

PSY 2610-003: STATISTICAL METHODS OF PSYCHOLOGY SPRING SEMESTER, 2012

CLASS TIME/LOCATION: MWF 10:00-10:50, T 9:00-10:40, PHYS Room 2110. Note: We'll use Tuesday's class periods mainly for quizzes and exams.

INSTRUCTOR: William Addison, PHYS Room 3155, 217-581-6417 (office), 217-345-3104 (home), weaddison@iu.edu (e-mail). Office Hours: MWF 11-12, T 3-5. If my office hours aren't convenient for you, please let me know and we'll arrange another time to meet.

TEXTBOOK: *Fundamental Statistics for Behavioral Sciences*, by Robert McCall (8E). As statistics textbooks go, this is a pretty good one. However, you may find that you'll get more out of the book if you read the relevant sections (see course outline) after we've covered the material in class.

COURSE OBJECTIVES: This course is designed to help you:

- Review and apply your basic math skills
- Develop your analytical thinking skills through the application of statistical concepts
- Understand how descriptive statistics are used by psychologists and others
- Understand the characteristics and applications of the standard normal distribution
- Use correlation and regression to provide information about relationships between variables
- Understand the logic of hypothesis testing and its role in behavioral research
- Use and interpret basic inferential statistics

GRADING: Course grades are determined as follows:

Assignments (10%). I don't grade the assignments, but I do check them. There are three possible scores for the assignments: (1) Full Credit: the assignment is submitted on time (**i.e., at the beginning of class on the due date, or earlier**) and it shows a legitimate effort to complete the work; (2) Half Credit: it's submitted on time and it does not show a legitimate effort, or it's submitted late; (3) No Credit: it's submitted late and does not show a legitimate effort, or it's not submitted at all. In order to receive half credit for a late assignment, it must be submitted **no later than the due date for the next assignment, or the date of the next quiz/exam**. Completing the assignments is a good way to: (1) prepare for the quizzes and exams, and (2) improve your overall course grade. **Assignments are due at the beginning of class, so it's a good idea to make a copy of your assignment to refer to as we go over it in class.**

Quizzes (30%). There are 6 quizzes (**each worth 5%**), two for each of the three units in the course, and they are mainly computational. There are no makeup quizzes; if you miss a quiz, the 5% that the quiz is worth is added to the percentage for the final exam.

Unit Exams (45%). There are three unit exams (one per unit), and **each exam is worth 15%** of your final grade. The exams include computational exercises similar to those on the assignments and quizzes, plus "conceptual" questions that take a variety of forms (e.g., multiple choice, true-false, short answer). In general, you have as much time as you need to complete an exam or quiz: however, this only applies if you're on time for class on the day the exam or quiz is scheduled (see "Attendance/Lateness Policy" for details). If you miss an exam, you'll need to take a makeup exam. Makeup exams are comprised mainly of computational problems and open-ended questions (e.g., short-answer questions), and they **must be taken within one week of the original exam date**.

Comprehensive Final Exam (15%). Because the material in this course is cumulative in nature, the final exam covers all the material from the entire course. Points on the final exam are fairly evenly distributed among the three units.

ATTENDANCE/LATENESS POLICY: Attendance is not factored into your grade in this class, nor is it required. However, poor attendance is likely to be reflected in a low course grade. In general, statistics is not one of those classes that you can attend occasionally, look over your notes and/or the book for several hours right before the exam, and then expect to do well on the exam.

The only time lateness is an issue is on a day that we have an exam or quiz scheduled. Being a few minutes late is okay (though not recommended), but if you show up for class after the first person in the class has completed his or her exam/quiz, you will be considered absent for that day and the makeup policy will apply. Also, if you are late to class on the day of an exam, you have only until the end of the class period to complete the exam.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: I will gladly make accommodations for students who provide official notification from the Office of Disability Services.

CELL PHONE POLICY: Cell phones should be turned off (or on “vibrate”) during class. Please avoid talking on the phone or texting during class, which can be distracting to me and other students.

ACADEMIC INTEGRITY: Consistent with EIU policy, I assume that all students will honor the tradition of academic honesty. However, if I observe what I consider to be academic dishonesty (e.g., copying from another student’s quiz or exam), I will notify the student and deduct 10% (one letter grade) from the grade on the relevant quiz, exam, etc. For a second offense by the same student, a grade of 0 will be recorded and I will report the occurrence to the EIU Office of Student Standards.

STRATEGIES FOR SUCCESS: Believe it or not, this is not necessarily a difficult course. But because of the emphasis on the conceptual basis of statistics, it’s important that you understand the material, which may take some extra effort on your part. Below are some strategies that are likely to help you do well in the course. If you use at least some of these strategies, you will almost certainly find that the class is not nearly as bad as you thought it would be. In fact, you might even find that you enjoy it! Really.

Keep Up with the Material

- Attend class regularly
- Do the homework assignments; hand them in on time
- Review class material on a regular basis (i.e., avoid cramming)
- Do relevant exercises at the end of each chapter in the textbook (see last page of syllabus)

Focus on Understanding Rather than Memorizing

- Pay attention in class (e.g., ask, answer questions)
- Learn from mistakes (i.e., make use of feedback provided by your instructor)
- Take an active (not passive) approach to learning material (i.e., think about the material)
- Supplement PowerPoint outline with examples, explanations
- Use the learning objectives to guide your studying

Take Advantage of Support Systems

- Consult with the instructor and/or tutor
- Form a study group
- Review publisher’s workshops at <http://psychology.wadsworth.com/workshops/workshops.html>
- Use resources available from EIU’s Academic Success Center (<http://www.eiu.edu/~success/>)

STRATEGIES FOR SUCCESS – ADVICE FROM FORMER STUDENTS:

Attitude

- Go into the class with a positive attitude.
- It is wise to think of this class as the building block to the rest of your psychology career.
- Start the semester off being enthusiastic about the class. The class is very beneficial to the major and you can actually use the stuff you learned in the future.
- Don't stress out - the class is not as scary as you probably think!
- Don't let unfamiliar or large equations psych you out - most of it breaks down into simple arithmetic.

Attendance

- Attendance is crucial; you will miss so much if you skip even one class.
- By regularly attending class, you can get information and learn things that aren't always on the PowerPoint slides.
- The best advice I can give is to attend class and participate as much as possible.
- Although attendance is not mandatory, it really is beneficial to attend every class. I wish I had gone more than I did, because on days when I missed it was hard to catch up.
- If you do have to be absent for one reason or another, be sure to get the notes and any homework assignments that are given.
- Don't text in class. Statistics is not an easy subject to study, and any time your attention is diverted from the lecture, you are losing out on potentially important information.

Homework Assignments

- Turn in every homework assignment.
- Doing the homework allows practice for the quizzes and also boosts your grade.
- When you do the homework, take it seriously because if you don't then you probably won't learn much. If you come across a problem that you can't really do, just try it anyway because you will find out the correct answer in class and you're not penalized for having wrong answers.
- Do the homework the same day it's assigned so you don't forget everything you learned in class.
- Re-do the homework problems that you got wrong.

Questions

- When going over the quizzes and tests don't be afraid to ask questions because most likely someone else in the class is wondering the same thing.
- I suggest asking questions in class about anything you are confused about because you might need to know it later on in order to understand new material.

Studying/Preparation

- The more practice problems you do, the easier the problems and equations become.
- Stay organized. Print out the PowerPoint slides and bring them to the pertaining lecture.
- Include in your class notes examples and own thoughts, not simply the PowerPoint notes.
- Keep all of your tests, quizzes, and assignments and organize them. They're extremely useful when you need to study, and will help you prepare for the final exam.
- You need to learn from the mistakes that you are making in this class.
- Study hard for the quizzes, so you won't have to cram and teach yourself everything before the exam.
- One thing that helped me a lot on the tests was understanding the learning objectives.
- The concepts are hard. Don't just memorize, try to understand.
- Pace your studying; when I began this class I crammed for the quizzes and did well, but as the year went on this technique became less effective and harmful to my grade.
- Don't leave your studying until right before the exam, in case you have questions about the material.
- Form a study group; it really helps to go over things with other students in the class.

COURSE OUTLINE:

<u>Week</u>	<u>Topic(s)</u>	<u>Reading</u>
Jan 9	Orientation Descriptive and inferential statistics Measurement scales Summation notation Types of frequency distributions	Ch 1, pp 4-6 Ch 1, pp 6-9 Ch 1, pp 9-13 Ch 1, pp 16-24 Ch 2, pp 29-34
Jan 16	Martin Luther King's Birthday (1/16); no class Graphing frequency distributions Characteristics of distributions Measures of central tendency Measures of variability	Ch 2, pp 40-46 Ch 2, pp 46-50 Ch 3, pp 54-63 Ch 3, pp 63-69
Jan 23	Summary of central tendency and variability QUIZ #1 (1/24) Measures of relative standing: percentiles Measures of relative standing: standard scores The standard normal distribution	Ch 3, p 74 Ch 5, pp 101-102 Ch 5, pp 113-119 Ch 5, pp 119-124
Jan 30	Application of the standard normal distribution QUIZ #2 (1/31) Summary of the standard normal distribution	Ch 5, pp 124-128 Ch 5, p 129
Feb 6	Review for EXAM #1 EXAM #1 (2/7) Pearson product-moment correlation coefficient	Ch 7, pp 163-164
Feb 13	Calculating the correlation coefficient Interpreting the correlation coefficient Coefficient of determination, nondetermination Abraham Lincoln's Birthday (2/17); no class	Ch 7, pp 169-170 Ch 7, pp 170-171 Ch 7, pp 171-173
Feb 20	Regression QUIZ #3 (2/21) Calculating the regression equation Standard error of estimate	Ch 6, pp 134-142 Ch 6, pp 142-148 Ch 6, pp 152-157
Feb 27	Relationship between correlation and regression QUIZ #4 (2/28) Probability and theoretical relative frequency Probability and the standard normal distribution	Ch 7, pp 174-176 Ch 8, pp 204-206 Ch 8, p 207

Mar 5	Review for EXAM #2 EXAM #2 (3/6) Sampling distributions Standard error of the mean	Ch 8, pp 195-199 Ch 8, pp 199-202
Mar 12	SPRING BREAK!	
Mar 19	Introduction to hypothesis testing Assumptions and hypotheses Significance levels and directionality Decision rules	Ch 9, pp 215-219 Ch 9, pp 219-221 Ch 9 pp 221, 228-231 Ch 9, pp 222-223
Mar 26	One-sample z test One-sample t test Two-sample t tests Deadline to drop course with grade of "W" (3/30)	Ch 9, pp 223-224 Ch 9, pp 231-237 Ch 10, pp 241-243
Apr 2	Independent groups t test QUIZ #5 (4/3) Correlated (Dependent) groups t test	Ch 10, pp 243-247 Ch 10, pp 247-251
Apr 9	Decision errors in hypothesis testing QUIZ #6 (4/10) Power of a statistical test	Ch 9, pp 224-226 Ch 9, pp 226-227
Apr 16	Logic of analysis of variance The F-statistic Limitations of hypothesis testing Effect size	Ch 14, pp 352-354 Ch 14, p 365 Ch 11, pp 270-273 Ch 11, pp 273-277
Apr 23	Review for EXAM #3 EXAM #3 (4/24) Review for FINAL EXAM	

The Final Exam is scheduled for Tuesday, May 1, 10:15-12:15.

PRACTICE EXERCISES FROM TEXTBOOK:

<p>Chapter 1 Conceptual: 1, 6 Computational: 8, 9a, 9d, 9f, 9i, 9j, 9k, 9l</p> <p>Chapter 2 Conceptual: 1 Computational: 12</p> <p>Chapter 3 Conceptual: 1, 3, 6, 7, 8 Computational: 9, 11, 12</p> <p>Chapter 5 Conceptual: 3, 5, 6 Computational: 10, 11, 12, 13, 14, 15, 16</p> <p>Chapter 7 Conceptual: 3 Computational: 11, 12</p> <p>Chapter 6 Conceptual: 4 Computational: 9</p>	<p>Chapter 8 Conceptual: 3, 5 Computational: 7, 8, 9, 10, 11</p> <p>Chapter 9 Conceptual: 1, 2, 3, 4, 5, 6, 7, 9, 10 Computational: 11</p> <p>Chapter 10 Conceptual: 1, 4 Computational: 6, 7, 8, 11a, 11b</p> <p>Chapter 14 Conceptual: 1 Computational: None</p> <p>Chapter 11 Conceptual: 1, 3 Computational: None</p>
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