Introduction to Statistics
PSYCH 301: Fall Semester 2012
Thomas L. Martin Building (MARB) Room 343
Section 1: Tuesday's and Thursday's 8-9:50 AM

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Office Hours: Wednesday's and Thursday's 2-3 PM or by appointment

TA:

TA office hours will be located in “Psych Central” on the 11th Floor of the Spencer W. Kimball Tower (SWKT).

Course Objective
This is the first course in statistics and as such provides an introductory level coverage of topics such as probability theory, descriptive statistics, sampling distributions, parameter estimation, tests of hypotheses, chi-square tests, and linear regression analysis. The course is intended to provide the student with a fundamental understanding of probability theory and statistics as used in typical applications. Illustrative problems will be presented and discussed.

You may ask yourself "Why do psychology students need to take a course in statistics?" Psychology, in part, is a scientific enterprise and the examination of human thinking processes and behavior requires the application of scientific method and statistical analysis for decisions to be made regarding their causes. Without statistics, the causes of human behavior could not be determined. You may say "I plan on being a therapist, not an experimental psychologist!" Most of the decisions therapists must make about treatment and psychological assessment are based on scientific study. In a more immediate vein, all psychology students are expected to have some knowledge of statistics. The psychology GRE has a significant number of questions concerning this material and graduate programs in psychology and related fields expect students to have good grades in statistics. All psychology graduate programs require students take several statistics courses and state licensing examinations have questions on statistics and research methodology. Outside of psychology, these statistical techniques are used in all sciences, business, marketing, economics, etc. These skills are highly marketable.

BS in Psychology Program Objectives
Graduates will:

1) Be able to demonstrate more extensive knowledge and deeper understanding of the major core content areas of psychology at a depth that clearly exceeds the undergraduate level.

2) Be able to demonstrate technical sophistication related to their self-selected area of scholarly specialty by using laboratory apparatus, software applications, survey instruments, etc.

3) Be able to design, produce, analyze, and report original research that contributes to their self-selected area of scholarly specialty.

4) Be able to weigh evidence, tolerate ambiguity, act ethically, and reflect other values that are the underpinnings of psychology as an academic and professional discipline. In particular, they should be able to critically reflect on these values in light of their knowledge of and commitment to the restored gospel of Jesus Christ and to sustain personal values that are true to the gospel while maintaining their scholarly study of psychology.
**Required Text**

1) Pagano, R.R. (2013). Understanding statistics in the behavioral sciences (10th Ed.). Belmont, CA: Wadsworth. You will need the e-version at a minimum – as this is how you will take your quizzes. If you wish you may also purchase the loose-leaf version bundled with the e-version.

2) Access to SPSS – nearly all computer labs have SPSS installed.

**Optional DVDs**

DVD’s have all the power points and provides a brief narrative for each lecture (about 20 min.). These may be beneficial in your review for quizzes and exams and will be beneficial if you miss a particular lecture.

**General Course Design**

There are three basic instructional activities: a) course lectures, b) assigned readings, and c) various independent problem sets. The lectures and readings are designed to convey the conceptual and logical foundations associated with developing an understanding of statistics. The problem sets while not explicitly graded, are included to promote students’ ability to perform various statistical operations.

There are no formal requirements concerning the attendance at lectures or the completion of readings. The lectures, reading and problem sets are simply the means by which students can prepare themselves for quizzes and examinations. Performance on quizzes, SPSS assignments, and the major examinations will serve as the basis for student evaluation in this course. These are described below in greater detail.

**Student Evaluation**

There are two distinct systems for student evaluation in this course. One is based on the assumption that each student should master certain objectives that are regarded as basic knowledge concerning statistics. This system is represented by the course on-line quizzes. The second system is based on the assumption that students will differ with respect to their achievement on more advanced or complex course objectives. This system is represented by the three major examinations.

**Aplia On-Line Quizzes**

The on-line quizzes are intended to give students frequent feedback concerning their mastery of essential instructional objectives. The quizzes are found on the e-book/aplia website and are to be completed before the due date.

The “supplemental” quiz for each chapter is not graded and is not counted towards your grade. It is essentially practice – you are not required to complete the supplemental quizzes, however, they will help you in preparing for the graded quizzes and the exams. The non-supplemental quiz is graded and does count toward your grade. Each graded quiz is scored as a percent correct. Of the 15 quizzes I will drop the three quizzes with the lowest percent correct. Of the remaining 12 quizzes I compute an average percent correct that is multiplied times 60. Thus if you have an average of 88% correct - after dropping your lowest three quizzes you would have .88 x 60 = 53

**NOTE: If you forget to take a quiz, a computer glitch, etc. this counts as one of your 3 dropped quizzes.**
Course Examinations

There will be three major course examinations, the first at about five weeks into the term, the second at or about the tenth week of the term and the last exam at the end of the term. The major exams are not comprehensive; however, they do build upon those concepts previously covered. Each exam will be given in the testing center on the dates listed and those chapters listed below in Course Outline.

The major examinations differ from the on-line quizzes in one important respect. The major examinations are designed to determine the degree to which students have achieved more advanced course objectives, e.g., ability to interpret or translate concepts and principles given novel situations, the ability to analyze various empirical findings and the appropriateness of their interpretations and/or assumptions, etc. Because the major exams are designed to tap more complex and subtle outcomes, students typically find them more challenging than the on-line quizzes.

SPSS Assignments

Clearly no one does statistics by hand – except for students in statistics courses. Hand computations are done to help you understand the logic of why a particular statistical operation works the way it does. More typically, however, we use various software packages to do our stats for us – this makes sense for large complicated data sets. Thus you too will learn some of the basics of SPSS and see how they compare to your hand computations. There are four SPSS assignments – each worth 10 points. The text provides very detailed instructions on how to do each of the assignments. It is anticipated that each of these assignments will take less than 30-minutes to complete and it is also expected that students will earn 100% on each of the four assignments.

Grade Assignment

Grades will be based on each student’s cumulative score on the quizzes, SPSS assignments and major examinations. There are a total of 302 points possible.

Exam 1 = 54 points
Exam 2 = 70 points
Exam 3 = 78 points
On-line Quizzes = 60 points
SPSS Assignments = 10 points each x 4 = 40
Total = 302 Grades, however, will be based on 300. This is done to avoid the end of the semester “…but I am only one point away…..”

Grade assignments will be based on the following basis

A = 93% or 279 points
A- = 90% or 270 points
B+ = 87% or 261 points
B = 83% or 249 points
B- = 80% or 240 points
C+ = 77% or 231 points
C = 73% or 219 points
C- = 70% or 210 points
D+ = 67% or 201 points
D = 63% or 189 points
D- = 60% or 180 points
Extra Credit

You can earn up to 5 extra credit points by participating in various research studies. A listing of these studies can be found on the “Sona” website [http://byu.sona-systems.com/](http://byu.sona-systems.com/) you will have to create an account if you do not already have one. When you sign-up or participate be sure to associate each credit with PSYCH 301- Sec 3 otherwise you will not get class credit. For each sona credit you will receive a point – again the maximum amount of extra credit that can be earned is 5 points. It takes about 1-2 weeks for them to post the scores on the Sona website and I update the extra credit at the end of the term. If you have participated in a research study and after 1-2 weeks you still do not have your Sona credit feel free to contact the researcher.

Plagiarism

BYU students should seek to be totally honest in their dealings with others. They should complete their own work and be evaluated based upon that work. They should avoid academic dishonesty and misconduct in all its forms, including plagiarism, fabrication or falsification, cheating, and other academic misconduct. Students are responsible not only to adhere to the Honor Code requirement to be honest but also to assist other students in fulfilling their commitment to be honest. (a complete version of the Academic Honesty Policy available at honorcode.byu.edu)

Academic Honesty

While all students sign the honor code, there are still specific skills most students need to master over time in order to correctly cite sources, especially in this new age of the internet; as well as deal with the stress and strain of college life without resorting to cheating. Please know that as your professor I will notice instances of cheating on exams or plagiarizing on papers. See [http://www.byu.edu/honorcode](http://www.byu.edu/honorcode) for specific examples of intentional, inadvertent plagiarism, and fabrication, falsification.

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education. Title IX covers discrimination in programs, admissions, activities, and student-to-student sexual harassment. BYU’s policy against sexual harassment extends not only to employees of the university but to students as well. If you encounter unlawful sexual harassment or gender based discrimination, please talk to your professor; contact the Equal Opportunity Office at 801-422-5895 or 801-422-5689 (24-hours); or contact the Honor Code Office at 801-422-2847.

Brigham Young University is committed to providing a working and learning atmosphere that reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, please contact the University Accessibility Center located in 2170 WSC (801-422-2767). Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. Services are coordinated with the student and instructor by the SSD office. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Equal Opportunity Office at 301-422-5895, D-282 ASB.

Student Learning Outcomes

Each program at BYU has developed a set of expected student learning outcomes. These will help you understand the objectives of the curriculum in the program, including this class. To learn the expected student outcomes for the programs in this department and college go to [http://learningoutcomes.byu.edu](http://learningoutcomes.byu.edu) and click on the College of Family, Home and Social Sciences and then this department. We welcome feedback on the expected student learning outcomes. Any comments or suggestions you have can be sent to [FHSS@byu.edu](mailto:FHSS@byu.edu).

Honor Code Standards

In keeping with the principles of the BYU Honor Code, students are expected to be honest in all of their academic work. Academic honesty means, most fundamentally, that any work you present as your own must in fact be your own work
and not that of another. Violations of this principle may result in a failing grade in the course and additional disciplinary action by the university.

Students are also expected to adhere to the Dress and Grooming Standards. Adherence demonstrates respect for yourself and others and ensures an effective learning and working environment. It is the university’s expectation, and my own expectation in class, that each student will abide by all Honor Code standards. Please call the Honor Code Office at 422-2847 if you have questions about those standards.

**PREVENTING SEXUAL HARASSMENT**

Title IX of the Education Amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds. The act is intended to eliminate sex discrimination in education and pertains to admissions, academic and athletic programs, and university-sponsored activities. Title IX also prohibits sexual harassment of students by university employees, other students, and visitors to campus. If you encounter sexual harassment or gender-based discrimination, please talk to your professor; contact the Equal Employment Office at 801-422-5895 or 1-888-238-1062 (24-hours), or http://www.ethicspoint.com; or contact the Honor Code Office at 801-422-2847.

**Students with Disabilities**

If you have a disability that may affect your performance in this course, you should get in touch with the University Accessibility Center (2170 WSC) 801-422-2767. This office can evaluate your disability and assist the professor in arranging for reasonable accommodations.

**A note regarding the exams:** As you will see each exam is given in the testing center over a span of several days for your flexibility. If, you miss, forget, or otherwise fail to take an exam – do not email me or the TA asking, “What can I do for you?”. My answer is I am sorry but you cannot take the exam.

Some excuses that are often provided – but are not acceptable.

1) I was planning on taking the test on such-and-such a day – but became sick/ill thus I did not take the exam.
2) I was traveling or otherwise out of town and missed the exam.
3) I arrived at the testing center at such-and-such a time but the lines were so long and I did not have enough time to start/finish the exam.
4) Weddings, family reunions, etc. are not excuses for missing an exam.

IF YOU KNOW OF A CONFLICT REGARDING AN EXAM LET ME KNOW BEFORE THE EXAM BEGINS – THEN ARRANGEMENTS CAN BE MADE. HOWEVER, PER UNIVERSITY POLICY, EARLY FLIGHTS HOME DURING FINALS WEEK (OR THANKSGIVING) IS NOT AN ACCEPTABLE EXCUSE FOR TAKING THE EXAM AT A DIFFERENT TIME.
# Tentative Course Outline

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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</thead>
<tbody>
<tr>
<td>1/8</td>
<td>Introduction to course and course objectives</td>
<td>Ch. 1</td>
</tr>
<tr>
<td>1/10</td>
<td>Introduction to statistics and the scientific method</td>
<td>Ch. 1 &amp; 2</td>
</tr>
<tr>
<td>1/15</td>
<td>Scales of Measurement and Percentiles</td>
<td>Ch. 3</td>
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<tr>
<td>1/17</td>
<td>Measures of central tendency &amp; Variability</td>
<td>Ch. 3 &amp; 4</td>
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<tr>
<td>1/22</td>
<td>Intro to SPSS</td>
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<tr>
<td>1/24</td>
<td>Standard scores &amp; Z-scores</td>
<td>Ch. 5</td>
</tr>
<tr>
<td>1/29</td>
<td>Exam 1 Review (<strong>SPSS #1 due in class and Quizzes 1-5 due by 1/30 at 10 PM</strong>)</td>
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Exam 1: Tuesday 1/29 through Monday 2/4 in the Testing Center (Ch’s 1-5)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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<tbody>
<tr>
<td>1/31</td>
<td>Correlation</td>
<td>Ch. 6</td>
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<tr>
<td>2/5</td>
<td>Correlation &amp; Factors affecting correlation</td>
<td>Ch. 6</td>
</tr>
<tr>
<td>2/7</td>
<td>Introduction to linear regression</td>
<td>Ch. 7</td>
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<tr>
<td>2/12</td>
<td>Conceptual foundations of regression</td>
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<tr>
<td>2/14</td>
<td><strong>SPSS Demo of Regression</strong></td>
<td></td>
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<tr>
<td>2/21</td>
<td>Random Sampling &amp; Probability</td>
<td>Ch. 8</td>
</tr>
<tr>
<td>2/26</td>
<td>Binomial Distribution (<strong>SPSS #2 due in class</strong>)</td>
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</tr>
<tr>
<td>2/28</td>
<td>Hypothesis testing &amp; Exam Review</td>
<td>Ch. 10</td>
</tr>
<tr>
<td>3/5</td>
<td>Hypothesis testing (<strong>Quizzes 6-10 due by 3/6 at 10 PM</strong>)</td>
<td>Ch. 10</td>
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</tbody>
</table>

Exam 2: Tuesday 3/5 through Monday 3/11 in the Testing Center (Ch’s 6-10)

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Reading</th>
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</thead>
<tbody>
<tr>
<td>3/7</td>
<td>Power</td>
<td>Ch. 11</td>
</tr>
<tr>
<td>3/12</td>
<td>Sampling distributions &amp; Critical regions and sampling distributions</td>
<td>Ch. 11 &amp;12</td>
</tr>
<tr>
<td>3/14</td>
<td>Review of Power</td>
<td>Ch. 12</td>
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<tr>
<td>3/19</td>
<td>Introduction to the t-test</td>
<td>Ch. 12 &amp; 13</td>
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<tr>
<td>3/21</td>
<td>Student’s t-test for a correlation</td>
<td>Ch. 13</td>
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<tr>
<td>3/26</td>
<td>Student’s t-test for correlated groups</td>
<td>Ch. 14</td>
</tr>
<tr>
<td>3/28</td>
<td><strong>SPSS for t-tests</strong></td>
<td>Ch. 14</td>
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<tr>
<td>4/2</td>
<td>Independent t-test and intro. to the ANOVA</td>
<td>Ch. 14 &amp; 15</td>
</tr>
<tr>
<td>4/4</td>
<td>ANOVA and follow-ups (<strong>SPSS #3 due in class</strong>)</td>
<td>Ch. 15</td>
</tr>
<tr>
<td>4/9</td>
<td>Post-hocs &amp; Chi Square and <strong>SPSS for ANOVA</strong></td>
<td>Ch. 15 &amp; 17</td>
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<tr>
<td>4/16</td>
<td>Ross out of town no class</td>
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<tr>
<td>4/16</td>
<td>Exam Review (<strong>SPSS #4 due in class &amp; Quizzes 11-15 due by 4/17 at 10 PM</strong>)</td>
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Exam 3 – will run during Finals Week in the Testing Center (April 19th – 24th: Ch’s 11-15 & Chi Square)