



Psych 300: Statistics ONLINE

Spring Semester, 2023

University of Wisconsin- Stevens Point

DESCRIPTION

This goal of this course is to introduce you to the statistics, descriptive and inferential, that you will need in order to understand the field of psychology, and specifically, to read and understand journal articles in psychology. You will learn how to reason statistically, to analyze data sets, what statistics to apply in given situations, and in general, how to understand traditional experimental statistical design in psychology. This class encompasses both the practical and theoretical; you will learn the reasoning underlying statistical design but also how to run simple statistical programs and how to apply the stats to experimental design.

COURSE INFORMATION

Instructor: Dr. Patrick Conley
E-mail: pconley@uwsp.edu

Office: D261 Science
Office Hours: TW 12:45 – 1:45

Office Hours can be either in-person or over Zoom (<https://wisconsin-edu.zoom.us/j/3301964995>; this address will also be posted on our Canvas page). I will open the Zoom window at 12:45pm on the specified days, but please understand that this is my office hours time for my face-to-face classes as well, so there may be a delay if I already have a student in the office. I will keep you apprised of this possibility over chat messages in Zoom.

REQUIREMENTS OF PSYCHOLOGY 300:

REQUIRED MATERIALS

The textbook for this course is Aron, Coups, and Aron (2013) *Statistics for Psychology* (6th Edition). Some material will be made available online at a later date.

Calculators: Calculators will be necessary to complete most of the homework assignments and are also allowed in the exams. Most calculators (even simple ones) are sufficient for the computational requirements of this course, so getting a calculator that would make Bill Gates envious is not necessary.

Internet Access: Obviously, with the class fully online and three time-specific exams, you need to have access to a reliable internet connection. **Do not take this course if you cannot be sure you will have reliable internet.**

Computers: After we start working on inferential statistics (later in the term), some of your homework will involve using a statistical software package called **SPSS**. This is available on all standard campus load computers through the Network menu, and online through the UWSP Remote Lab. Don't worry; we will spend a fair amount of time in class discussing how to access and operate this program.

REQUIRED PERFORMANCE

1. Satisfactory performance on examinations
2. Consistent class participation (though we are online, lectures must be viewed etc.) in a timely manner for you to succeed in this class. Putting things off is a recipe for disaster in Statistics.
3. Careful reading of the assigned readings in a timely manner. This means reading the text material the weekend before the week for which it is assigned
4. Attendance at the **scheduled exam times**. Yes, we still have assigned test times for the conceptual portions of the exams (other portions are take-home) **NO MAKE-UP EXAMS WILL BE ADMINISTERED WITHOUT APPROPRIATE DOCUMENTATION**. If you have such an emergency, you must attend the one-time-only makeup period I assign. If you do not, you will receive a zero on the exam.

5. Homework assignments must be handed in ON TIME. No credit will be given for any late assignments without express advanced permission given by me. This permission will only be given in the case of emergencies or other serious causes.
6. Although group study and group work on homework assignments is permitted, you must at least write up your own homework assignment that is to be turned in. Any copying, etc. of assignments will result in Fs on the assignment for all students involved.

ASSIGNMENT AND EXAMINATION SCHEDULE

Homework Assignments (25%) There will be regular (weekly) homework assignments that you must complete and hand in on-time. **You must show all work** for full credit. Problems not showing any work will receive little if any credit. There are 12 homework assignments in this class, so each homework assignment is worth about 2.1% of your final grade. Therefore, missing more than a few homework assignments will likely lower the letter grade you receive in this course.

Exams (75%) There will be 3 exams in this course, 2 midterms and a final. Each is therefore worth 25% of your grade. The exam will consist of both conceptual and computational sections. The conceptual sections will consist of multiple choice and short answer material. The computational sections will consist of more mathematical problems and calculations, similar in nature to the problems you answer in homework and will require you to demonstrate your theoretical understanding of the material. Both the conceptual and the computational sections of the exam are open book/open notes. The conceptual portions are assigned for a specific test date (see below) and the computational sections are take-home.

LECTURE AND ASSIGNMENT SCHEDULE

A tentative schedule follows. Certain subjects may take less or more time than they are scheduled for below. The assigned readings in Coup et al. should be read *prior to* the class for which that chapter is listed.

| Date | Topic | Readings and HW Due |
|--|---|--------------------------------------|
| Week 1 (Jan 23-28) DUE: | Introduction to Statistics | ACA Ch. 1 Homework #1 |
| Week 2 (Jan 29- Feb 4) DUE: | Scales of measurement, variables Frequency distributions, Central Tendency | ACA Ch. 2 Homework #2 |
| Week 3 (Feb 5-11) DUE: | Variance and Standard Deviations Normal Distributions/ Z scores | ACA Ch. 3 Homework #3 |
| Week 4 (Feb 12-18) DUE: | Z's continued, Correlation Correlation & Regression | ACA Ch. 11 Homework #4 |
| Week 5 (Feb 19-25) DUE: | Regression Questions and Review EXAM 1 Conceptual (Thurs 11:00am, February 23rd) Computational (Saturday 10:00pm, February 25th) | |
| Week 6 (Feb 26 – Mar 4) DUE: | Introduction to Hypothesis testing Hypothesis testing (cont.) / Go over Exam 1 | ACA Ch. 4 Homework #5 |

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| Week 7 (Mar 5-11) DUE: | Distributions of Means Zs for samples | ACA Ch. 5 Homework #6 |
| Week 8 (Mar 12-17) DUE: | One sample t-test Dependent Measures t-test | ACA Ch. 7 Homework #7 |
| S P R I N G B R E A K | | |
| Week 9 (Mar 27-Apr 1) DUE: | Independent Measures t-test Comparing the Zs and Ts | ACA Ch. 8 Homework #8 |
| Week 10 (Apr 2-8) DUE: | Effect Size Power EXAM 2 Conceptual (Thursday 11:00am, April 6th) Computational (Saturday 10:00pm, April 8th) | ACA Ch. 6 |
| Week 11 (Apr 9-15) DUE: | Oneway ANOVA SPSS and ANOVA / Go over Exam 2 | ACA Ch. 9 Homework #9 |
| Week 12 (Apr 16-22) DUE: | Post-Hoc Tests Factorial ANOVA | ACA Ch. 10 Homework #10 |
| Week 13 (Apr 23-29) DUE: | Repeated Measures | Handout No HW this week |
| Week 14 (Apr 30 – May 6) DUE: | Repeated Measures in SPSS | ACA Ch. 13 Homework #11 |
| Week 15 (May 8–12) DUE: | Wrap up and Review Final Exam Practice | Homework #12 |
| FINAL EXAM | Conceptual Portion: Tuesday, May 16, Any time between 10:15am and 4:15pm. Computational Portion: Due by Thursday, May 18 th , at 10:00pm | |

GRADING SCALE

| Grade | Percentage |
|-------|------------|
| A | 100-91% |
| A- | 90% |
| B+ | 89% |
| B | 88-81% |
| B- | 80% |

| Grade | Percentage |
|-------|------------|
| C+ | 79% |
| C | 78-71% |
| C- | 70% |
| D+ | 69% |
| D | 68-60% |

SPECIAL NEEDS

Special needs (ADD, ADHD, or other physical, psychological, or learning conditions that require special arrangements) must be handled through the Disability Services Office. Please note that even short term disabilities (such as breaking your leg) can also be handled through this office. The Disability Services Office will handle special testing needs, materials, etc.

UWSP is committed to providing reasonable and appropriate accommodations to students with disabilities and temporary impairments. If you have a disability or acquire a condition during the semester where you need assistance, please contact the Disability and Assistive Technology Center on the 6th floor of Albertson Hall (library) as soon as possible. DATC can be reached at 715-346-3365 or DATC@uwsp.edu.

EXPLANATION OF COURSE LEARNING OUTCOMES

Learning Outcome 1: Select, analyze, and interpret appropriate numerical data used in everyday life in numerical and graphical format.

Students are required to learn how to construct frequency tables, computational tables for the computations of means, standard deviations, z-scores, etc. Students are instructed in the construction of scatterplots for multivariate data and to use these plots as an estimate of correlational strength and a check on their eventual computation of these correlations. A main focus of the class is in the construction of statistical distributions. Students learn about the differences between samples, populations, and theoretical distributions such as the sampling distribution of the mean. They learn about the normal distribution and its relationship to z-scores, percentile ranks, and null hypothesis significance testing. They learn to use these distributions both visually and conceptually to make decisions about the likelihood of various outcomes.

Assessment: Computational: Determining if the answer for various problems such as measures of central tendency and variability are correct. Conceptual: determination (from multiple choice and short answer questions) if the concepts and purpose behind these computations are clearly understood by the student.

Learning Outcome 2: Identify and apply appropriate strategies of quantitative problem solving in the theoretical and practical applications.

Psych 300 has a very practical focus on understanding the data necessary to read and understand articles published in psychology journals. There are several main focuses, therefore, to the problem solving emphasized in this class. The first is the basic description of data, such as means, measures of variability, and z-scores. The second is for null hypothesis significance testing, a mechanism for measuring the likelihood of a specific outcome under the assumption that chance is the best explanation for the result. The final emphasis is on effect size, a measurement of the strength of the relationships between relevant variables. All of these are emphasized in order for the student to better understand the process of psychological research.

Assessment: A main challenge of the class is to choose the appropriate test for the appropriate scenario. Since this is made artificially easy in the normal course of homework by subject ("This week we are covering t-tests, next week ANOVA"), I provide assessments that mix all possible scenarios and hypothesis test types are require the students to gain practice and expertise by deciding, based on their knowledge and flow-charts that I provide, which test is appropriate for which situation. I then formally test this as a major part of their exams, in which they are never explicitly told which type of hypothesis test or post-hoc they must use – they must determine that themselves from the available data.

Learning Outcome 3: Construct a conclusion using quantitative justification.

This is an important focus for the entire length of the class. Students must not only perform the appropriate statistical analysis, but they must interpret the outcome in terms of the problem or scenario for all of the problems in the course. Since the focus of this class is on research outcomes, most of the problems in the course are presented as the results of one study or another, and the student must conduct the analysis on the data and interpret whether the result was statistically significant, what the effect size was, whether there was evidence of an interaction between variables, etc. No problem is complete by simply performing the correct computation; the focus is on understanding the process, even when that is fairly abstract, for instance, the creation of a sampling distribution of the mean.

Assessment: By letting the student start from the beginning with raw data to the final formal conclusion about the outcome of the test. For instance, in null hypothesis significance testing, students must formally follow five steps of hypothesis testing: 1) Identify the null and alternative hypotheses for the scenario, as well as identifying which test (t-test, ANOVA, chi-square) would be most appropriate for the data presented, 2) Identify and label the comparison distribution, or the distribution that would arise if the null hypothesis was true; what is its center, what is its standard error, etc, 3) Identify the cutoff points for the 5% or 1% least likely outcomes. This is also affected by one- and two-tailed testing, chosen alpha levels, degrees of freedom, and the distribution type, 4) Conduct the actual hypothesis tests, and 5) Compare the results of

the hypothesis test to the stated cutoffs and make a decision regarding the null hypothesis. Then, interpret these results in terms of the actual scenario of the problem.

POLICY ON CHEATING AND ACADEMIC MISCONDUCT

Students are responsible for understanding the nature and avoiding the occurrence of plagiarism and other academic offenses. Note that such offenses include cheating on an examination, submitting false or fraudulent assignments or credentials, impersonating a candidate, or submitting for credit in any course, without the knowledge and approval of the instructor to whom it is submitted, any academic work for which credit has previously been obtained or is being sought in another course in the University or elsewhere. If you are in doubt about whether what you are doing is appropriate, consult your instructor. A claim that you didn't know it was wrong will not be accepted as an excuse.

COURSE WITHDRAWAL

Students must withdraw from class in a timely manner in accordance with published deadlines. Failure to do so could result in a failing grade or the loss of reimbursable tuition fees. The published deadlines can be found at:

<http://www.uwsp.edu/news/uwspcatalog/academic.htm#Drop/Add>

CLASS MATERIALS

Lecture materials and recordings for Psych 300 are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

STUDENT'S RIGHTS AND RESPONSIBILITIES

UWSP values a safe, honest, respectful, and inviting learning environment. In order to ensure that each student has the opportunity to succeed, a set of expectations has been developed (see <https://www.uwsp.edu/stuaffairs/Documents/RightsRespons/rightsCommBillRights.pdf>) for both students and professors. All students are expected to be familiar with and to abide by these expectations.

EMERGENCY PROCEDURES

(These must be included per regulation, but obviously have little relevance in an online-only course)

In the event of a medical emergency call 911 or use Red Emergency Phone. Offer assistance if trained and willing to do so. Guide Emergency Responders to victim.

In the event of a tornado warning, proceed to the lowest level interior room without window exposure at SCI C181. Avoid wide-span rooms and buildings. www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx shows other floor plans providing severe weather shelters on campus. In the event of a fire alarm, evacuate the building in a calm manner. Meet at the front of the Health Enhancement Center (HEC) Notify instructor or emergency command personnel of any missing individuals.

Active Shooter – Run/Escapes, Hide, Fight. If trapped hide, lock doors, turn off lights, spread out and remain quiet. Follow instructions of Emergency Responders. See UW-Stevens Point Emergency Management Plan at www.uwsp.edu/rmgt for details on all emergency response at UW-Stevens Point.

TITLE IX

Under several federal and state laws, and according to several university guidelines, I am required to report acts of a criminal or offensive nature. This includes acts of sexual harassment and assault, bias and hate crimes, illicit drug use, and acts of violence. Any disclosure or description of these incidents – both current and in the past – may be reported to the Dean of Students office (<http://www.uwsp.edu/dos/>) or the local authorities.