Psychology 200
Statistical Methods in Psychology
Winter 2015

Instructor: Tracy Tomlinson, PhD
Office Hours: Online discussions M 7:30 – 8:30pm
Email: ttomlin1@umd.edu

Teaching Assistant Information
Teaching Assistant: Lizzie Sauber
Email: lizzie.sauber@gmail.com
Online Office Hour: Thursday 1:00 – 2:00pm

Teaching Assistant: Marina Chernikova
Email: mchernik1@gmail.com
Online Office Hour: Friday 12:00 – 1:00pm

Course Philosophy
Some of you will produce or use statistics in your life’s work and many of you will not. We all, however, are consumers and victims of statistics. We make choices under uncertainty on a daily basis, and statistics are often available to help us if we know how to interpret them. Moreover, other people will use statistics to make choices for us. For example, statistics often inform public policy decisions, medical advice and procedures, and recommendations for safety features on cars – the list is endless. And of course, statistics is at the core of psychological and behavioral research. In order to avoid common errors in human judgment and decision-making, to understand the basis for many public policy and other decisions that affect you, and to understand an important component of psychological research, you must have a basic foundation in statistical thinking and practice.

Course learning objectives. The objectives of this course are to provide you with:

1. A basic foundation in statistical thinking and practice.
2. The necessary background for more advanced courses in statistics, experimental design, or research methods.
3. Improved critical reasoning skills

Upon successfully completing this course, you will have a good understanding of descriptive statistics, as well as a basic, theoretically grounded understanding of probability theory and the principles of research design and inferential statistics. You will be able to summarize data, do simple statistical tests, better understand statistical aspects of news reports, and be prepared for more advanced courses if you want to take them. In addition, you will understand some of the errors that people usually make in reasoning about uncertainty and be in a position to avoid them.
Prior knowledge and course level. We will assume that you have an introductory-level background in psychology, knowledge of high-school algebra, and no prior training in logic. We will focus on concepts and theory rather than on tedious calculations. You still will have to do calculations in order to implement and understand the concepts. We expect you to gain a good understanding of statistics and statistical thinking, not simply learn how to plug numbers into formulas.

How to Study

This is not a cookbook course. Simple memorization and merely learning how to plug numbers into formulas will not get you very far in this course. Lectures, discussion, homework, and exams all will involve a mix of formulas, numerical calculations, and conceptual thinking. Treat this course as a combination of mathematics, psychology, and logic. You must keep up with the material on a day-to-day basis and you must do the assigned homework. You will benefit from doing additional problems at the ends of the chapters.

The only way to get a handle on this material is to work with it, which means actively studying on a regular basis. Skim or read the assigned material before listening to lecture in order to get the gist of what we will cover. Read it again after lecture, this time more carefully and work with it actively, not passively. Do problems, complete assigned activities, and test yourself as you go along. Small study groups are a good idea for some people. It is fine to study together, but test yourself privately to be sure you understand the material. Regularly go back to material covered earlier and work a few problems. We will assign homework regularly for you to work through the material as you learn it. Always ask questions if you are confused about any concept.

Ask questions. You will learn much better if you think actively about the material. If you don’t understand something, ask right away in class. Almost certainly, someone else will have the same question.

The material is cumulative. Do not let yourself get behind, as each topic builds on the previous one.

Course Mechanics and Rules

Lecture Time. Lecture sections will be entirely online. This time is meant for you to engage with the material and not just passively listen. To this extent, there will be interactive quizzes sporadically throughout each lecture for you to work with the material. These quizzes will be the basis for your participation grade. It is tempting to look at other things online, such as e-mail or Facebook, when you are listening to the lecture online, please try not to divert attention to other sources as you may miss important information.
Lab time. Lab sections will function similarly to lecture time. The lab time serves to present information from lecture from a different viewpoint. The lab time is mostly spent working through different examples to master the material. Some of these will require your participation online and some you may observe. This time may also be spent teaching you about necessary computer programs or skills for the course.

Computers and calculators: You may use calculators when doing your homework and on the exams. You must also show your work by writing the equations and showing how you inserted the data. As an online course, all of the assigned homework and exams will require you to use a computer. However, you should not use the Internet for any homework or exam help. A calculator will also help you follow along with example problems in lecture and lab so we encourage you to have a calculator handy when watching the lecture and lab modules online.

Professional Conduct: Profession conduct is expected in this course, as we want you to learn and practice this conduct for your future careers. Additionally, in being professional you will be showing respect to the teachers as well as to your fellow students. You are expected to be respectful and courteous with your instructor and TA’s at all times. This entails at a minimum: 1) Not using class time to check social networking websites, comics, instant messaging services, or other off-task, on-line behavior, 2) Not using class time to read or send text messages on your phone, and 3) Professional conduct when writing emails or posting anything on Canvas. Think of this last point as an opportunity to practice the kind of writing you will use when inquiring about job opportunities, communicating with your supervisor, and so forth.

Homework Etiquette: Professional conduct is necessary during the assessment portions of this class as well. Show your work. You may use Excel to check your answers, but you may not let Excel do all the work for you. Make sure to read and carefully follow all homework instructions. You are expected to work alone on homework. You are also expected to maintain your homework at all times and ensure that no other students view your homework as that is considered collaboration. If you have questions or concerns, speak to your professor and/or one of the TA’s, or make use of the tutoring options that are available and listed below in the “Tutoring Options” section if you are able to be on campus.

Exam Etiquette: During exams, students will have a set amount of time in which to complete the exam. For all exams, students may use the course textbook, their personal notes from class, and a calculator. No talking or collaboration with other students is allowed on exams, nor are any Internet searches allowed during the exam.

Grades

Homework (38%). Homework will consist of an online assignment through Aplia. You will have a homework assignment due almost every class.
Homework is due on the days indicated in the syllabus by 11:00am. We do not accept late homework. You must turn in all homework either early or on time to receive any credit. This is similar to you being on time for work – you often get penalized (explicitly or implicitly) for showing up late to work. If you have a valid, University sanctioned excuse (see later in the syllabus for more detail on this) to turn in a homework assignment late, you may e-mail the documentation to us and we will evaluate this exception. This excuse must be submitted prior to the homework deadline.

If you disagree with the grade you receive on your homework, you will have one week to dispute it (see below for re-grading policies), after which time we assume you agree to the grading and no discussion of the grade will be had.

Exams (46%). There will be two exams during the course (15% of your final grade each) and a final exam at the end of the course (16% of your final grade). There will be review slides posted prior to each exam with example questions for you to work through. These slides will contain information on the format of the exam, topics that might be covered on the exam, and practice problems. There will also be discussion modules for you to post any questions you may have while studying. For all exams, students may use the course textbook, their personal notes from class, and a calculator. The exams will be a combination of solving and interpreting statistics questions. Notes and calculators are allowed, but no collaboration and no Internet searches are allowed.

Exams will be due 12 hours after the last homework for that exam. On exam days the exam will be due 12 hours after the homework so it will be due by 11:00pm. This means that the exam must be completed by 11:00pm.

Projects: Critiquing Statistics (10%). Each student will submit one short paper critiquing a recent news article that uses statistics. In this paper, students will review a recent (since the beginning of the semester) news article that directly uses or implies a statistic discussed in class. Students will: a) briefly summarize the article, b) discuss the statistics used or implied in the article, c) discuss what the article did well, d) discuss what the article did not do well, and e) discuss how the student would report the findings differently, and why/why not. Additional information regarding the expected format for this project is provided on Canvas along with example papers. You will be given more details on how to submit these writings on Canvas in the final paper guidelines.

The paper is due on the day and time indicated in the syllabus. We do not accept late papers. You must turn in your paper either early or on time to receive any credit. If you have a valid, University sanctioned excuse (see later in the syllabus for more detail on this) to turn in the paper late, you may e-mail the documentation to us and we will evaluate this exception. This excuse must be submitted prior to the paper deadline. You are expected to work alone on the paper unless approved by the instructor. You are also expected to maintain your paper at all times and ensure that no other students view your paper as that is considered collaboration. If you have questions or concerns, speak to your professor and/or one of the TA’s.
If you disagree with the grade you receive on your paper, you will have one week to dispute it (see below for re-grading policies), after which time we assume you agree to the grading and no discussion of the grade will be had.

**In-Class Activities (6%).** There will be activities/assignments throughout the semester in lecture and/or lab. These are interactive quizzes that will appear sporadically throughout the lecture and/or lab discussion modules online. These will occur neither consistently at the beginning nor consistently at the end of the class and may be at multiple times in the lecture. Participation, not accuracy, is graded, though you will need to get the activity correct before being able to move forward with your lecture or lab discussion. If you miss an activity for an excused absence you will still be awarded the participation points when you provide valid documentation. This documentation should be presented prior to missing the class or no later than the next class if an emergency. You also receive one “freebie” such that you can have full credit for participation if you do all class participations activities and will still get full credit if you miss one participation mark for unexcused absences.

Lecture and lab video participation is due on the days indicated in the syllabus by 11:00pm.

You will also have practice homework problems on Canvas posted for each homework assignment. These problems will be graded for completion and are to help you prepare for your exams as these problems will help you learn the format in which the exam will be (Canvas). Completion of the homework practice problems will count towards your participation grade.

**Extra Credit.** There are two extra credit opportunities in this class for a total of 3 extra credit points: 1) SONA systems and 2) Online surveys about this course. You may earn a maximum of 2 extra credit points by participating in psychology studies through the psychology SONA systems. You may apply these credits towards this class for extra credit. Each credit is equivalent to one hour of participation in a study. These extra credit points will be credited at the end of the semester. To logon and sign up for studies go to http://umpsychology.sona-systems.com/. However, there is no guarantee that you may earn 2 full credits, as research during the summer is limited, so it is highly recommended that you try to fulfill this extra credit as soon as you can. You may also earn a maximum of 1 extra credit points by participating in three online surveys regarding this course and statistical material. There will be one survey at the beginning of the semester, one in the middle, and one at the end. We will provide you with the survey links as they become available throughout the semester. All of these credits (SONA and surveys) will be incorporated into your final grade by increasing your final percentage by one half percentage for each credit earned. **Thus, a 1.5% increase in your final grade from extra credit is possible if you earn all the extra credit points.**

**Grading.** The class has grading TA’s who do and handle all of the homework, exam, and final paper grading. If you have a question about a grade, talk to your TA first. Grades for homework and exams will be posted on Canvas shortly after the assignments are graded. We anticipate a weekly turnaround on grading, although it may at times be shorter or longer.
you have a grading question about any specific assignment, talk to the TA immediately. You will have one week after receiving a grade to dispute it. At that point, it will be assumed that you agree with the grade you received. This grading policy also applies to the grades that you receive for in-class activities. Please note that having questions you may have about how an assignment was graded and disputing a grade are separate concepts and processes. Thus, your lab TA can address questions you may have about the grading of an assignment, but grades disputes should be handled as outlined in the Re-Grading section below. Your course grade will be converted to a letter grade as dictated by the University. The grading rules are precise and generous and therefore they will be followed without exception and with no rounding.

Your course grade will be calculated as follows:

\[ \text{Grade} = 0.38 \times \text{Homework} + 0.10 \times \text{FinalPaper} + 0.15 \times \text{Exam1} + 0.15 \times \text{Exam2} + 0.16 \times \text{Exam3} + 0.06 \times \text{InClassActivities} + \text{EC} \]

Using the output from the above equation, you will be assigned a letter grade as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>A+</td>
<td>96 % – 100 %</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>93 % – 95.99 %</td>
<td></td>
</tr>
<tr>
<td>A–</td>
<td>90 % – 92.99 %</td>
<td></td>
</tr>
<tr>
<td>B+</td>
<td>86 % – 89.99 %</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>83 % – 85.99 %</td>
<td></td>
</tr>
<tr>
<td>B–</td>
<td>80 % – 82.99 %</td>
<td></td>
</tr>
<tr>
<td>C+</td>
<td>76 % – 79.99 %</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>73 % – 75.99 %</td>
<td></td>
</tr>
<tr>
<td>C–</td>
<td>70 % – 72.99 %</td>
<td></td>
</tr>
<tr>
<td>D+</td>
<td>66 % – 69.99 %</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>63 % – 65.99 %</td>
<td></td>
</tr>
<tr>
<td>D–</td>
<td>60 % – 62.99 %</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>&lt; 60 %</td>
<td></td>
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</tbody>
</table>

Grade Disputes and Re-Grading: Occasionally, students are unhappy with a grade they have received. If you feel that you want your homework, exam, or final paper re-graded, you must present, in writing, your request for a re-grade. Your written request must include a valid reason to merit your request for a re-grade. Your reasons for why you should get points back must be substantiated by the class textbook, class readings or class notes. It must also be evident in your written request for a re-grade that you have thoroughly read the Aplia explanations and/or Canvas discussions and have evaluated your assignment in light of the answer explanations provided.

1. You must submit your request for a re-grade within one week of the day the assignment is returned to the class. If your documentation and argument are sufficient, the assignment will then be re-graded by a different grader. By requesting a re-grade, you agree that the new grade will be the permanent grade. Please note that your re-grade may be higher OR lower than your original grade. Assignments will be re-graded only once.

Office hours: As an online course we do not have set office hours. We are available to talk via e-mail or potentially Skype by appointment. We may be able to meet with you in person if you are on campus and set up an appointment. We will also be available via the online
discussion modules that will be set up in Canvas, please make use of these discussions by posting any (non-personal) questions and respond to other students questions as well.

**Class Web Page.** We will use the Canvas Academic Suite available at https://elms.umd.edu for this course. Log in there and follow the links to PSYC 200. We will make this syllabus and syllabus updates available there. In addition, we will have all lecture and lab slides posted here. This is also were you will have grades posted and be able to participate in online discussions about the course material.

**Tutoring Options.** For those of you who would like additional help mastering this material, the math department has tutoring for STAT 100 and students may go there for free tutoring. OMSE also provides tutoring. And, you are of course always encouraged to come to the instructor or your TA with any questions or difficulties that you are experiencing.

**Evaluations:** Your feedback about this course is very important to me and therefore we do several forms of evaluations throughout the semester. One important campus-wide evaluation is the online evaluation at the end of the semester. Students can go directly to the website (www.courseevalum.umd.edu) to complete their evaluations prior to the start of exam week.

**Textbooks and Readings and Required Material for the Course**


**Required.** Aplia software access code. The course key can be found in the Files section of Canvas in the Aplia Winter Term pdf.

**Readings.** Additional readings may be assigned to supplement the Pagano text and will be available on Canvas.

**Attendance policies**

**All Absences:** It is the policy of the University to excuse student absences resulting from (a) illness of the student (or a dependent as defined by Board of Regents policy on family and medical leave); (b) religious observance (where the nature of the observance prevents the student from being present during the class period); (c) participation in university activities at the request of University authorities; and (d) compelling circumstance beyond the student's control. Students claiming excused absence must apply in writing and furnish documentary evidence that the absence resulted from one of these causes. Students are responsible for learning about any material or announcements missed and for initiating a process to make up missed work. Unless otherwise approved by the instructor, any work due on the missed day(s) must be submitted by the first class meeting after the absence. Documentation must be provided no later than the next class as well.

**Absences due to illness or injury:** University of Maryland policy dictates that a single absence during the semester due to illness or injury will be excused with a signed and dated letter attesting to the date of the health problem and acknowledging that the information is
true and correct and that providing false information is prohibited under the Code of Student Conduct. The letter must be submitted by the first class meeting after the absence, and only one such letter is allowed in the class during the semester. This policy does not apply when the absence occurs on a major graded event (i.e., exam, paper due date) or is for more than a single class. Multiple absences, and those occurring on a major scheduled grading event, require written documentation of the illness or injury from the Health Center or an outside health care provider. The signed and dated letter must verify the dates of treatment and the time period during which you were unable to meet academic responsibilities. The letter must be provided on the first class meeting after the multiple absences. Accommodations for such absences will be arranged on a case-by-case basis.

Scheduled Absences: When the absence is due to a major scheduled event (e.g., religious observances, jury duty), the student must provide written notice of the absence by the first week of the semester (or as soon as possible thereafter if the student learns about the scheduled absence after the second week) in order to have the absence excused. If an exam is given during this planned absence, this written notice must include a request for a make-up exam.

Participation points: If you miss a class for an excused and documented reason you will receive participation points for that day if you provide your documentation prior to missing the class or by the next class you attend.

Final paper points: If you fail to turn in your final paper on time due to an excused and documented reason you will be provided 24-72 hours to turn in your paper. Your time extension will be considered on a case to case basis depending on the nature of the excuse assuming that you also provide your documentation when turning in your final paper.

Missing Exams: If some extreme event or religious observance is going to require you to miss an exam, you must talk with me about missing the exam at least one week before the exam date. Claims of physical illness or distress must be accompanied by documentation from a physician or mental health practitioner. Claims of death in the family must be accompanied by a funeral announcement (or analogous documentation).

The make-up assessment will be at a time and place mutually agreeable to the instructor and student, will cover only the material for which the student was originally responsible, will be at a comparable level of difficulty with the original assessment, and will be given within a time limit that retains the currency of the material.

Special Accommodations: Appropriate special arrangements will be made for students with documented disabilities. Students with documented disabilities should report them to the instructor immediately so that proper arrangements can be made.

University Closure: As this is an online course, we will be unaffected by any University closures and classes and deadlines will resume as normal, unless otherwise indicated by the instructor.
Academic Integrity and Accommodations

Academic Integrity: The University is one of a small number of universities with a student-administered Code of Academic Integrity and an Honor Pledge. The Code prohibits students from cheating on exams and assignments. Cheating includes, but is not limited to, plagiarizing, copying another student’s answers, bringing cheat notes in for the exam, etc. You will be asked to write the following signed statement on each examination or assignment: I pledge on my honor that I have not given or received any unauthorized assistance on this assignment/examination.

Academic Dishonesty: All students are expected to abide by the University's Code of Academic Integrity which is printed in the Undergraduate Catalog (also see http://www.studenthonor council.umd.edu/code.html). Academic dishonesty (cheating, fabrication, facilitating academic dishonesty, and plagiarism) will not be tolerated. The definitions for these offenses are printed in the Code of Academic Integrity, and I urge you to familiarize yourselves with them. Academic dishonesty is a serious offense and will be dealt with according to University policy.

The Code of Academic Integrity is reprinted in full in the Undergraduate catalog for further information, to report Academic Dishonesty, or to inquire about serving on the Honor Council call 301-314-8204. http://www.testudo.umd.edu/soc/dishonesty.html

Note that ignorance of the student conduct policy is not an accepted excuse for committing academic dishonesty. Issues relating to academic dishonesty will be sent to the Office of Student Conduct.

Please read the Ethics of Scholarship in Psychology handout that is available on Canvas.
<table>
<thead>
<tr>
<th>Date</th>
<th>Topic (Due by 11:00pm)</th>
<th>Reading</th>
<th>Assignment (Due by 11:00am)</th>
<th>Lab video (Due by 11:00pm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day 1</td>
<td>Knowledge: Experiments &amp; Studies, Sampling, Measurement</td>
<td>Section 1.1 – 1.9, Chapter 2</td>
<td>Math Review, Terminology, Levels of Measurement</td>
<td></td>
</tr>
<tr>
<td>01/05</td>
<td>Describing Data: Central Tendency, Variability</td>
<td>Chapter 3 &amp; 4, C&amp;S Describing Data, G&amp;S Spread</td>
<td>Homework 1 due, Contract due</td>
<td>Real Limits, Raw Frequency, Grouped Frequency, Central Tendency &amp; Skew Variability</td>
</tr>
<tr>
<td>Day 2</td>
<td>Standard Scores, Lying with Statistics, Correlation, Correlation Assumptions</td>
<td>Section 5.3, Chapter 6</td>
<td>Homework 2 due</td>
<td>Z-score Calculations, Pearson’s r Correlation, Correlation Assumptions, Spearman’s rho</td>
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<tr>
<td>01/06</td>
<td>Lying with Statistics, Regression Concept &amp; Calculation, Multiple Regression, Regression Assumptions</td>
<td>Chapter 7</td>
<td>Homework 3 due</td>
<td>Regression Concepts, Regression Computation &amp; Assumptions, Multiple Regression</td>
</tr>
<tr>
<td>01/07</td>
<td>Bayes, Normal Distribution Introduction, Normal Distribution Probabilities</td>
<td>G&amp;S_Bayes, Chapter 5</td>
<td>Homework 5 due</td>
<td>Bayes, Normal Distribution Z-scores</td>
</tr>
<tr>
<td>Day 4</td>
<td>Binomial Coefficient, Binomial Distribution, Distinguishing Distributions</td>
<td>Chapter 9</td>
<td>Homework 6 due</td>
<td>Binomial Calculations, Distinguishing Distributions</td>
</tr>
<tr>
<td>01/08</td>
<td>NHST Steps, NHST Example, Simple Binomial NHST, Sign Binomial NHST</td>
<td>Chapter 10</td>
<td>Homework 7 due, Article selection due</td>
<td>Simple Binomial, Sign Test</td>
</tr>
<tr>
<td>Day 5</td>
<td>NHST Criticisms, Power Concept, Power Calculations, Power Purpose</td>
<td>Chapter 11</td>
<td>Homework 8 due</td>
<td>Power Concepts, Power Calculations</td>
</tr>
<tr>
<td>01/09</td>
<td>Exam 2 due by 11:00pm</td>
<td></td>
<td>Homework 9 due, APA and Final paper guidelines quiz due</td>
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<tr>
<td>Day 6</td>
<td>Sampling Distribution, Sampling Distribution &amp; Central Limit Theorem, Z-test, Z-test Part 2, One-Sample t-test, One-sample t-test Part 2</td>
<td>Chapter 12 &amp; 13</td>
<td>Optional draft due</td>
<td>Sampling Distribution and CLT, NHST with Z-scores, One sample T and Assumptions</td>
</tr>
<tr>
<td>01/10</td>
<td>Confidence Intervals, Independent Samples t-test, Dependent Samples t-test, Within versus Between Design</td>
<td>Chapter 14</td>
<td>Homework 10 du, Optional peer review due</td>
<td>Confidence Intervals, NHST with one-sample t-test, Independent Samples t-test, Dependent Samples t-test</td>
</tr>
<tr>
<td>Day 11</td>
<td>One-way ANOVA, Bayesian Statistics</td>
<td>Chapter 15</td>
<td>Homework 11 du</td>
<td>One-way ANOVA, Bayesian Statistics</td>
</tr>
<tr>
<td>01/12</td>
<td>Final Exam due by 11:00pm</td>
<td></td>
<td>Homework 12 du</td>
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</table>

*This is a guideline for the course, and is thus subject to change.*
**On average you will have 3 hours and 20 minutes of lecture and lab viewing each scheduled class day, which means some days will be slightly more and some weeks will be slightly less to give you the appropriate average classroom instruction time.**

***The homework assignments are due to be submitted by 11:00am of the day listed.***

****The lectures and labs are due to be watched by 11:00pm of the day listed. The lectures are all available to be watched online at any time before the due date.

*****The exams will cover all homework and material that was covered prior to the due date and will be due 12 hours (11:00pm) after the last homework is due.