Psych 300: Statistics
Fall 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	**Office Location**	D261 Science
E-mail:	Patrick.Conley@uwsp.edu	**Office Hours:**	TuW 12:45-1:45

TIME AND LOCATION OF CLASSES:

Lecture:	9:30 – 10:45	Mon and Wed in SCI D217
Lab 1:	9:00 – 10:50	Thursdays in D223
Lab 2:	11:00 – 12:50	Thursdays in D223

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 or handed out in class as well.

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.

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. Don't worry; we will spend a fair amount of time in class discussing how to operate this program.

REQUIRED PERFORMANCE

l. Satisfactory performance on examinations
2. Consistent class attendance (though class attendance itself will not be graded, systematically missing classes will almost certainly lead to poor exam performance)
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. NO MAKE-UP EXAMS WILL BE ADMINISTERED EXCEPT FOR SERIOUS PERSONAL OR FAMILY EMERGENCIES WITH 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. You must turn in your homework in the beginning of the section **to which you are registered.**
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 photocopying, 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. These assignments will be given out in Lab and will generally be due in lab, except as noted in the schedule below; I require you to make a copy of your homework assignments. One will be turned in at the beginning of class, and the other you can use as a reference as we go over the problems. **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% of your final grade. Therefore, missing more than a few homework assignments will usually lower your final letter grade and should be avoided.

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 closed book and open book sections. The closed book sections will consist of multiple choice and short answer material. The open book section will consist of more conceptual problems and calculations, similar in nature to the problems you answer in homework (which, if you think about it, are open-book tests themselves) and will require you to demonstrate your theoretical understanding of the material.

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 Due
Sept. 6	Introduction to Statistics	ACA Ch. 1
LAB:	**Cover topics/homework from Week 1**	**Homework #1**
Sept. 11	Scales of measurement, variables	ACA Ch. 2
Sept. 13	Frequency distributions, Central Tendency	
LAB:	**Cover topics/homework from Week 2**	**Homework #2**
Sept. 18	Variance and Standard Deviations	ACA Ch. 3
Sept. 20	Normal Distributions/ Z scores	
LAB:	**Cover topics/homework from Week 3**	**Homework #3**
Sept. 25	Z's continued, Correlation	ACA Ch. 11
Sept. 27	Correlation & Regression	
LAB:	**Cover topics/homework from Week 4**	**Homework #4**
Oct. 2	Regression	
Oct. 4	Questions and Review	
LAB:	**EXAM 1 (October 5th)**	
Oct. 9	Introduction to Hypothesis testing	ACA Ch. 4
Oct. 11	Hypothesis testing (cont.)	
LAB:	**Go over exam; Week 6 Review**	**Homework #5**

Oct. 16	Distributions of Means	ACA Ch. 5
Oct. 18	Zs for samples	
LAB:	**Cover topics/homework from Week 7**	**Homework #6**
Oct. 23	One sample t-test	ACA Ch. 7
Oct. 25	Dependent Measures t-test	
LAB:	**Cover topics/homework from Week 8**	**Homework #7**
Oct. 30	Independent Measures t-test	ACA Ch. 8
Nov. 1	Comparing the Zs and Ts	
LAB:	**Cover topics/homework from Week 9**	**Homework #8**
Nov. 6	Effect Size	ACA Ch. 6
Nov. 8	Power	
LAB:	**EXAM 2 (Nov. 9th)**	
Nov. 13	Oneway ANOVA	ACA Ch. 9
Nov. 15	SPSS and ANOVA	
LAB:	**Go over exam; Week 11 Review**	**Homework #9**
Nov. 20	Post-Hoc Tests	ACA Ch. 10
Nov. 22	Two-way ANOVA and interactions	
LAB:	**No Lab (Thanksgiving)**	
Nov. 27	Factorial ANOVA and analysis	
Nov. 29	Factorial ANOVA (continued)	
LAB:	**Cover topics/homework from Weeks 12-13**	**Homework #10**
Dec. 4	Repeated Measures	Handout
Dec. 6	Repeated Measures in SPSS	
LAB:	**Cover topics/homework from Week 14**	**Homework #11**
Dec. 11	Chi-Square	ACA Ch. 13
Dec. 13	Chi-Square	
LAB:	**Cover topics/homework from Week 15**	**Homework #12**
December 19th	**Final Exam (Tuesday) 10:15am – 12:15pm**	

GRADING SCALE

Grade	Percentage		Grade	Percentage
A	100-91%		C+	79%
A-	90%		C	78-71%
B+	89%		C-	70%
B	88-81%		D+	69%
B-	80%		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 constructions 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 statisically 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:

- 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
- 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.
- 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.
- Conduct the actual hypothesis tests
- 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

USING ELECTRONIC DEVICES

To maintain the integrity of in-class exams, the use of electronic devices **(excepting standard calculators)** will not be permitted during exams without prior documented approval from the Disability Services office or other pertinent offices on campus. This includes, but is not limited to, requests to use cellular or wireless network-enabled mobile devices for foreign language translation assistance. Students who are found using these devices will be dismissed and receive a zero for their exams. Other penalties will be considered under the misconduct policy. Moreover, students who arrive late to an exam will only be allowed to take it if they arrive before the first student finishes and leaves the room. After that point, requests to take exams will be declined unless they are consistent with the makeups policy

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

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/Escape, 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.

COVID POLICY

The official Covid-19 policy of this course is to follow the official guidelines of the University. At the start of the current term (Fall 2023) masks are optional, though that may change if there is a resurgence of Covid-19 on campus. If this happens, please do not ask for exemptions to this policy as I am not capable of making any kind of accommodation going against official University policy.

In case of illness, Covid-19 will be treated as any other excused absence for health reasons. It will be your responsibility to provide a doctor's note, get notes from students and to make up the missed material when possible. I will, of course, help you in any way possible, but I cannot teach this class in two modalities, both online and in-person, meaning that, barring a complete class shutdown or quarantine, class lectures will not be provided online.