

Quantitative Methods and Analysis in Education II
EPRS 8540
Spring 2020

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Web for Courses: http://coshima.davidrjfikis.com/statistics_2.htm

Virtual (On-Line) Office Hours: by appointment

Course Requirements

Class Schedule: 1/13/20 - 4/29/20
(Exam 1 Tue 3/3 - Wed 3/4/20)
(Exam 2 Tue 4/28 - Wed 29/20)

Texts: Stevens, J.P. (2007). Intermediate statistics: A modern approach. Third Edition. Lawrence Erlbaum Associates. Taylor & Frances Group, New York. (Required)

Huck, S. W. (2011). Reading statistics and research. Sixth Edition. Pearson Education Inc. (**Optional**)

Floyd, R., Wright, K., Russell, A., Beggs R, May, G. & Oshima, T.C. (2015). SPSS for windows: A survival guide. (**Available at iCollege. Free**)

Class notes available at
http://coshima.davidrjfikis.com/statistics_2.htm

On-Line Resources: Readingstats.com <http://readingstats.com/>
HyperStat Online <http://davidmlane.com/hyperstat/index.html>
Rice Virtual Lab <http://onlinestatbook.com/rvls.html>
Etc.

Prerequisite: Quantitative Methods and Analysis 1 (EPRS8530)

Exams: Exam 1 Tue 3/3 - Wed 3/4/20

Exam 2 Tue 4/28 - Wed 4/29/20

Quizzes & Assignments: There will be weekly on-line quizzes ('Quizzes' in iCollege). Out of all quizzes, the lowest grade will be dropped to calculate the mean score of the quizzes. There will be four assignments ('Assignments' in iCollege). Out of all assignments, the lowest grade will be dropped to calculate the mean score of the assignments.

Computer/Writing Project: There will be one writing project. Students will analyze their data and write up a report. An on-line presentation will be required. See the separate instructions.

Grades: Grades will be based on the student's performance on the two exams (Exam 1 and Exam 2), the mean score of quizzes, the mean score of assignments, and the score of the writing project. They are weighted as follows: $.25 \times \text{Exam 1} + .25 \times \text{Exam 2} + .10 \times \text{Mean Quiz Score} + .10 \times \text{Assignment} + .30 \times \text{Writing}$.

Cutting scores of 90, 80, 70, 60, and 0 will apply for grades A, B, C, D, and F, respectively.

All the assignments have to be completed to obtain credits for the class. Make-up exams may be given with the instructor's permission.

Participation will not be graded. However, active participation on-line (via discussion, e-mail, etc. in iCollege) is required and expected. If the instructor notices a lack of participation, a notice will be given to the student via e-mail in iCollege. After two such notices, if the student fails to actively participate, then **the course grade will be lowered by 10%**.

Academic Honesty: Please see the section of the general catalog which describes the university policy on academic honesty. The policy provides descriptions of what violates the policy and the penalties that may be imposed for violations. Departmental policy authorizes professors to assign failing grades for any work that does not meet the standards of academic honesty. Any violation of academic honesty may result in a failing grade in a course.

Please note that all quizzes, exams, and assignments are done INDEPENDENTLY. As this is an online course, all quizzes, exams, and assignments are open book and students can also use the Internet. However, students cannot seek help from other

individuals for quizzes, exams, and assignments. Any questions should be discussed openly in the discussion board (DB) in iCollege. Work not performed independently will result in a failing grade.

Please see:

<http://education.gsu.edu/student-services/academic-honesty/>

Note: The last day to withdraw and possibly receive a "W" is 3/3/20.

Course Description

This is the second course in a sequence of three courses (including the core requirement EPRS 8530 and the elective courses EPRS 8540 and EPRS 8550) designed to provide theoretical and applied understandings of quantitative research. In this course, fundamentals of experimental design and quasi-experimental design are built upon for instruction in research designs of more than two populations, designs with more than one independent variable, repeated-measures designs, and the ANOVA techniques appropriate for these designs. Fundamentals of hypotheses testing are extended with the introduction of sampling distributions and power analysis, and this course introduces designs for multiple predictor variables of a single criterion variable. Skills at using SPSS, reviewing research articles, and writing research reports are further developed.

Course Goals

Students will be able to:

1. Determine sample size for a target level of power before data are collected.
2. Conduct a power analysis after results are obtained.
3. Plan and analyze data from a study that:
 - a. involves three or more populations of interest in an experimental design or a quasi-experimental design.
 - b. involves two or more independent variables in an experimental design or a quasi-experimental design.
 - c. incorporates a repeated-measures design.
 - d. controls the influence of a covariate of the dependent variable.
 - e. involves two or more predictor variables of a single criterion variable.
4. Select and conduct the appropriate analysis for and interpret, in terms of the research query, the results from data from advanced experimental and quasi-experimental designs.
5. Explain statistical significance in terms of a sampling distribution.
6. Demonstrate at least intermediate ability to write a Method section and a Results section of a research report.

Outline

Please see the attached Excel sheet for the dated outline.

Note: The course syllabus provides a general plan for the course; deviation may be necessary.

Overview of the On-Line EPRS8540

Welcome to our on-line EPRS8540. In this course, instructions will be given using the multimedia technology via Desire 2 Learn (iCollege). The instructional materials include on-line videos, on-line resources, virtual office hours, and of course, traditional textbooks. Learning outcome will be assessed via on-line quizzes, assignments, a writing project and exams.

1. Meeting Times: We will not meet face-to-face in this course. However, we will be "meeting" and communicating in the cyber space throughout the course. Students are expected to keep up with the pace by following the outline posted on my Web. In the outline, specific videos and reading materials are presented week by week. This is a non-synchronous on-line course to allow a maximum flexibility for students. The instructors will be available via email and the discussion board (DB) in iCollege. Furthermore, on-line office hours can be arranged via WebEx.

2. System Requirements: Each student needs to have an access to Internet. A fast access to Internet (DSL, etc.) is strongly recommended. The computer should have speakers, and a microphone is needed to participate in virtual office hours and also to present the project. Students will have an access to videos, etc. via iCollege. Other materials (handouts, etc.) are also available on my Web site.

3. Computer Knowledge: No special computer knowledge is necessary beyond basic computer skills. If one can use iCollege and knows how to visit Web sites, then he or she is ready for this course. As for the software knowledge, basic Excel or SPSS skills covered in EPRS8530 are prerequisite.

4. Communications: Communications between the instructors and students and among students are maintained in the discussion board (DB) and e-mail in iCollege. Students are expected to check iCollege as often as possible during the week, daily if possible. Students are responsible for reading the announcements from instructors (which will be posted the first thread of the discussion board (DB1)). The communication is open all the time. The instructors will do their best to reply within 24 hours on weekdays. Please understand that there is no reply/posting from instructors on Sundays.

For any other questions, please contact oshima@gsu.edu.

5. Learning Outcome: Quizzes are administered on-line via iCollege. The assignments will be turned in via iCollege using the Dropbox Tool. The idea/concept of the writing project is due on Monday of Week 12. The draft (or the first submission) of the project is due on Monday of Week 13. Projects will be presented by the students during Week 14. The final written project is due Monday before Exam 2. The two exams are administered via iCollege. The details of the exams will be announced later. Exam 1 covers the first half of the course and Exam 2 covers the second half of the course.

6. Virtual Office Hours (WebEx): The attendance of the virtual office hours will be voluntary just like regular office hours. During the office hours, the instructor is available to meet one-on-one or as a group via WebEx. Please make an appointment by

emailing the instructor in advance (a day before) in iCollege if you would like to attend. WebEx sessions can be recorded. A microphone is required to participate.

7. **Participation:** Participation is very important in an online course. You will be expected to participate actively and to **contribute substantive discussion messages as much as possible**. Please note that both quantity and quality are important considerations when it comes to participation. For example, a message which says simply, "I agree," does not constitute participation, because it does not add anything of substance to the discussion. You must add something of substance to the discussion on each occasion—this would consist of new ideas, your perspectives, pointed follow-up questions, etc.

8. **Tips:**

- Quiz
 - The weekly quizzes will be available from Friday (6 AM) through Monday (midnight).
 - It is possible to go back and change your answers during the session.
 - Be sure to save your answers before you submit.
 - Do not panic, if a technical failure occurs. Instructors can reset your quiz.
 - Although the quiz is not timed on the screen, it is meant to be a 20-minute quiz. Please try to finish the quiz within 20 minutes. The time spent on the quiz, as well as the score, will be reported to the instructor. Excessive overtime may result in a lower score.
- Assignments/Projects:
 - Assignments and projects are returned with comments. Be sure to view the comments.
 - When you turn in files, please name each file as follows. Suppose your name is Joe Smith. Your file name for Assignment 1 will be: Joe_Smith_Assignment_1.doc. If it is a draft, it will be Joe_Smith_Assignment_1_Draft.doc. If you revise and resubmit, then the file name will be: Joe_Smith_Assignment_1_Revised_1.doc. If you revise and resubmit one more time, then it will be: Joe_Smith_Assignment_1_Revised_2.doc. The extension (*.doc) may differ according to the software. **Be sure that all your files start with your name (and the same name!) Files with improper naming may be returned.**
- WebEx
 - Online Rooms should be available in iCollege.
 - Please minimize personal text messaging during the session. Although person-to-person messages are not viewed by others, moderators (instructors) see all the messages including person-to-person messages.
- Pace
 - The course moves week by week centered on Wednesday. Quizzes (Fri through Mon) are great pace makers. The discussion board (DB) will be used to help students understand the week's materials. WebEx will be another place to clarify any questions. WebEx will be also used for students'

presentations. Although it is up to the individual how to study for this course, here is an example how one can study:

- Mon - Fri - Study the week's materials (Videos, Reading, DB, etc.)
 - Weekend - Wrap up the week's study and take the quiz for the week
- iCollege
 - o Please use iCollege for all the communications, including e-mail and submissions of assignments and projects.
 - o In the past, students experienced occasional problems with attachment in iCollege. If that happens, you may want to exit iCollege and come back in and try again. That sometimes solves the problem.
 - o Check iCollege often, every day if all possible.
 - General Advice
 - o An online course saves time in commuting and parking, etc., but it will not save time in learning. It takes just the same time to study the materials as the face-to-face course does. The online course would be most suitable for individuals who are busy but extremely motivated to learn and who are good at time management.

Our goal is to help you learn quantitative methods as effective and enjoyable as possible. If there are any comments/feedback/requests, please feel free to e-mail me at any time oshima@gsu.edu.

GOOD LUCK!

Chris Oshima