**Course:** Applied Statistics for the Behavioral Sciences       **Instructor:** Jeffrey D. Leitzel, Ph.D.
**Catalog #** Psych 160.09(1325)       **Phone:** (office) 570-389-4232 (cell) 650-6286, Fax - 383-6847
**Fall 2018**       **Best way to contact is via e-mail:** jleitzel@bloomu.edu
**Web:** WWW.LEITZEL.COM       **Course Schedule:** M W 3-4:15 pm
**Office:** McCormick 2116       **Office hours:** M W 5:45-7:15 pm, Th 3-5 pm

**Course Description:** Introduces and applies fundamental statistical concepts, principles, and procedures to the analysis of data related to the behavioral sciences. Students learn computation, interpretation, and application of commonly used descriptive, correlational, and inferential statistical procedures as they relate to behavioral science research. It is required for students majoring or minoring in Psychology, and is offered every semester. 3 hours of lecture per week. Lecture, class discussions, problem solving, in-class videos, use of SPSS software, homework assignments, quizzes, and exams will be used to meet the instructional goals.

**Learning Objectives**
Upon successful completion of this course, students will be able to:
1. Provide accurate explanations of information presented in tables and graphs, and make appropriate inferences based on that information
2. Create appropriate tables and graphs from relevant information
3. Make calculations that are sufficiently comprehensive to solve the problem
4. Use quantitative analysis of data and the hypothesis testing procedure as the basis for drawing accurate conclusions
5. Communicate the results and conclusions of hypothesis testing procedures in a clear and accurate format

Students will demonstrate their attainment of these learning objectives during class discussions, by working through problems during class and on quizzes and exams.

**Required Text**
       Spatz, C. (2016). Exploring Statistics: Tales of Distributions (11th ed.). Conway, AR: Outcrop Publishers.
**You will need a good calculator (minimally able to do squares and square roots).**

**Arithmetic and basic algebra review**
Since learning statistics is akin to learning a foreign language it is strongly recommended that students review the material in appendix A and be certain that they are comfortable with their expertise in utilizing basic arithmetic and algebraic operations. Learning the language of statistics will be far less difficult if you are not also struggling with the basic mathematics involved. If you are not comfortable with basic mathematical operations, I urge you to practice until you are and to seriously consider getting a tutor for the course immediately.

**Quizzes:** Five quizzes will be given during the semester. Format of the quizzes will vary. Those given in class will be very brief and may be announced or unannounced. The highest three grades of the five will be retained. Since you may drop your lowest two of the five quizzes, **absolutely no make-ups will be given in the event of absence, regardless of reason for missing class.** Any quiz missed will be one that is dropped, obviously if you miss more than two a grade of zero will be entered for one or more of your quizzes. In class quizzes will be problem solving, similar to problems in the text and study guide.

**Exams**
There will be three exams during the course of the semester and a comprehensive final exam. If classes are cancelled on an exam date, the exam will be given during the next class. A snow cancellation of the class preceding an exam will not affect the date of the scheduled exam. An exam given following a snow cancellation will include all material indicated on this syllabus for that exam, even if it has not yet been covered in class.

**If you miss an exam for any reason it is your responsibility to contact me to arrange for a make up prior to the next scheduled class meeting, failure to do so will result in a zero for that exam.**
The final exam will be worth 20 points.
The problem-solving portion of the exams will be open book/open notes, the theoretical, "knowledge assessment" portion of the exams will be completed without book/notes.

**Homework problems**
It is nearly impossible to do well in this course without completing the assigned problems. You will learn statistics through practice and repetition.
I may collect homework problems at the conclusion of a chapter to count as a quiz grade. If I were to do so, I would collect the homework during the class meeting after I have completed coverage of the material in that chapter. It is your responsibility to complete all homework problems in the text and to bring them with you to class, if I collect them as a quiz, you will not be able to "bring them to my office later."
Students are encouraged to ask questions during class about anything that they do not understand from the homework problems. If you aren't getting it, chances are good that at least some others aren't as well.

**Attendance/Participation**
While attendance is strongly encouraged, it is not required. However, 10% of your final grade will be based on class attendance and participation. Since exam and quiz items will be taken from both the textbook for the course and material not in the book that I present during class, it is in your best interest to be present for class. Regular attendance and participation during class can help in case of a borderline grade. Specifically exceptional attendance can result in being "bumped up" if a student is close to the next higher grade (Note: **at most**, with **no absences** you can gain approximately 1 point, though this can sometimes make a difference). Your participation grade will be based on your input during class, both bringing your questions about the material and answering questions from both me and other students. Being in class consistently, answering questions and engaging in discussion of the material will earn full credit for participation. You can miss three class meetings without any penalty, every absence after the first will result in a one point deduction from your attendance/participation grade. I also track late arrivals to class and every three late arrivals count as an additional absence. If you arrive late, it is your responsibility to approach me after class and make sure I have you recorded as being present. I do not differentiate excused and unexcused absences, you have a week of absences you can use without penalty, use them wisely, or not at all.

**Evaluation/grading**
Class attendance & participation      10 points
Quizzes                              30 points total (highest 3 of 5 @ 10 points each)
Exam #1                              10 points
Exam #2                              15 points
Exam #3                              15 points
Final Exam                           20 points

**Grade Ranges**
A  = 90-100      B  =  80-89.99  C  =  70-79.99  D  =  60-69.99  E   =  <60

**Extra credit**
There may be opportunities during the semester to earn extra credit points. These will be discussed if/when they arise.

**Some tips on how to do well in this class**
1. Do the homework problems.
2. Come and see me during my office hours for help with problems if 1 has left you confused. When you come to see me for help, be prepared to show me the work you have done on problems and to discuss specifically what it is that you don't understand.
3. Attend class and participate. Attendance is essential if you hope to do well in the course. You are responsible for all information presented in class whether you are present or not.
4. Do the assigned reading and attempt the problems prior to class and come prepared to ask and answer questions about the material. This process will help you clarify any points you do not understand, as well as integrating the ideas and concepts you do understand. Active involvement facilitates learning.
5. Study and review problems with other students. Helping others to understand something is an excellent way of increasing our own mastery. Having others to ask about stuff you don't understand can also be a big help.
6. If there are things that you are just not getting despite reading the chapter, working through the problems, attending class and reviewing your notes, please set up an appointment with me or come see me during office hours.
7. See my webpage for links to sites with helpful information/review & practice materials for this course.

**Course Schedule (subject to modification)**
**Tentative course schedule (subject to change, any changes will be discussed in class and substantial changes will be posted to my web site) exact exam dates will be announced in class, this schedule provides the sequence, but not exact dates:**

| Week of | Topic(s) | Reading(s) |
|---|---|---|
| 8-27 | Introductions, review syllabus | |
| | Variables and levels of measurement | Chapter 1 |
| 9-3 | **Labor Day 9-3 No Class** | |
| | Exploring data: Frequency distributions & graphs | Chapter 2 |
| 9-10 | Exploring data: Central tendency | Chapter 3 |
| 9-17 | Exploring data: Variability | Chapter 4 |
| 9-24 | **Exam #1 (Ch 1-4)** | |
| 10-1 | Other Descriptive Statistics | |
| | Standardizing scores: The z score | |
| | Summarizing distributions - boxplots | |
| | Group differences - effect-size index | Chapter 5 |
| 10-8 | Adding a second variable: Correlation | Chapter 6 |
| 10-15 | Correlation/Regression(including scatterplots) | Chapter 6 |
| | **Exam #2 (Ch 5-6)** | |
| 10-22 | Distributions: rectangular, binomial, normal | Chapter 7 |
| 10-29 | Sampling, sampling distributions, | |
| | confidence intervals | Chapter 8 |
| 11-5 | Hypothesis testing and potential | |
| | pitfalls, one sample t-test | Chapter 9 |
| 11-12 | Two sample t-test | Chapter 10 |
| 11-19 | **Exam #3 (Ch 7-10)** | |
| | **No class on 11-21 Happy Thanksgiving** | |
| 11-26 | One-Way Analysis of Variance (ANOVA) | Chapter 11 |
| 12-3 | One-Way ANOVA (cont.) | |

Final Exam:     Monday, December 10, 1:00 pm