COURSE SYLLABUS

DIVISION: Theoretical and Behavioral Foundations

PROGRAM AREA: Educational Evaluation and Research

COURSE: EER 7630 Fundamentals of Statistics

COURSE CREDIT: 3 Semester Hours

TERM/YEAR: Spring 2015

COURSE LOCATION: 308 Oakland Center

TIME: 4:30-7:15 Monday and Wednesday

INSTRUCTOR: Barry S. Markman, Ph.D.

OFFICE: 333 Education

OFFICE HOURS: 1:30 PM – 3:00 PM Monday and Wednesday

OFFICE PHONE: (313) 577-1806

E-MAIL: b.markman@wayne.edu

COURSE DESCRIPTION:

Review of mathematics essential for statistics, sampling and computer use. Basic patterns of statistical inference, confidence estimation, and significance testing regarding measures of averages, dispersion, correlation and selected non-parametric statistics will be covered. One-way and two-way analysis of variance will also be explored.

COURSE OBJECTIVES:

The student will:

1. Recognize the distinction between statistics and parameters.
2. Identify the differences between inferential and descriptive statistics.
3. Differentiate among the scales of measurement.
4. Recognize and use summation notation.
5. Recognize and use the general rules for constructing frequency distributions.
6. Classify and use measures of central tendency.
7. Classify and use measures of variability.
**Course objectives continued.**

8. Classify and use measures of relationship
9. Recognize and use the concept of skewness.
10. Recognize and use the concept of kurtosis.
11. Recognize and use the standard normal distribution.
12. Recognize and use the concept of the area under a normal curve.
13. Recognize and use simple linear regression.
14. Recognize and use the simple laws of probability.
15. Identify and use the standard error of a statistic.
16. Recognize and use the concept of a sampling distribution of a statistic.
17. Formulate and use null hypotheses.
18. Formulate and use alternative hypotheses.
19. Recognize and use the concept of degrees of freedom.
20. Identify Type I and Type II errors.
21. Select and use appropriate alpha levels.
22. Differentiate between and use appropriately one and two tailed tests.
23. Recognize and use inferential tests for a single group.
24. Recognize and use inferential tests for two groups.
25. Recognize and use inferential tests for correlated groups.
26. Recognize and use the application of one and two way analysis of variance.
27. Recognize the concept of power.
28. Recognize and use the one variable chi-square test.
29 Recognize and use the two variable chi-square test.
30. Recognize and use the binomial test.
31. Recognize and use non-parametric statistical tests with ordinal variables.

The student will calculate:

1. The limits of an interval.
2. The midpoint of an interval.
3. True class limits.
4. The size of the class interval.
5. Sums involving summation notation.
7. Medians.
8. Modes.
9. Ranges.
11. Variances.
13. Proportions and percentages.
15. Areas under a curve.
Course objectives continued.
20. The slope of a line.
21. The intercept of a line.
22. Values of tests for single groups.
23. Values of tests for two groups.
24. Values of tests for correlated groups.
25. Degrees of freedom
27. Chi square test of independence.
29. One and two way ANOVA's
30. Power
31. Effect Size

TEXT

GRADING
Each exam is 25% of the grade

A 90%
A- 88%
B+ 85%
B 80%
B- 78%
C+ 75%
C 70%

CLASS POLICIES
1. Attendance is not required, but it is to your advantage to attend class as the lecture material and the text do not necessarily overlap, i.e. I lecture on material not covered in the text.
2. You may not record the lectures.
3. Incomplete grades are given only with a doctor's excuse for not being able to complete the course during the term. You must be passing the course at the time to receive an incomplete.
4. Make-up examinations are not among my favorite things and will only be given for illnesses unless accompanied by a doctor's note; deaths must also be supported by documentation. An exam conflicting with your vacation is not a sufficient excuse for missing that exam.
5. Please turn off your cell phones in class unless you are a physician on call. Do Not Text, use Skype, Facebook, etc. during class.
<table>
<thead>
<tr>
<th>DATE</th>
<th>CHAPTER(s)</th>
<th>TOPIC(s)</th>
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<tbody>
<tr>
<td>5/11/15</td>
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<td>Introduction to Statistics</td>
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<td>Major Anxiety Attacks</td>
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<td>5/13/15</td>
<td>1 &amp; 2</td>
<td>Scales of numbers. Frequency</td>
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<td>Distributions. Graphing. Percentiles</td>
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<td>5/18/15</td>
<td>3-5</td>
<td>Measures of Central Tendency. Dispersion</td>
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<td>The Normal Distribution. Z Scores</td>
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<td>5/20/15</td>
<td><strong>EXAM I</strong> (ch. 1-5)</td>
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<td>5/25/15</td>
<td><strong>Memorial Day Holiday</strong></td>
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<td>5/29/15</td>
<td><strong>Scheduled as a Monday</strong></td>
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<tr>
<td>6/1/15</td>
<td>16 p 556-569</td>
<td>Regression</td>
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<td>6/3/15</td>
<td><strong>EXAM II</strong> (ch. 15 &amp; 16)</td>
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<td>6/8/15</td>
<td>6</td>
<td>Probability</td>
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<td>6/10/15</td>
<td>7,8</td>
<td>Statistical Inference with continuous variables</td>
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<tr>
<td>6/15/15</td>
<td>9,10,11</td>
<td>Statistical Inference with continuous variables.</td>
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<td>Statistical Inference with 2 independent samples.</td>
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<td>$t$-tests. Difference $t$-test. Power. Effect Size</td>
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<td>6/17/15</td>
<td><strong>EXAM III</strong> (ch. 6-11)</td>
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<tr>
<td>6/22/15</td>
<td>18 &amp; 17</td>
<td>Statistical Inference with categorical variables.</td>
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<td>The Binomial Test. Chi Square.</td>
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<td>6/24/15</td>
<td>12 &amp; 14 p.465-489</td>
<td>Analysis of Variance</td>
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<td>6/29/15</td>
<td><strong>EXAM IV</strong> (ch. 18, 17, 12, 14)</td>
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Academic Dishonesty
No form of academic dishonesty will be tolerated. You are in this class to learn, and you must commit the effort to obtaining your own knowledge and skills. You should already be aware, but for specific examples of academic dishonesty, including what constitutes plagiarism, you should read the Undergraduate and Undergraduate Bulletins found at [http://www.bulletins.wayne.edu/](http://www.bulletins.wayne.edu/). The Student Due Process Policy at [http://students.slis.wayne.edu/policies/index.php](http://students.slis.wayne.edu/policies/index.php) and any other formal documents that are created for students at WSU found through [www.wayne.edu](http://www.wayne.edu). You will be asked to sign a "denial of academic dishonesty/pledge of authenticity" statement and attach it to each product turned in for credit in this class. Any academic dishonesty will clearly be considered premeditated and not accidental. Expulsion is probably not worth the few hours of work you will avoid by cheating, so please think carefully and thoroughly, ask for help when needed, and make smart decisions.

WSU Plagiarism Policy: Plagiarism includes copying material (more than 5 consecutive words) from outside texts or presenting outside information as if it were your own or by not crediting authors through citations. (APA cites require author, year, and page number for direct quotes in quotation marks and for paraphrases with no quotation marks.) It can be deliberate or unintended. If in doubt about the use of a source, cite it. University policy states that students can be subject to multiple sanctions, from reprimand to expulsion as a consequence of academic dishonesty. Students caught plagiarizing information from other sources will receive a failing grade in the course. To enforce this policy, all outside references must be submitted with assignments. [Check out web resources related to plagiarism to learn more. For instance a good plagiarism definition can be found at: [http://www.suite101.com/content/a-definition-for-plagiarism-a10232](http://www.suite101.com/content/a-definition-for-plagiarism-a10232); and paraphrasing examples good and bad at [http://library.csusm.edu/plagiarism/howtoavoid/how_avoid_paraphrase.htm](http://library.csusm.edu/plagiarism/howtoavoid/how_avoid_paraphrase.htm).

Religious Observance Policy
Because of the extraordinary variety of religious affiliations represented in the University student body and staff, the Wayne State University calendar makes no provisions for religious holidays. It is University policy, however, to respect the faith and religious obligations of the individual students who find that their classes or examinations involve conflicts with their religious observances. They are expected to notify their instructors well in advance so that alternative arrangements as suitable as possible may be worked out.

Student Disability Services
If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The Student Disability Services (SDS) office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department. SDS telephone number is 313-577-1851 or 313-577-3365 (TDD only). Student Disability Services’ mission is to assist the university in creating an accessible community where students with disabilities have an equal opportunity to fully participate in their educational experience at Wayne State University.
Withdrawal Deadline

Withdrawal Policy: Students who withdraw from a course after May 25, 2015, will receive a grade of WP, WF, or WN.

- WP will be awarded if the student is passing the course (based on work due to date) at the time the withdrawal is requested
- WF will be awarded if the student is failing the course (based on work due to date) at the time the withdrawal is requested
- WN will be awarded if no materials have been submitted, and so there is no basis for a grade

Students must submit their withdrawal request on-line through Pipeline. The faculty member must approve the withdrawal request before it becomes final, and students should continue to attend class until they receive notification via email that withdrawal has been approved. Withdrawals can be requested at any point from the fifth week of class through the end of the 10th week of classes. **Sunday, June 14, 2015 is the last day to withdraw.**

Students are sent two communications each semester regarding course withdrawals and deadlines for withdrawing. The medical withdrawal process can be initiated for up to three months following the end of a term, and is not impacted by this change in withdrawal deadline. Exceptions for other reasons would be considered only when circumstances beyond a student’s control affect ability to complete course requirements, and occur after the end of the withdrawal period and prior to the beginning of the final examination period. In no case will a late withdrawal be approved after a student has taken the final exam, or received a final grade in the class. *The appropriate remedy for a poor grade is normally to repeat the course. If questions exist about exceptions for course withdrawal after the deadline, please consult with the Office of the Registrar prior to advising a student to seek an exception.*