Evaluation, Measurement, and Research 6450  
Data Analytics I: Designed Studies  
Fall 2013

Tuesdays 6:00 – 8:30 p.m  
2720 Sangren Hall (classroom)  
2510 Sangren Hall (lab)

Instructor: Monica Lininger, Ph.D.  
Office: 3571 Sangren  
Email: monica.lininger@wmich.edu  
Office Hours: 4:00 – 5:00 Thursdays or by appointment

Instructor: Jessaca Spybrook, Ph.D.  
Office: 3571 Sangren  
Phone: (269) 387 – 3889 (Office)  
Email: jessaca.spybrook@wmich.edu  
Office Hours: 4:30 – 5:30 Tuesdays or by appointment

Due to the large number of students enrolled in the course, there will be two instructors. It is imperative that you send all emails to both Jessaca and Monica. In all emails, please put EMR 6450 in the subject line. We will only email you at your wmich account so please check that account frequently.

Course Web site:  
For this course we will be using E-learning. You can access E-learning through the WMU portal and the E-learning button. Lectures, announcements, assignments, data sets, and any other classroom materials will be posted on the class site. Major assignments and weekly exercises must also be submitted through the web site. Please check the E-learning site frequently. We will post updates and announcement for the class on the site.

Course Pre-requisites:  
Successful completion of EMR 6400, Introduction to Evaluation, Measurements, and Research or permission of instructor.

Catalog Description:  
This class focuses on the principles of research design and data analysis. Primary topics include: descriptive statistics, t-tests, chi-square, correlation, analysis of variance, post-hoc comparisons, non-parametric statistics, and statistical power. All topics will be taught from an applied perspective. Students will learn how to use statistical software for analyses.

Course Objectives:  
The four main objectives for this course are:  
1. Feel comfortable reading, writing, and talking about statistics.  
2. Be able to identify when a particular statistical method is appropriate and apply the method.  
3. Perform statistical analyses using SPSS.  
4. Interpret the results of statistical analyses in a clear and understandable manner.

Required Text:  

Optional Text:  

Optional Software:
We will use SPSS for our statistical computing package. The computers at the labs on campus have SPSS installed. Students who are interested in purchasing the software should buy the SPSS Standard Graduate Pack. The software can be purchased at Total Tech in the WMU Bookstore (http://www.wmich.edu/totaltech). A couple of other options are www.studentdiscounts.com and http://www.onthehub.com/spss/ although we have never purchased from these online sites.

Course Expectations:
This course provides an introduction to statistics for students in education and social sciences. The course covers an introduction to quantitative research, descriptive statistics, and inferential statistics. All concepts will be taught from an applied perspective.

Course expectations include regular attendance, participation in class discussions and activities, completion of reading for class, and completion of all major assignments, weekly exercises, the midterm, and the final. All assignments and weekly exercises must be submitted on time via the class web site through E-learning. All major assignments must follow APA style. Weekly exercises do not need to follow APA style.

Students are strongly encouraged to form study groups for the class. However, each student must submit his/her own assignments and will be graded individually.

Weekly Exercises:
There will be a total of 6 weekly exercises. Each exercise will be worth 5 points. Completed weekly exercises will earn 5 points. Points will be taken off for incomplete exercises. Late weekly exercises will NOT be accepted. All weekly exercises will be posted and turned in through E-learning. Solutions will be posted online after the class period in which they are turned in.

Major Assignments:
There are 4 major assignments in this class. Each assignment is worth 30 points. All assignments will be posted on the course web site at least two weeks prior to the due date. Major assignments will be turned in as well as returned to the student through the course web site. Late assignments will be penalized a 10 percent point reduction per day they are late. Assignments must follow APA style.

Midterm and Final Exam:
The midterm and final exam are both applied exercises. Each exam is worth 75 points. Students will be given 2.5 hours to complete the midterm and final exam. Each exam will be open note, open book but completed individually through E-learning. Neither the midterm nor the final will require you to use SPSS.

Diversity:
Western Michigan University's College of Education maintains a strong and sustained commitment to the diverse and unique nature of all learners, and to maintaining high expectations for each student.

Academic Ethics and Integrity:
You are responsible for making yourself aware of and understanding the policies and procedures in the Graduate Catalogue that pertain to Academic Integrity. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse for all materials related to this class. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Judicial Affairs. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with the course instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.
Course Evaluation:
There are a total of 300 possible points in the class. The points are distributed as follows:

- Major Assignments: 120 Points (40 percent)
- Midterm: 75 Points (25 percent)
- Final: 75 Points (25 percent)
- Weekly Exercises: 30 Points (10 percent)

Below is the grading scale for the class:

<table>
<thead>
<tr>
<th>Total Points</th>
<th>Percentage</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>284 - 300</td>
<td>(95 - 100 percent)</td>
<td>A</td>
</tr>
<tr>
<td>269 - 283</td>
<td>(90 - 94 percent)</td>
<td>AB</td>
</tr>
<tr>
<td>254 - 268</td>
<td>(85 - 89 percent)</td>
<td>B</td>
</tr>
<tr>
<td>239 - 253</td>
<td>(80 - 84 percent)</td>
<td>CB</td>
</tr>
<tr>
<td>224 - 238</td>
<td>(75 - 79 percent)</td>
<td>C</td>
</tr>
<tr>
<td>Below 224</td>
<td>(less than 75 percent)</td>
<td>E</td>
</tr>
</tbody>
</table>

Incompletes will only be given in extreme emergencies and a written request with justification is required.
### Tentative Course Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings¹</th>
<th>Major Assignments</th>
<th>Weekly Exercises</th>
<th>Lead Instructor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sept. 3</td>
<td>Introductions, Course Overview, Introduction to Quantitative Research, Variables, Measurement, Intro to SPSS</td>
<td>Chapter 1</td>
<td></td>
<td></td>
<td>Jessaca</td>
</tr>
<tr>
<td>Sept. 10</td>
<td>Descriptive Statistics, Graphical Representations</td>
<td>Chapters 2 and 3</td>
<td>Weekly Exercise 1 due</td>
<td></td>
<td>Monica</td>
</tr>
<tr>
<td>Sept. 17</td>
<td>Sampling, Sampling Distributions, Central Limit Theorem</td>
<td>Chapters 4 and 5</td>
<td>Weekly Exercise 2 due</td>
<td></td>
<td>Jessaca</td>
</tr>
<tr>
<td>Sept. 24</td>
<td>Hypothesis Testing (1 sample)</td>
<td>Chapters 6</td>
<td>Weekly Exercise 3 due</td>
<td></td>
<td>Monica</td>
</tr>
<tr>
<td>Oct. 1</td>
<td>Hypothesis Testing (2 sample)</td>
<td>Chapter 7</td>
<td>Major Assignment 1 due</td>
<td></td>
<td>Jessaca</td>
</tr>
<tr>
<td>Oct. 8</td>
<td>Chi-square</td>
<td>Chapter 8</td>
<td>Weekly Exercise 4 due</td>
<td></td>
<td>Monica</td>
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<tr>
<td>Oct. 15</td>
<td>Midterm</td>
<td></td>
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<tr>
<td>Oct. 22</td>
<td>One-way ANOVA</td>
<td>Chapters 9 and 11</td>
<td>Major Assignment 2 due</td>
<td></td>
<td>Monica</td>
</tr>
<tr>
<td>Oct. 29</td>
<td>One-way ANOVA</td>
<td>Chapters 9 and 11</td>
<td>Weekly Exercise 5 due</td>
<td></td>
<td>Jessaca</td>
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<tr>
<td>Nov. 5</td>
<td>Multiple Comparisons</td>
<td>Chapter 12</td>
<td>Weekly Exercise 6 due</td>
<td></td>
<td>Monica</td>
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<tr>
<td>Nov. 12</td>
<td>Two-way ANOVA</td>
<td>Chapter 13</td>
<td>Major Assignment 3 due</td>
<td></td>
<td>Jessaca</td>
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<tr>
<td>Nov. 19</td>
<td>Random and Mixed effects ANOVA</td>
<td>Chapter 15</td>
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<td>Monica</td>
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<tr>
<td>Nov. 26</td>
<td>No Class</td>
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<tr>
<td>Dec. 3</td>
<td>Power and Review</td>
<td>Chapter 6 and additional readings</td>
<td>Major Assignment 4 due</td>
<td></td>
<td>Jessaca</td>
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<tr>
<td>Dec. 10</td>
<td>Final</td>
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¹This is a tentative course schedule and may be modified during the semester based on class progress.
²Additional readings may be added throughout the semester so please be sure to check the course web site frequently.