Psychology 3101: Research Methods and Data Analysis in Psychology   Fall, 2011

Prof. Charles (Chick) Judd
Office: D343C Muenzinger
Office Hours: Mon. 10:00 – 12:00
email: charles.judd@colorado.edu

Teaching Assistants:

Jason Gwinn       Office: E338 Muenzinger
                   jason.gwinn@colorado.edu
                   Office hours: Wed. 9:30 – 10:30

Mark Travers      Office: D343D Muenzinger
                   mark.travers@colorado.edu
                   Office hours: Thurs. 1:00 – 3:00

Katie Wolsiefer   Office: E314 Muenzinger
                   katherine.wolsiefer@colorado.edu
                   Office hours: Mon. 3:00 – 5:00

Lectures:  11:00 – 12:15 Tues. and Thurs.   Muenzinger E0046

Labs: L110  9:00 – 10:50 Thurs.  Muenzinger D346  Katie Wolsiefer
          L111  1:00 – 2:50 Wed.   Muenzinger D346  Jason Gwinn
          L112  9:00 – 10:50 Tues. Muenzinger D346  Mark Travers
          L113  3:00 – 4:50 Mon.  Muenzinger D346  Mark Travers
          L114  1:00 – 2:50 Mon.  Muenzinger D346  Katie Wolsiefer

General purposes of the course:
1) To facilitate critical evaluations of claims to truth and causality made by psychologists and other scientists.
2) To facilitate comprehension of statistical information presented in journals and books in psychology, and other types of scientific literature.
3) To provide an introduction to the conducting and reporting of psychological research.
4) To provide an introduction to computerized data analysis and interpretation.

Course structure:
This course is structured to give you a variety of opportunities to learn the material at a level that will enable you to be successful both in the course and in the application of what you learn to other academic and non-academic pursuits. You are expected to fully engage in all of these opportunities. First, we will introduce you to new material and review old material in biweekly lectures featuring relevant examples. Second, to support your understanding of material provided in lectures, you will be asked to read assigned chapters in the textbook. Exams will primarily cover lecture material, but reading the text is essential. Third, weekly labs held by your TA will offer you the chance to apply lecture concepts to data analysis, to ask homework questions and clarify any confusion you may have, and learn how to use statistical software to do data analysis. Attendance in lab is
mandatory. Finally, your instructor and your teaching assistants will each have weekly office hours which we encourage you to attend if you want extra instruction.

**Teaching philosophy:**
1) Attendance and attention are key. The most efficient and effective way to learn the required material is for you to attend every lecture, and to pay attention. Please arrive on time, limit unnecessary conversation, and refrain from using cell phones, checking email, or browsing the web. Respect your own time and education, and those of your peers.
2) All students learn in their own way and at their own pace. Similarly, students come into any class with a wide range of previous knowledge. It is our goal to provide a structured but flexible learning environment that matches challenge with skill.
3) Questions are strongly encouraged. Even if your question is, “Would you say that again in another way?”, please don’t hesitate to ask. If you don’t understand something, it is likely others are confused as well.
4) Although this is not a course in mathematics, we do assume basic algebra skills. On the first day of class, you will be given a short basic algebra test. Those not performing well on this test should consult with the instructor and/or teaching assistants and may want to consider dropping the class and taking an algebra refreshment course before re-enrolling.

**Course evaluation:**
1) Laboratory grade (30% of final grade): Your lab grade will consist of scores on weekly homework assignments and quizzes. TAs will assign and collect homework assignments every week except the week following an exam. Short quizzes will take place every week in lab, and will evaluate material from the last two lectures. Please note, attendance in lab is mandatory and under no circumstance will make-up quizzes be offered. The two lowest quiz grades will be dropped.
2) Two midterm exams (20% of final grade each). The first exam will be in class on October 6th; the second will be on November 10th. Although the midterm exams are not technically cumulative, you will be expected to have a thorough understanding of all material learned to date.
3) A cumulative final exam (30% of final grade) to be held on December 12th, covering the entire semester.

**Exam policies:**
Grading: Letter grades on exams will be assigned using percentage scores relative to the average scores of the two individuals earning the most points in the class on any given exam. Anyone earning 90% of the points earned by those top two scorers will receive an A- or above; anyone earning 80% of the points earned by those top two scorers will receive a B- or above; and so forth.

Missing an exam: Except for major life events, make-up exams will not be offered if you miss an exam. In general, illness not requiring a doctor’s visit is not an acceptable excuse. If you need to miss a scheduled exam due to religious obligations, we will make arrangements for you to make up the exam.

Accommodations for students with documented disabilities: If you qualify for accommodations because of a disability please submit a letter to us from Disability Services
(www.colorado.edu/disabilityservices) in a timely manner so that your needs may be addressed.

**Course wiki**
We are using a course wiki to post lectures, lab instructions and assignments, etc. To get to the course wiki go to the following URL: [http://psych.colorado.edu/wiki/](http://psych.colorado.edu/wiki/). Once there you will need to log in (lower right corner of web page). Your username is 3101judd and your password is stats. You can then click on the specific wiki for our course.

**Required readings:**
The basic text for the course is:
During the first few weeks, there will also be required readings from:

**Statistical software:**
For this class, we will be using the program R to conduct data analysis. This program is available to download for free for both PCs and Macs. You will receive instruction on how to use R in lab. The program will be installed on the computers you will use in lab, but you are welcome to install it on your personal computer as well. To download R, go to [http://www.r-project.org/](http://www.r-project.org/). In general, R requires you to type in commands at a prompt to run statistical tests.

**Course Outline:**

<table>
<thead>
<tr>
<th>Date Range</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug. 23</td>
<td>Introduction</td>
</tr>
<tr>
<td>Aug. 25 – Sept. 1</td>
<td>Naive vs. scientific approaches to understanding behavior. Criteria for evaluating research. Validity and reliability: How do we measure what we want to measure? Research design: What designs are good for what purposes?</td>
</tr>
<tr>
<td>Readings:</td>
<td>Hoyle, Harris, &amp; Judd: Chapters 1-2</td>
</tr>
<tr>
<td>Sept. 6 – Sept. 15</td>
<td>Descriptive statistics: Frequency distributions, measures of central tendency, variability, and relative location.</td>
</tr>
<tr>
<td>Readings:</td>
<td>Hoyle, Harris, &amp; Judd: Chapter 17</td>
</tr>
<tr>
<td></td>
<td>Howell: Chapters 1-5</td>
</tr>
<tr>
<td>Sept. 20 – Oct. 4</td>
<td>The logic of inferential statistics: Probability, sampling distributions, confidence intervals; Single sample t-test.</td>
</tr>
</tbody>
</table>
Readings: Howell: Chapters 6 - 8, 12

Oct. 6 First Midterm Exam

Oct. 11 – Oct. 18 Inferences about the difference between two means; Related and independent samples

Readings: Howell: Chapters 13 - 14

Oct. 20 – Oct. 25 Statistical Power Howell: Chapter 15

Oct. 27 – Nov. 8 Analysis of Variance

Readings: Howell Chapters 16 - 17

Nov. 10 Second Midterm Exam

Nov. 15 – Dec. 1 Simple Regression and Correlation

Readings: Howell Chapters 9 - 10

Dec. 6 – Dec. 8 Contingency tables; Chi-Square

Readings: Howell Chapter 19

Dec. 12 Final Exam (4:30 - 7:00 p.m.)

**Honor Code:**

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at http://www.colorado.edu/policies/honor.html http://www.colorado.edu/academics/honorcode/