COURSE APPROVAL DOCUMENT
Southeast Missouri State University

Department: Psychology   **Course No.:** PY 671

Title of Course: Design and Analysis II   **Date:** 8/15/2015

Please check: ☐ **NEW**
☐ Revision

I.   Catalog Description (Credit Hours of Course):

Correlation and regression analysis, including bivariate and multiple regression, coding of categorical variables, and testing for mediation and moderation. (3 credit hours)

II. Co- or Prerequisite(s):

None

III. Purposes or Objectives of the Course (optional):

1) To provide a broad overview of statistical techniques commonly employed in psychological research involving correlational designs, including (but not limited to) different forms of correlation, simple regression, multiple regression, and analysis of covariance (ANCOVA).
2) To familiarize students with how these statistical techniques are applied in various research contexts, including instruction in distinguishing appropriate uses of each technique from inappropriate uses.
3) To help students develop numerous skills, including computation, critical analysis, integration, writing (particularly in APA style), and oral communication.

IV. Student Learning Outcomes (Minimum of 3):

1) Describe the formulas underlying a number of statistical tests in order to fully understand what those tests are trying to accomplish.
2) Use quantitative skills to understand and analyze graphs used to depict results of experiments.
3) Use statistical software packages (e.g., SPSS) to analyze and graph scientific data.

V.   Optional departmental/college requirements:

N/A

VI. Course Content or Outline (Indicate number of class hours per unit or section):

A. Introduction to Correlational Statistics (3 class hours)
B. Measurement & Scientific Inquiry (3 class hours)
C. Criterion & Construct Validity (3 class hours)
D. Experimental Designs (3 class hours)
E. Quasi-Experimental & Nonexperimental Designs (3 class hours)
F. Basic Forms of Correlation (3 class hours)
G. Simple Linear Regression (3 class hours)
H. Multiple Linear Regression (3 class hours)
I. Curvilinear Regression (3 class hours)
J. Multiple Regression vs. ANOVA (3 class hours)
K. ATI Analysis; ANCOVA (3 class hours)
L. Exploratory Factor Analysis (3 class hours)
M. Confirmatory Factor Analysis (3 class hours)
N. Structural Equation Modeling (3 class hours)
O. Group Project Q&A Sessions (3 class hours)

Please Attach copy of class syllabus and schedule as an example

Signature: _____   Date: _____
　　　　　　 Chair

Signature: _____   Date: _____
　　　　　　 Dean

Section 001
Southeast Missouri State University
Fall 2016

Professor: Jeremy D. Heider, Ph.D.
Class Location: SC 413
Meeting Times: MWF 10:00-10:50
Credit Hours: 3
Department: Psychology (SC 404)
Office Location: SC 414
Office Hours: TR 8:30-10:00; or by appointment
Phone Number: (573) 651-2437
E-mail: jheider@semo.edu

Text & Materials:
Pedhazur, E. J., & Schmelkin, L. P. (1991). *Measurement, design, and analysis: An integrated approach*.
Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.

Note. Additional readings may be assigned throughout the semester. When possible, these readings will be provided to you in PDF format.

Note. A guiding principle in this (and any) course is to **READ EARLY and READ OFTEN.** You will maximize the benefits of class discussions by completing the assigned readings before we cover them in class, and you will be better prepared for assignments and exams if you have read the material more than once. I also encourage you to ask questions, both to foster in-class discussion and to ensure that you have an understanding of what is covered in the textbook and discussions.

Course Description:
Bulletin Description:
Correlation and regression analysis, including bivariate and multiple regression, coding of categorical variables, and testing for mediation and moderation.

Dr. J's Description (the real scoop!):
This course will introduce you to a number of statistical techniques that are critical in the world of psychological research, particularly those that are correlational in nature (e.g., simple regression and multiple regression). Without research, there is no field of psychology – and without stats, there is no research! So by successfully completing this course, you will have a better understanding of how psychologists reach certain conclusions. All it takes is a basic understanding of algebra and a lot of hard work! (OK, I'll admit it…it isn't exactly easy to make stats sound exciting. But give me credit for trying, huh?)

Course Objectives:
- To provide a broad overview of statistical techniques commonly employed in psychological research involving correlational designs, including (but not limited to) different forms of correlation, simple regression, multiple regression, and analysis of covariance (ANCOVA).
- To familiarize students with how these statistical techniques are applied in various research contexts, including instruction in distinguishing appropriate uses of each technique from inappropriate uses.
- To help students develop numerous skills, including computation, critical analysis, integration, writing (particularly in APA style), and oral communication.

Student Learning Outcomes (SLOs):
Students with a passing grade in this course should be able to:
- Describe the formulas underlying a number of statistical tests in order to fully understand what those tests are trying to accomplish.
- Use quantitative skills to understand and analyze graphs used to depict results of experiments.

- Use statistical software packages (e.g., SPSS) to analyze and graph scientific data.

Means of Assessment:
In this course, students will demonstrate the course outcomes in the following ways:
- Performance on assigned homework problems requiring traditional calculations.
- Performance on exercises using statistical software.
- Performance on calculation- and theory-based examinations.
- Performance on a group project requiring data collection, data analysis, and write-up.
- Participation in class discussions and demonstrations.

Course Requirements:
Exams:
There will be three exams in this course. Each will consist of in-class and take-home components (using SPSS), and will cover material from a given portion of the course. Technically none of these exams will be cumulative, but the nature of a statistics course dictates that material learned earlier in the semester is almost always still applicable at later stages of the course. Any information found in the textbook, lectures, or class discussions will be fair game for the exams.

Homework Assignments:
For each chapter we cover you will be asked to complete a series of homework problems. These assignments will contain a mix of computational and theoretical items. Most of the problems will be completed the traditional way (i.e., by performing the calculations yourself), but occasionally you will be allowed to complete a problem using statistical software.

Group Project:
During the latter portion of the semester, we will form work groups that will be responsible for putting together a group project and an associated class presentation. This project will consist of a series of steps, including data collection, data entry, data analysis, graphing, and an APA-style write-up of the findings. Each group will then present their findings to the rest of the class during our finals week meeting. Other details regarding this assignment will be discussed as the semester progresses.

Class Participation:
As noted later in this syllabus (see p. 5), although class attendance is not mandatory, you are expected to attend every class meeting. But beyond mere class attendance, I expect students in my courses to *actively participate* in the learning process by asking questions, contributing to discussions, taking part in class activities and demonstrations, and so on. A small portion of your semester grade will come from the degree to which you fulfill these duties.

Material	Possible Points	% of Total Points
Exams:		
Exam 1	45	15%
Exam 2	45	15%
Exam 3	45	15%
Homework Assignments:	120 (10 per assignment)	40%
Group Project:		
Written Portion	15	5%
Class Presentation	15	5%
Class Participation:	15	5%
	300	100%

Grading Scale:
A   =   270-300 pts
B   =   240-269.5
C   =   210-239.5
D   =   180-209.5
F   =   179.5 or less

Note. These grade cutoffs are <u>FIRM</u>. In other words, I do <u>not</u> round grades. So if you end up with 269 points (or 268, or 267…), don't even bother asking me if I will round your grade up to an A. I won't.

Attendance Policy (see http://www.semo.edu/pdf/old/2014_Bulletin.pdf, p. 19):
Students are expected to attend all classes and to complete all assignments for courses in which they are enrolled. An absence does not relieve the student of the responsibility to complete all assignments. If an absence is associated with a university-sanctioned activity, the instructor will provide an opportunity for assignment make-up. However, it is the instructor's decision to provide, or not to provide, make-up work related to absences for any other reason.

A student not present for class during the entire initial week of a scheduled course may be removed from the course roster unless the student notifies the instructor by the end of the first week of an intention to attend the class. Questions regarding the removal process should be directed to the Registrar.

In other words, class attendance is extremely important. You are expected to attend *every* scheduled class meeting (see course schedule on pp. 8-9), because lectures, class discussions, activities, demonstrations – and most importantly, **your participation** – are all valuable contributors to your learning. If you know you are going to be late to (or leave early from) class, please come anyway. I would rather have you present for part of class than to miss it completely.

Academic Honesty (see http://www.semo.edu/pdf/old/2014_Bulletin.pdf, pp. 20-23):
Academic honesty is one of the most important qualities influencing the character and vitality of an educational institution. Academic misconduct or dishonesty is inconsistent with membership in an academic community and cannot be accepted. Violations of academic honesty represent a serious breach of discipline and may be considered grounds for disciplinary action, including dismissal from the University.

Academic dishonesty is defined to include those acts which would deceive, cheat, or defraud so as to promote or enhance one's scholastic record. Knowingly or actively assisting any person in the commission of an above-mentioned act is also academic dishonesty.

Students are responsible for upholding the principles of academic honesty in accordance with the "University Statement of Student Rights" found in the student handbook. The University requires that all assignments submitted to faculty members by students be the work of the individual student submitting the work. An exception would be group projects assigned by the instructor. In this situation, the work must be that of the group. Academic dishonesty includes:

*Plagiarism***.** In speaking or writing, plagiarism is the act of passing someone else's work off as one's own. In addition, plagiarism is defined as using the essential style and manner of expression of a source as if it were one's own. If there is any doubt, the student should consult his/her instructor or any manual of term paper or report writing. Violations of academic honesty include:
1. Presenting the exact words of a source without quotation marks;
2. Using another student's computer source code or algorithm or copying a laboratory report; or
3. Presenting information, judgments, ideas, or facts summarized from a source without giving credit.

*Cheating***.** Cheating includes using or relying on the work of someone else in an inappropriate manner. It includes, but is not limited to, those activities where a student:
1. Obtains or attempts to obtain unauthorized knowledge of an examination's contents prior to the time of that examination.
2. Copies another student's work or intentionally allows others to copy assignments, examinations, source codes or designs;
3. Works in a group when she/he has been told to work individually;
4. Uses unauthorized reference material during an examination; or
5. Have someone else take an examination or takes the examination for another.

Translation? **DON'T CHEAT.**

Civility (see http://www.semo.edu/pdf/stuconduct-code-conduct.pdf):
Every student at Southeast is obligated at all times to assume responsibility for his/her actions, to respect constituted authority, to be truthful, and to respect the rights of others, as well as to respect private and public property. In their academic activities, students are expected to maintain high standards of honesty and integrity and abide by the University's Policy on Academic Honesty. Alleged violations of the Code of Student Conduct are adjudicated in accordance with the established procedures of the judicial system.

Classroom behavior should not interfere with the instructor's ability to conduct the class or the ability of other students to learn from the instructional program. Unacceptable or disruptive behavior will not be tolerated. Students who disrupt the learning environment may be asked to leave class and may be subject to judicial, academic or other penalties. This prohibition applies to all instructional forums, including electronic, classroom, labs, discussion groups, field trips, etc.

I expect every student in my courses to be good community members by remembering to **CONSIDER THE NEEDS OF OTHERS**. This means a lot of things: (1) If others need help (e.g., asking to see your notes), then help them. (2) Don't be disruptive in class (e.g., via excessive talking); other people might actually want to pay attention. (3) **SILENCE YOUR CELL PHONES OR OTHER DEVICES THAT MAKE NOISE.** They are annoying. No one cares that you have a phone call, nor do they need to hear what witty song you have as a ringtone. (4) Please **SHOW RESPECT FOR OTHERS' IDEAS AND OPINIONS.** In this class we may occasionally discuss personal and/or sensitive issues that provoke strong feelings. Please be sensitive to the feelings of others in discussing these issues. Also remember that good people can have differing opinions, and that part of the purpose of the class is to increase your familiarity with how others might think and feel about various issues related to psychology and life.

Accommodations for Students with Disabilities:
Southeast Missouri State University and Disability Support Services remain committed to making every reasonable educational accommodation for students with disabilities. Many services and accommodations which aid a student's educational experience are available for students with various types of disabilities. It is the student's responsibility to contact Disability Support Services to become registered as a student with a disability in order to have accommodations implemented. Accommodations are implemented on a case by case basis. For more information visit the following site: http://www.semo.edu/ds/index.htm or contact Disability Support Services at 573-651-2273.

Technology:

As noted above, some of your assignments will be written in Microsoft Word and submitted electronically. Southeast provides you with access to both Word and the internet via on-campus computer labs, so all students should have no problems using these technologies for our course.

Unlike some instructors, I **DO** allow the use of portable electronic devices in my classroom (e.g., phones, tablets, laptops, etc.). However, I fully expect these devices to be silenced (see previous section on "Civility") and primarily used for class-related purposes. For example, if you want to use Google to find a certain fact that might contribute to a class discussion, I encourage you to do so. On the other hand, texting your BFF about Katy Perry's latest hairstyle is discouraged. I'm not saying I will take your device away in such circumstances, but please know that whenever you use a device for non-class purposes, you are only hurting yourself by missing out on potentially important class-related information.

This course will utilize the **Moodle** online system to facilitate learning and communication. The Moodle page for this class will be used to post course documents such as the course syllabus and lecture notes, and you will also be able to check your grades using this system.

Note: I highly recommend printing out the lecture notes and bringing them to class – your printouts will make a handy place to take additional notes. However, don't make the mistake of thinking that having access to my PowerPoint notes will serve as a substitute for class attendance. It won't!!! We will discuss a great deal of information above and beyond what is presented in the slides, so if you make a habit of missing class I can guarantee you will be at a serious disadvantage when it comes time for the exams and other assignments.

To log into Moodle, go to http://learning.semo.edu. This will take you to the login page (your user name and password are the same ones you use to log into the mySoutheast portal).
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Questions/Comments:

Questions, comments or requests regarding this course should be taken to the instructor. Unresolved issues involving this class may be taken to Dr. Leslee Pollina, Chair of the Department of Psychology (573-651-2835 or lpollina@semo.edu).

Course Calendar:

Note. This proposed schedule is tentative; changes may be made as necessary. If changes are made, they will only be announced in class – so make sure you attend regularly!

Week 1 (8/22, 8/24, 8/26):
Introduction to Correlational Statistics (Pedhazur & Schmelkin, Ch 1)

Week 2 (8/29, 8/31, 9/2):
Measurement & Scientific Inquiry (Pedhazur & Schmelkin, Ch 2)

NO CLASS MONDAY, 9/5 (LABOR DAY)

Week 3 (9/7, 9/9):
Criterion & Construct Validity (Pedhazur & Schmelkin, Chs 3-4)

Week 4 (9/12, 9/14, 9/16):
Experimental Designs (Pedhazur & Schmelkin, Ch 12)

Week 5 (9/19, 9/21, 9/23):
Quasi-Experimental & Nonexperimental Designs (Pedhazur & Schmelkin, Chs 13-14)

Week 6 (9/26, 9/28, 9/30):
Basic Forms of Correlation (Handout: Howell, Chs 9-10)

Week 7 (10/3, 10/5, 10/7):
Simple Linear Regression (Pedhazur & Schmelkin, Ch 17)

Week 8 (10/10, 10/12, 10/14):
Multiple Linear Regression (Pedhazur & Schmelkin, Ch 18)

Week 9 (10/17, 10/19, 10/21):
Curvilinear Regression (Pedhazur & Schmelkin, Ch 18)

Week 10 (10/24, 10/26, 10/28):
Multiple Regression vs. ANOVA (Pedhazur & Schmelkin, Chs 19-20)

Week 11 (10/31, 11/2, 11/4):
ATI Analysis; ANCOVA (Pedhazur & Schmelkin, Ch 21)

Week 12 (11/7, 11/9, 11/11):
Exploratory Factor Analysis (Pedhazur & Schmelkin, Ch 22)

Week 13 (11/14, 11/16, 11/18):
Confirmatory Factor Analysis (Pedhazur & Schmelkin, Ch 23)

NO CLASS MONDAY, 11/21, WEDNESDAY, 11/23, OR FRIDAY, 11/25 (FALL/THANKSGIVING BREAK)

Week 14 (11/28, 11/30, 12/2):
Structural Equation Modeling (Pedhazur & Schmelkin, Ch 24)

Week 15 (12/5, 12/7, 12/9):
Group Project Q & A Sessions (no reading assigned)

FINAL EXAM MEETING: MONDAY, 12/12, 10:00-12:00 (regular classroom)