Psychology 210: Psychological Statistics

Fall Semester, 2017
Tuesday and Thursday, 10:00 – 11:20. Maxey 207
Lab Tuesdays, 7:30 - 8:30 p.m. Maxey Computer Lab

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Telephone: 527-5217
Home: 240-8178 (before 11:00 please)
E-mail: herbrawt@whitman.edu (often the best way to reach me)
Office hours: Monday, Wednesday 1:00-2:00; and by appointment

Class web page: http://people.whitman.edu/~herbrawt/classes/210/psych210.html

Course Materials
Required Text:

The text is available at the Whitman bookstore. On some days you’ll need to bring it to class (or find a buddy who does), as the various tables will be needed for completing problems and exercises. On some days (consult the schedule later in this syllabus) the cardboard foldout with a subset of the tables will be adequate. Exams are partly open-book (but not collaborative), so you’ll want to be absolutely certain you have your own textbook with you on exam day.

Calculator: You’ll also want to have a calculator to bring to class and exams. It need not be fancy, but should be capable of handling exponents, square roots, and factorials. If you don’t already own one, the bookstore carries several nice calculators, in varying levels of impressiveness.

Course Overview
This course is intended to provide an introduction to data analysis, probability, and statistical methods as they are commonly used in psychology. Understanding and being able to perform these analyses is an important part of grasping how psychology is done, as statistics constitute some of the most powerful tools available to psychologists. Unfortunately, statistical analyses are also some of the most constraining and misused tools available to psychologists. It is my hope that students will gain not only the ability to properly calculate and interpret statistics, but will also gain an appreciation for why these methods are used, and what their various strengths and weaknesses are.
An Important Note: Psych 210 is a class that rewards tenacity. The most successful students are invariably those who stay on top of homework and lab assignments. Not only do these make up a sizable chunk of your grade, but completing them will help you perform better on exams. While it sometimes requires a serious effort, you will be well-served by completing readings and assignments in a timely and conscientious fashion. Even more than most classes, a sustained effort is immensely preferable to concentrated cramming sessions before exams.

Grading and Assignments
Your grade in Psychology 210 will be based on the following assignments:
4 exams – 80% (20% each)
Numerous homework assignments – 20% total

Exam format: Exams will be part open-book and part closed-book. You will begin with the closed book portion; once you have finished, you can turn in that section and begin the open book portion. Once the closed-book portion has been turned in, you will not be able to go back to it. The closed-book items will be mostly theoretical, relating to the basic logic of statistical analysis, and will not require calculations. The open-book items will be numerical problems, many of which will require computation. You will be allowed to use calculators, notes and textbooks for these items, but please show all steps in the calculation of your answer so that I can confirm the proper steps were followed, and so that partial credit can be given in the case of minor procedural or computational errors.

Weekly Labs (optional): The optional lab component of the course will meet every week in the Maxey hall computer lab. These sessions will show you how to take advantage of computers’ willingness to slog through millions of monotonous calculations without the smallest complaint. Specifically, we will learn how to analyze data sets using SPSS, one of the most powerful statistical packages available (in fact, fluency with SPSS is something you might consider adding to your resume after the semester), hopefully eliminating the threats to sanity and leisure time once posed by large data sets. Most labs will include a small assignment that needs to be completed and turned in for grading. You should be able to finish them during the lab period, but will have one week to turn them in (i.e., by the beginning of the next lab session).

Homework Assignments: Homework will be assigned on a regular basis (about 1 per week), and involve completing problems by hand. For hand calculations, you must show your work so that the sources of procedural and mathematical errors can be pinpointed (and also because I want to know you didn’t just use the automated function on your fancy calculator). For full credit, you’ll need to turn them in at the beginning of the next class period. I’ll also accept them up to one week late for half credit.
Extra-credit opportunities: Extra credit may be earned in three ways:

1) By correcting your own exam. You may turn in corrections to the open book portion of your exam for up to 1 week, and half the difference between your original exam and the corrected version will be added to your score. Corrections are not available for the closed book portion (sorry).

2) By bringing me examples of “statistics abuse” from the popular media. This could be a misleading use of probability, an incorrectly calculated or interpreted statistic, a poorly represented graph or chart... anything relevant to the class. Bring me the original error (clipping from print media, video clip, etc), along with a short paragraph describing why it is an inappropriate use of statistics, and how you would correct that particular quantitative sin.

3) By participating in experiments conducted by individuals affiliated with the Whitman College Psychology Department (faculty or senior thesis research). After participating, write a short description of the experiment, and a summary of how you would choose to analyze the data (based on what we've covered in class). Thus, you may want to ask the researcher some questions during the post-experiment debriefing (include the name of the researcher, so that I can be sure which experiment you're describing).

Grading Scale: Grades will be assigned based on the percentage of all possible points earned (see above for the relative contributions of each assignment). Below are the overall performance ranges that result in various letter grades.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
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<tbody>
<tr>
<td>A</td>
<td>93-100%</td>
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<tr>
<td>A-</td>
<td>90-92%</td>
</tr>
<tr>
<td>B+</td>
<td>87-89%</td>
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<tr>
<td>B</td>
<td>83-86%</td>
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<tr>
<td>B-</td>
<td>80-82%</td>
</tr>
<tr>
<td>C+</td>
<td>77-79%</td>
</tr>
<tr>
<td>C</td>
<td>73-76%</td>
</tr>
<tr>
<td>C-</td>
<td>70-72%</td>
</tr>
<tr>
<td>D+</td>
<td>67-69%</td>
</tr>
<tr>
<td>D</td>
<td>63-66%</td>
</tr>
<tr>
<td>D-</td>
<td>60-62%</td>
</tr>
<tr>
<td>F</td>
<td>Below 60%</td>
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</tbody>
</table>

The top 10 reasons to become a statistician:

10. In statistics, deviation is expected.
9. It’s your lifelong ambition to be wrong 5% of the time.
8. After two hours at a statistics conference, you feel like James Dean.
7. Nobody else will want your job.
5. Finally understand what snoopy baseball fans mean by “on base percentage”
4. Gain a .002% edge at Las Vegas blackjack table, walk away with crisp new $5 bill.
3. A bulging middle and skinny ends are considered “normal”.
2. Can claim that 3 Ds out of 5 classes is “not significant”
1. Accounting would be too exciting.

And the number one reason to be a statistician…
1. Accounting would be too exciting.
Some important class policies you’ll want to know about:

Late Assignments:

I like to think I’m a reasonable fellow, so I’m not against granting deadline extensions from time to time. Here are my guidelines:

1. Extension requests made 1 week (or more) before the due date are almost certain to be granted, without penalty, provided that
   a) the conflict is a reasonable and legitimate one, and
   b) you haven’t requested an extension for every assignment all semester long. After all, Wally didn’t just fall off the conveyor belt yesterday. The conveyor belt thing happened years ago.
   In short, make your requests as early as possible, but don’t abuse my generosity.

2. Within one week (7 calendar days) of the deadline, extensions may still be granted, subject to the following (no exceptions).
   a) If supported by the Dean of Students, there will be no late penalty.
   b) If not, there will be a penalty of 5% per day (e.g., a score of 96% would become a 91%, then an 86% and so on for each day late).

In other words, plan your semester early. Identify your busy weeks early on and get the “free” version of the extension, rather than losing 5% or more. If you’re unexpectedly abducted by howler monkeys, the Dean and I will understand. If you simply forgot you had three papers due tomorrow, we’re less forgiving.

Attendance:

If you have to miss class because of some commitment that can’t be missed, that’s generally fine. Check with me to make sure you didn’t miss any important announcements, and collect any handouts. Re-read the assigned chapters, and ask me about any questions you might have. I also recommend borrowing class notes from that attractive classmate you’ve been dying to meet. Here’s your opener: “Herbranson doesn’t have lecture notes to give out. Can I borrow yours?”. From there you’re on your own. Good luck.
Tentative Schedule of Topics and Assignments:

Readings are from the Bluman text, and should be completed prior to the class meeting for each date listed. Lab topics are also listed here, for those enrolled in the optional lab section (Psyc 210L)

** Bring your textbook to class
* Bring your stats tables (or your textbook) to class

<table>
<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Lab</th>
<th>Chapter</th>
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</thead>
<tbody>
<tr>
<td>T, 8-29</td>
<td>First day, Introduction to stats</td>
<td>No Lab</td>
<td></td>
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<tr>
<td>Th, 8-31</td>
<td>Measuring psychological variables</td>
<td></td>
<td>Chapter 1</td>
</tr>
<tr>
<td>T, 9-5</td>
<td>Exploratory data analysis &amp; graphs</td>
<td></td>
<td>Chapter 2</td>
</tr>
<tr>
<td>Th, 9-7</td>
<td>Descriptive statistics</td>
<td></td>
<td>Chapter 3</td>
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<tr>
<td>T, 9-12</td>
<td>Basic rules of probability</td>
<td></td>
<td>Chapter 4</td>
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<tr>
<td>Th, 9-14</td>
<td>SPSS and other windows programs</td>
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<td>Chapter 5</td>
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<tr>
<td>T, 9-19</td>
<td>Catch-up and prepare for exam</td>
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<td></td>
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<tr>
<td>Th, 9-21**</td>
<td><strong>Exam #1</strong></td>
<td></td>
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<tr>
<td>T, 9-26*</td>
<td>The normal distribution</td>
<td>Binomial tests</td>
<td>Chapter 6</td>
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<tr>
<td>Th, 9-28*</td>
<td>Confidence intervals</td>
<td></td>
<td>Chapter 7.1-7.2</td>
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<tr>
<td>T, 10-3*</td>
<td>Single sample t-tests</td>
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<td>Chapter 8.1-8.3</td>
</tr>
<tr>
<td>Th, 10-5</td>
<td>Confidence intervals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T, 10-10*</td>
<td>Paired samples t-tests</td>
<td>Paired and independent t-tests</td>
<td>Chapter 9.1-9.3</td>
</tr>
<tr>
<td>Th, 10-12</td>
<td>Independent samples t-tests</td>
<td></td>
<td>Review Ch. 9.2</td>
</tr>
<tr>
<td>T, 10-17*</td>
<td>Catch up and prepare for exam</td>
<td>No lab</td>
<td></td>
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<tr>
<td>Th, 10-19**</td>
<td><strong>Exam #2</strong></td>
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<td></td>
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<tr>
<td>T, 10-24*</td>
<td>Chi-square goodness of fit test</td>
<td>Chi-square tests</td>
<td>Chapter 11</td>
</tr>
<tr>
<td>Th, 10-26*</td>
<td>Chi-square test for independence</td>
<td></td>
<td>Review Ch. 11.2</td>
</tr>
<tr>
<td>T, 10-31**</td>
<td>Oneway ANOVA</td>
<td></td>
<td>Chapter 12</td>
</tr>
</tbody>
</table>
Lab               ANOVA
Th, 11-2** Post-hoc tests for ANOVA Review Ch. 12.2
T, 11-7** Two-way and factorial ANOVA Review Ch. 12.3
Lab               Factorial ANOVA
Th, 11-9** Catch up and prepare for exam

T, 11-14** Exam #3
Lab               No Lab
Th, 11-16 Correlation Chapter 10

11/18 – 11/26 Turkey-Centered Gluttony Break

T, 11-28 Regression Review Ch. 10.2
Lab               Correlation and regression
Th, 11-30 No Class Meeting

T, 12-4 Multiple Regression Review Ch. 10.4
Lab               Multiple regression
Th, 12-6 Catch up and prepare for final exam

Monday, 12-11** Exam #4 (Non-cumulative) 9:00-11:00 a.m.
Some not so commonly asked questions...

Q: I hate this! How do I withdraw?
A: Students may drop without record until October 11th. If you plan to do this, please do so as quickly as possible so that others may register. After that, students may withdraw until November 3rd, and doing so will leave a nifty “W” on your transcript (I think it’s for “Wally”, to help you remember me).

Q: Is attendance required?
A: No, but it is highly recommended. My official policy is that you are the one paying to go to class, so you may attend whenever you deem necessary. Keep in mind though, that you are responsible for any material presented in class. If you will be absent from class, it’s a good idea to borrow notes from somebody to ensure you don’t miss anything important. See the attendance policy on page 4.

Q: I think I’m going to have smallpox on several critical exam dates this semester. Can I schedule makeup exams?
A: Notify me as soon as you realize there will be a serious conflict. Makeup exams can be arranged only for legitimate and properly documented excuses (i.e., serious illnesses, natural disasters and the like, with a corresponding doctor’s note, CNN footage, subpoena, etc.) Note: The season finale of Survivor is not a legitimate excuse. If it’s that important I’ll help you obtain a copy and I promise not to spoil the big ending. Also see the late assignment policy on page 4.

Q: Dude, I bombed that first exam... What can I do?
A: Keep in mind that the remaining assignments (a full 80% of your grade) should provide a good opportunity to correct a rough start. Also see the extra credit opportunities on page 3.

Q: I have no idea what you were talking about last week…
A: Please feel free to ask questions during lectures, and let me know if I’m moving too quickly or am not explaining something clearly - It’s difficult for me to always know what you’re experiencing in class. I’m also glad to take some time at the beginning of class to clarify points from previous lectures or from the text.

Q: Do I really need to be here for the final during finals week?
A: Only if you want points for it.