-home exams, and the final project.
2. Learn how to **determine the strength of association and direction of relationships between two or more variables** by identifying and computing (both by hand and with a statistical package) appropriate statistical tests, such as chi-square statistics, correlation coefficients, and linear regression models, and by writing Data Analysis and Results sections.

3. Learn how to **examine significant mean differences between and within groups** by identifying and computing (both by hand and with a statistical package) appropriate statistical tests, such as t-tests and analysis of variance models (ANOVA), and by writing Data Analysis and/or Results sections.
4. Learn how to **write professional papers** by composing drafts of one complete paper and many drafts of Data Analysis and Results Sections each using the knowledge gained about APA writing style and the content of each of these sections.

Requirements: One (1) lab section is available. You must be registered in lecture (PSYC 5405-001) and the lab section (PSYC 5405-002) concurrently. Please see the **lab schedule** for further information.

Required texts and resources (bring texts to lecture and lab):

- Lomax, R. G. (2007). *An Introduction to statistical concepts* (2nd ed.). Mahwah, NJ: Lawrence Erlbaum Associates. (ISBN: 0-8058-5739-7)
- Holcomb, Z. C. (2007). *Interpreting basic statistics: A guide and workbook based on excerpts from journal articles* (5th ed.). Glendale, CA: Pyczak. (ISBN: 1-884585-71-X)
- UT Austin SPSS Online Tutorial available at <http://www.utexas.edu/its/rc/tutorials/stat/>
- Reserved readings will be available in the Science Education and Career Center in LS106.

Required supplies: A calculator will be needed.

Recommended (optional) resources:

- American Psychological Association (2001). *Publication manual of the American Psychological Association* (5th edition). Washington, D.C.: APA. (ISBN: 1-557-98791-2)
- www.apastyle.org

Assignments and exams:

In addition to in-class exercises, other exercises and assignments will be scheduled throughout the term. Assignments will not be graded but completion of assignments will count towards the participation grade worth 50 points. Two cumulative take-home exams will be given and will be worth 50 points each. See the **course schedule** for exam dates. A final project will be due on November 28, 2007 and will be worth 100 points. The final project will be a complete manuscript that will consist of using the statistical analyses learned in this course to test hypotheses generated by the student using a database identified by the student. Approval of hypotheses, data analyses, and data sets must be secured prior to submitting the final project.

Attendance: Regular attendance at lecture and lab is expected and counts toward the participation grade.

Make-up work: Make-up and/or late assignments and exams will be granted only for University-approved, documented absences.

Grading: You will receive one course grade for your combined performance in the lecture and laboratory. You will have a chance to earn **250 points** total. There will be two take-home exams worth 50 points each and a final project worth 100 points. Additionally, lecture and lab participation will be worth 50 points. Final course grades will be calculated by adding participation, exam and final project points together, dividing by 250, and assigning final letter grades as follows:

<u>Letter Grade</u>	<u>Percentage of Points</u>	<u>Points required</u>
A	89.5-100.0%	223.75-250
B	79.5-89.4%	198.75-223.74
C	69.5-79.4%	173.75-198.74
D	59.5%-69.4%	148.75-173.74
F	0%-59.4%	0-148.74

Grade Grievance Policy: The University Grade Grievance Policy will be followed. (See Grade Grievance Policy in the Graduate School Regulations and Information.)

Drop Policy:

The University Drop Policy will be followed. (See Drop Policy in the Graduate School Regulations and Information.)

Americans With Disabilities Act:

The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 92-112 - The Rehabilitation Act of 1973 as amended. With the passage of federal legislation entitled *Americans with Disabilities Act (ADA)*, pursuant to section 504 of the Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens.

As a faculty member, I am required by law to provide "reasonable accommodations" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty of their need for accommodation and in providing authorized documentation through designated administrative channels. Information regarding specific diagnostic criteria and policies for obtaining academic accommodations can be found at www.uta.edu/disability. Also, you may visit the Office for Students with Disabilities in room 102 of University Hall or call them at (817) 272-3364.

Academic Integrity:

It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and will not be tolerated in any form. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University.

"Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts." (Regents' Rules and Regulations, Series 50101, Section 2.2)

Student Support Services:

- **Computers** are available in the OIT Labs. The following labs have computers on which SPSS is installed: Business Building, Fine Arts Building, Ransom Hall, and University Hall.
- **Library information** can be obtained through Helen Hough, Psychology Librarian. Please contact her by phone (817-272-7429) or by email (hough@uta.edu). You will find useful information for psychology at <http://library.uta.edu/JDBC/DBs/narrowdbs.jsp?DBID=PSYCHOLOGY>.
- **Other** services can be obtained from the University. The University supports a variety of student success programs to help you: learning assistance, developmental education, advising and mentoring, admission and transition, and information about federally funded programs. Students seeking assistance with academic, personal or social problems should contact the Office of Student Success Programs at 817-272-6107.

E-Culture Policy:

The University of Texas at Arlington has adopted the University email address as an official means of communication with students. Through the use of email, UT-Arlington is able to provide students with relevant and timely information, designed to facilitate student success. In particular, important information concerning registration, financial aid, payment of bills, and graduation may be sent to students through email.

All students are assigned an email account and information about activating and using it is available at www.uta.edu/email. New students (first semester at UTA) are able to activate their email account 24 hours after registering for courses. There is no additional charge to students for using this account, and it remains active as long as a student is enrolled at UT-Arlington. Students are responsible for checking their email regularly.

Wk	Date	Lecture Topic	Reading Assignments	Date:	Lab Exercises/Assignments	Assignment Due
1	T 8/28	Data Entry & Screening	Lomax Chpt. 1-2	W 8/29	SPSS: Codebook, Database Construction, Data Entry, Checking Data	
	R 8/30	Data Manipulation	Reserve Readings: T & F Chpt. 4 and SPSS chapter UT – Austin SPSS Tutorial: 1 Getting Started & 4 Data Manipulation & Advanced Topics Section 8 Syntax			
2	T 9/4	Descriptive Statistics	Lomax Chpt. 3-4	W 9/5	SPSS: Screening & Descriptives How To Write A Results Section: Data Screening	Assignment 1: Copy of UTA CITI Human Research Subjects Training & Copy of Completion of UTA Tutorial on Acknowledging Sources Ex. Of Results Sections For Data Screening Due 9/4
	R 9/6	Distributions & Data Screening	UT Austin SPSS Tutorial: 2 Descriptive & Inferential Statistics			
3	T 9/11	Probability & Sample Statistics	Lomax Chpt. 5	W 9/12	Probability How To Write A Data Analysis Section & The Beginning Of A Discussion	Assignment 2 Ex. Of Results Sections For Descriptive Statistics Due 9/10
	R 9/13					
4	T 9/18	Proportions & Measures of Association	Lomax Chpt. 8	W 9/19	Z and Chi-square How To Write Data Analysis & Results Sections For Chi-square	Assignment 3 Ex. Of Results Sections For Chi-Square Due 9/17
	R 9/20					
5	T 9/25	Correlation & Prediction	Lomax Chpt. 10	W 9/26	Correlations How To Write Data Analysis & Results Sections For Correlations	Assignment 4 Ex. Of Results Sections For Linear Regression Due 9/24
	R 9/27					
6	T 10/2	Introduction To Linear Regression	Lomax Chpt. 17	W 10/3	Simple Linear Regression How To Write Data Analysis & Results Sections For Linear Regression	Assignment 5 Ex. Of Results Sections For Linear Regression Due 10/1
	R 10/4	Z tests & T-tests	Lomax Chpt. 6-7			
7	T 10/9	T-tests <i>Hand out Exam 1</i>	Lomax Chpt. 7 UT Austin SPSS Tutorial: 2 Descriptive & Inferential Statistics: T-test	W 10/10	T-tests How To Write Data Analysis & Results Sections For T-test	Assignment 6 Ex. Of Results Sections For T-test Due 10/8
	R 10/11	Oneway ANOVA	Lomax Chpt. 9 & 11			
8	T 10/16	Oneway ANOVA	Lomax Chpt. 11	W 10/17	Oneway ANOVA How To Write Data Analysis & Results Sections For Oneway ANOVA	<i>First Take-Home Exam Due</i> Ex. Of Results Sections For One-way Due 10/15
	R 10/18	Multiple Comparisons	Lomax Chpt. 12			

Wk	Date	Lecture Topic	Reading Assignments	Date:	Lab Exercises/Assignments	Assignment Due
9	T 10/23	Multiple Comparisons & Planned Contrasts	Lomax Chpt. 12	W 10/24	Comparisons & Contrasts	Assignment 7 Proposal Due Ex. Of Results Sections For Comparisons & Contrasts in ANOVA Due 10/22
	R 10/25				How To Write Data Analysis & Results Sections For Comparisons & Contrasts	
10	T 10/30	Power Analysis	Lomax Chpt. 13	W 10/31	How to Calculate Sample Size	Assignment 8 Ex. Of Sample Size Determination for T-Test or One-way ANOVA Due 10/29
	R 11/1	Factorial Design			How To Write Sample Size Determination In A Proposal	
11	T 11/6	Factorial ANOVA	Lomax Chpt. 13	W 11/7	ANOVA & GLM	Assignment 9 Rough Draft Due (optional) Homework Exam 1 Due Ex. Of Results Sections For Two-Way Between ANOVA Due 11/5
	R 11/8		UT Austin SPSS Tutorial: 2 Descriptive & Inferential Statistics: General Linear Model		How To Write Data Analysis & Results Sections For Factorial ANOVA	
12	T 11/13	Factorial ANOVA	Lomax Chpt. 13	W 11/14	GLM Factorial ANOVA	Assignment 10 Ex. Of Results Sections For Two-Way Between ANOVA Due 11/12
	R 11/15				How To Write Data Analysis & Results Sections For Factorial ANOVA	
13	T 11/20	Repeated Measures ANOVA	Lomax Chpt. 15, pp. 313-319	W 11/21	Reading Day	
	R 11/22	Thanksgiving Holiday NO LECTURE	Reserved Reading: T & F Chpt. 8			
14	T 11/27	Repeated Measures ANOVA	Lomax Chpt. 15, pp. 313-319	W 11/28	GLM RM ANOVA	Final Project Due Ex. Of Results Sections For Within-Subjects ANOVA Due 11/26
	R 11/29	Multivariate Approach to Repeated Measures	Reserved Reading: T & F Chpt. 8		How To Write Data Analysis & Results Sections For RM ANOVA	
15	T 12/4	Mixed ANOVA Hand out Exam 2	Lomax Chpt. 15, pp. 319-331	W 12/5	GLM Mixed ANOVA	Assignment 11 Ex. of Results Sections For Mixed ANOVA Due 12/3
	R 12/6	Hypothesis Generation			How To Write Data Analysis & Results Sections For Mixed ANOVA	
16	T 12/11	Second Take-Home Exam Due 12/12 by 4:00 p.m.				
	R 12/13					