

Statistical Methods (PSY 2100 Section 003) – Spring 2013

Monday/Wednesday, 12:30-1:45 / University Hall 5150F

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Office Hours: Monday 2:00 to 4:00 or by appointment

Text and Materials

Gravetter, F. J. & Wallnau, L. B. (2011). *Essentials of Statistics for the Behavioral Sciences*. (7th Ed.). Wadsworth, Cengage.

Prerequisite: C- or better in Math 1320 (or a higher math)

Calculator: Required (a simple scientific calculator is sufficient)

Course Blackboard Website: <http://www.dl.utoledo.edu>

Course Objectives

This course provides a basic understanding of the statistics used most commonly by social scientists. Topics to be covered include summarizing data with graphs and numbers, generalizing from samples to a population, and determining the effect of one variable on another. The course will also allow you to understand research reports in social science publications and in the press. We will particularly emphasize the application of statistics, or using and interpreting the statistics (rather than the mathematical proofs underlying these statistical methods). Even students who say they have “math anxiety” can excel in this class, if they are willing to keep up with the work.

By the end of this class, you should be able to:

- 1) summarize and organize data,
- 2) select and calculate an appropriate statistic to decide whether a variable reliably affects another variable, or whether such findings are driven by chance,
- 3) critically evaluate research findings in scientific journals and in the media,
- 4) interpret output from a statistical software program (SPSS), and
- 5) possess a basic understanding of statistics that can be built upon in future research design and statistics classes.

As your instructor, my goal in this course is to make statistics *accessible* (understandable to all students), *applicable* (ability to see how statistics applies to things you are interested in), and *inviting* (will want to use statistics instead of avoiding them).

Course Requirements

Exams

There will be 3 exams during the semester plus a cumulative final exam given during finals week for a total of 4 exams. Each of the exams is worth 100 points and consists of a combination of multiple-choice, calculation, and essay-style questions. The first 3 exams will cover information presented in class and on assigned readings *since* the previous exam. The final exam will be cumulative and assess material throughout the course.

You must bring a photo ID, pencil, and calculator to each exam. Exams should not be missed, but exams will be rescheduled if the student has a legitimate, university-sanctioned reason (e.g., for a participatory athletic event, religious holiday) for missing the exam. If you can anticipate you must miss an exam, contact me (Mr. Conratt) via e-mail at least *one week prior* to the exam. If you are unable to take an examination on time due to illness or emergency, notify me *before* the examination is scheduled to begin by sending me an e-mail or calling my office. Be prepared to take the make-up exam at the earliest possible date. If you do not follow these procedures, make-up exams will only be allowed under extraordinary circumstances (e.g., note from doctor) and will be penalized 10% per day late.

Homework Assignments

Homework is essential for success in this course. The assignments will solidify your understanding of course material. There will be 10 homework assignments worth 10 points each for a total of 100 points. Assignments will be posted on the course website 1 week prior to the listed due date. Assignments must be handed in at the beginning of class on the listed due dates. Assignments that are not completed and handed in BEFORE the beginning of class will be penalized 10% per day late (10% penalty for assignments handed in during the class period, but after the start of class). If you anticipate missing a homework assignment, notify me via email at least *one week prior* to the assignment's due date. If you are ill or have an emergency on a day that a homework assignment is due, you must notify me *before* class and be prepared to hand in your assignment as soon as is possible.

Homework Corrections

Corrections to homework assignments can be turned in for partial points. Students may resubmit their homework using the following guidelines:

- 1) For a given homework, you must fully re-work any problem that you lost points on. This means that even if you received partial credit on a problem, you must do that entire problem over. Problems in which you earned full credit do not have to be completed again. Keep in mind that if you got part a of a problem correct, but missed points on part b, you only have to redo part b.
- 2) Homework corrections need to be completed on a separate sheet of notebook paper (or separate assignment sheet) showing all work necessary to earn full credit. You must submit your original homework with your corrections.

- 3) Homework corrections are due the class period after you receive your first graded submission back.
- 4) Late penalties still apply to homework corrections.

If you turn in corrections, your homework assignment score will be adjusted such that you are given the average of your two homework scores.

Practice Problems

In addition to assigned homework, select problems from each chapter of your textbook will be posted on blackboard for further practice. These problems provide additional practice on concepts and problems covered in class, on homework assignments, and on exams. Completion of these problems is **optional**. However, it is in your best interest to understand how to answer each of these examples. At the end of the semester, you will be given the opportunity to turn in a practice problem journal for **extra credit**.

<u>Evaluation</u>			<u>Points</u>
Exams (80%)	4 exams @ 100pts each	=	400
Homework Assignments (20%)	10 assignments @ 10pts each	=	100
Total			500

Letter Grades

A	93+%	> 463 points	C	73-76%	363-382
A-	90-92%	448-463	C-	70-72%	348-362
B+	87-89%	433-447	D+	67-69%	333-347
B	83-86%	413-432	D	63-66%	313-332
B-	80-82%	398-412	D-	60-62%	298-312
C+	77-79%	383-397	F	< 60%	<298

Class Policies

- No cell phones or other electronic devices (except calculator). Please turn them off.
- Arrive on time and do not leave early.
- The computers on your desks are to remain off unless we are working on an in-class exercise that requires the use of computers (e.g., SPSS).
- Do not talk in class unless it is part of an assignment (or asking the instructor questions).
- Be attentive in class.
- Ask questions.

University of Toledo Policy Pertaining to Academic Integrity

Academic dishonesty will not be tolerated. Among the aims of education are the acquisition of knowledge and development of the skills necessary for success in any profession. Activities inconsistent with these aims will not be permitted. Students are responsible for knowing what constitutes academic dishonesty. If students are uncertain about what constitutes plagiarism or cheating they should seek the instructor's advice. Examples of academic dishonesty include, but are not limited to:

- Plagiarizing or representing the words, ideas or information of another person as one's own and not offering proper documentation;
- Giving or receiving, prior to an examination, any unauthorized information concerning the content of that examination;
- Referring to or displaying any unauthorized materials inside or outside of the examination room during the course of an examination;
- Communicating during an examination in any manner with any unauthorized person concerning the examination or any part of it;
- Giving or receiving substantive aid during the course of an examination;
- Commencing an examination before the stipulated time or continuing to work on an examination after the announced conclusion of the examination period;
- Taking, converting, concealing, defacing, damaging or destroying any property related to the preparation or completion of assignments, research or examination;
- Submitting the same written work to fulfill the requirements for more than one course.

Students with Disabilities

Reasonable accommodations will be made for anyone with a disability that may require some modification of seating, testing, or other class requirements. Students must contact the Office of Accommodations (Rocket Hall 1820) for an evaluation and a form specifying what course accommodations are judged reasonable for that student. Please contact the instructor after class or during office hours so that appropriate arrangements may be made.

The contact information for the Office of Accommodations is as follows:

Campus Address: Rocket Hall 1820, Mail Stop #342

Phone Number: 419.530.4981

Web: <http://www.utoledo.edu/utlc/accessibility/>

How to Succeed in this Course

I have noticed first-hand that many students dread this statistics requirement. Many wonder why a statistics class is necessary for psychology majors. Others think back to math courses with considerable anxiety. I want you to know that I am aware that many students are nervous about this class and, above all, I want to help you succeed in this course. Moreover, I will do my best throughout the semester to convince you that it is quite natural for psychology and statistics to exist together.

Mastering the basics of statistics is much like learning a new language – it requires practice, practice, practice. New material builds on older material, and it is essential that you stay up on the class material. Here are some general strategies to consider when going through the course:

Attend Class

Attending class is critical for success in this course. In fact, research has shown that one of the best predictors of grades in courses is class attendance, and even the brightest students gain more insight by attending classes regularly. This is especially important in a class like statistics, as it is helpful to consume information multiple times and in a number of different formats (e.g., reading, lectures). Moreover, there will be some course material presented in class that does not appear in the book; thus, you will need to attend to get all the information covered on exams.

Read, Study, and Take Notes Actively

Research shows that many individuals read and write passively, that is, without thinking about the meaning of what they are covering. In reading and studying textbook-type material, everyone (professors included) must read actively and as a result somewhat slowly. Research shows that learning is much more effective if new information is related to old information. Passively writing down what is on the overhead screen or what is discussed in class without thinking about it will not help you learn or understand the material.

Study the Summaries and Section Headings Before and While You Read

Summaries and headings help you mentally organize what you read. The authors did not just throw a bunch of information together randomly; they present an organized framework of ideas and information. You should seek to discover and understand their organization. Research shows that information is learned best when it is part of an organized mental framework.

Alter Your Expectations for Studying

Research consistently shows that students greatly underestimate the effort and time it takes to do a quality job of learning the new and complex material that is part of most courses. Academic experts generally agree that for a typical three-credit semester-long course, spending at least 6 hours per week outside of class working on learning is the norm for reasonable achievement.

Do the Homework Assignments

In order to facilitate your mastery of basic statistics, I have included homework assignments (in addition to the 4 exams). The purpose of the assignments is two-fold: 1) they allow you more opportunities to earn points in the course, and 2) they will give you critical practice for building your understanding of the material for exams and facilitate your use/retention of the information.

Keep up with Class Material and Ask Questions

There is a large amount of information to learn in this course, and most of the new material builds upon previously-learned material. Therefore, if you fall behind in the readings or don't understand a key concept, this will severely hurt your progress in the course. So keep up with the readings and ask questions when things are unclear!

Tentative Course Schedule

<u>Date</u>	<u>Topic</u>	<u>Assigned Reading</u>	<u>Assignment</u>
1 / 7	Course Introduction & Requirements	----	Assignment 0 (2 pts)
1 / 9	Introduction to Statistics and Math Preliminaries	Chapter 1 (p. 1 – 30)	
1 / 14	Frequency Dist., Data Organization, & Shape	Chapter 2 (p. 35 – 51)	
1 / 16	Measures of Central Tendency	Chapter 3 (p. 58 – 83)	Assignment 1 due
1 / 21	NO CLASS: MLK Holiday		
1 / 23	Measures of Variability	Chapter 4 (p. 88 – 111)	
1 / 28	Standardized (Z) Scores	Chapter 5 (p. 120 – 140)	Assignment 2 due
1 / 30	Probability & the Normal Distribution	Chapter 6 (p. 145 – 167)	
2 / 4	Slippage and Review	----	Assignment 3 due
2 / 6	Exam 1 (Chapters 1-6)	----	
2 / 11	Sampling & Distributions	Chapter 7 (p. 175 – 188)	
2 / 13	Hypothesis Testing & z test	Chapter 8 (p. 201 – 221)	
2 / 18	Hypothesis Testing & z test	Chapter 8 (p. 221 – 240)	
2 / 20	t statistic & single sample t-tests	Chapter 9 (p. 250 – 270)	Assignment 4 due
2 / 25	Independent Groups t-tests	Chapter 10 (p.277 – 300)	
2 / 27	Independent Groups t-tests	----	Assignment 5 due
3 / 4	NO CLASS: SPRING BREAK!		
3 / 6	NO CLASS: SPRING BREAK!		
3 / 11	Correlated Groups t-tests	Chapter 11 (p. 309 – 326)	
3 / 13	Slippage and Review	----	Assignment 6 due
3 / 18	Exam 2 (Chapters 7-11)		
3 / 20	Analysis of Variance (ANOVA)	Chapter13 (p. 363 – 383)	
3 / 20	Analysis of Variance (ANOVA)	Chapter 13 (p.383 – 404)	
3 / 25	Repeated Measures ANOVA	Chapter 14 (p. 414 – 428)	Assignment 7 due
3 / 27	Two-Factor & Factorial ANOVA	Chapter 14 (p. 428 – 448)	
4 / 1	Slippage and Review	----	Assignment 8 due
4 / 3	Exam 3 (Chapters 13-14)		
4 / 8	Correlation	Chapter 15 (p. 466 – 488)	
4 / 10	Correlation and Regression	Chapter 15 (p. 488 – 512)	
4 / 15	Chi-Square	Chapter 16 (p. 521 – 549)	Assignment 9 due
4 / 17	NO CLASS: SRCD CONFERENCE	----	
4 / 22	Slippage and Review	----	Assignment 10 due
4 / 24	Choosing the Right Statistic + Cumulative Review	----	
4 / 29 (Monday)	Final Exam: 12:30 – 2:30		

