PSY 706 Intermediate Statistics I

Mackay Science 321
T/TH 9:30 - 10:45 am

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Course Description:
This course is designed to provide graduate students in Psychology with a solid introduction to the knowledge and application of statistics. I believe that statistical training should continue throughout one’s research career—this course is merely the beginning. I teach from the perspective of the general linear model. This provides a broad framework from which the more advanced techniques become simple extensions. Thus, we will work hard to set up the proper foundation in this course to make it easier for you to take more advanced courses throughout your graduate career.

Course Learning Objectives:
Through the completion of the course, students will be able to

- describe and accurately communicate fundamental characteristics of categorical and quantitative data.
- apply parametric inferential statistical techniques to categorical and quantitative data.
- accurately communicate the results of parametric inferential statistical techniques.

Recommended Texts:

- *Discovering Statistics Using R*, by Field, Miles, & Field.

Software:
All homework assignments in this course will require the use of a statistics package. You are free to conduct the analyses with any package of your choice. I will use R throughout the course to standardize the examples. You can download R at [http://www.r-project.org/](http://www.r-project.org/), and R-Studio at [http://www.rstudio.com/](http://www.rstudio.com/).

Grading:

- **Homework:** 30%
- **Exam 1:** 20%, Tuesday, October 4
- **Exam 2:** 20%, Tuesday, November 8
- **Final Exam:** 20%, Tuesday, December 13
- **Final Project:** 10%, Tuesday, December 20
Your final course score will be determined by the following formula:

\[
\text{Course Score} = 0.30H + 0.20M_1 + 0.20M_2 + 0.20F + 0.10P
\]

where \(H\), \(M_1\), \(M_2\), \(F\), and \(P\) represent the score out of 100 possible on homework, midterm exam 1, midterm exam 2, the final exam, and the final project respectively. Letter grades will be assigned according to the course scores. Students with similar course scores (as judged by the instructor) will receive similar letter grades. The order of the letter grades will match the order of the course scores.

**Homework:**

The main purpose of all homework assignments in PSY 706 is to help you learn the course material. All homework assignments will be posted on WebCampus. Due dates are posted on the web site and written on the homework documents. No late homework will be accepted, but your lowest homework score will not be used to compute your grade.

Answers to homework assignments should be written neatly or typed and well organized with no extraneous information. You are welcome to work with other students on homework problems. You must, however, write your own answers to the questions. Copying other’s work is prohibited.

**Exams:**

There will be two midterms and a final exam. The exams will not involve the use of the computer, but sections of the exams will require interpreting computer output. The exams will also require that you work with the computer output in order to answer research questions. All exams will be cumulative. No make-up exams will be given unless circumstances are exceptional.

**Final Project:**

You will create a protocol to determine what statistical analysis to perform for any dataset (i.e., all types of situations). This assignment will provide you with a source for determining what kind of statistical test to use in any of the situations covered this semester. The final product is something you can turn to in the future (after the course ends) to help you match the statistical test to the characteristics of a dataset. Additional information will be provided on this assignment.

**Accommodations:**

Any student with a disability needing academic adjustments or accommodations is requested to speak with the Disability Resource Center (Pennington Student Achievement Center, Suite 230) as soon as possible to arrange for appropriate accommodations.

**Academic Dishonesty:**

Cheating, plagiarism or otherwise obtaining grades under false pretenses constitute academic dishonesty according to the code of this university. Academic dishonesty will not be tolerated and penalties can include canceling a student’s enrollment without a grade, giving an F for the course or for the assignment. For more details, see the University of Nevada, Reno General Catalog.

**Audio and Video Recording:**

Surreptitious or covert video-taping of class or unauthorized audio recording of class is prohibited by law and by Board of Regents policy. This class may be videotaped or audio recorded only with the written permission of the instructor. In order to accommodate students with disabilities, some students may be given permission to record class lectures and discussions. Therefore, students should understand that their comments during class may be recorded.

**Academic Success Services:**

Your student fees cover usage of the Math Center (775-784-4422), Tutoring Center (775-784-6801), and University Writing Center (775-784-6030). These centers support your classroom learning; it is your responsibility to take advantage of their services. Keep in mind that seeking help outside of class is the sign of a responsible and successful student.
## Tentative Course Schedule:

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<th>Week</th>
<th>Topics</th>
<th>Readings</th>
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<td>1</td>
<td>Overview; Defining data</td>
<td>C1; FMF1-3</td>
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<tr>
<td>2</td>
<td>Summarizing and visualizing data</td>
<td>C2,3; FMF4</td>
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<td>3</td>
<td>Hypothesis testing: Underlying logic</td>
<td>C4,5; FMF5</td>
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<td>4</td>
<td>Hypothesis tests: Means for a predictor with 1-2 levels</td>
<td>C6,7,11; FMF9</td>
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<td>5</td>
<td>Hypothesis tests: Correlations for single predictors</td>
<td>C9,10; FMF6,7; KNNL1-3</td>
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<td>6</td>
<td>Exam 1</td>
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<td>7</td>
<td>Hypothesis tests: Means for a predictor with 3+ levels</td>
<td>C12,13; FMF10; KNNL15,16</td>
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<td>8</td>
<td>Hypothesis tests: Means for multiple predictors</td>
<td>C14; FMF12; KNNL19,23,24</td>
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<td>9</td>
<td>Hypothesis tests: Means for repeated measures</td>
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<td>Hypothesis tests: Correlations for multiple predictors</td>
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<td>Thanksgiving Break, No Class</td>
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<td>Hypothesis tests: Non-parametric</td>
<td>C19,20; FMF15</td>
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<td>Determining sample sizes for studies</td>
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<td>16</td>
<td>Final Exam</td>
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<td>17</td>
<td>Final Project</td>
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