

PSY 2510: STATISTICS IN PSYCHOLOGY

4 CREDITS, WINTER 2018

MWF 10:40 – 11:47 AM, SOUTH FOUNDATION HALL 373

Instructor: Francisco (Pako) Arcediano, Ph.D.

E-mail: arcediano@oakland.edu (email is the preferred form of communication)

Office Hours: 213B Pryale House; Monday and Wednesday, 12:00-1:00 pm, and by appointment.

Course Description. Introduces principal statistical procedures needed to analyze and interpret data in behavioral science research. Includes descriptive and inferential statistics.

This course was previously numbered as PSY 251.

This course was formerly titled "Statistics and Research Design". Students who took PSY 251 under that title may not repeat it except for grade improvement.

Course Prerequisites: PSY 2500 (previously PSY 250) with a grade of 2.0 or higher and proficiency in intermediate algebra as demonstrated through a grade of 2.0 or higher in MTH 062 or placement in a higher mathematics course.

Required Textbook and Course Material.

- Aron, A., Aron, E.N., & Coups, E.J. (2013). *Statistics for Psychology*. Pearson, 2013, 6th Ed. (ISBN-13: 9780205258154)
- Any simple, non-programmable, calculator (e.g., Texas Instruments 30Xa or 30Xa-Solar; available at Meijer's, Target, Walmart, and most stores where calculators are sold).
- SPSS for Windows (SPSS is available in most public computers on campus and through the campus Oakland University Appstore: <https://oakland.bizappcenter.com/>. Installation information at <https://oakland.edu/uts/faculty-and-staff-services/general-software-information/>, under "Oakland University Appstore and SPSS").

Course Procedures: Lectures and discussion, working on homework assignments.

Course Objectives: In this course, you should gain the following:

- The ability to understand and explain statistical methods and analyses in reports of psychological research.
- A preparation for more advanced courses in statistical methods.
- The ability to identify the appropriate statistical procedure for many basic research situations and to carry out the necessary computations.
- Further development of your quantitative and analytic thinking skills.

Learning Outcomes: By the end of this course, students should be able to:

- Define and comprehend basic descriptive and inferential statistical concepts.
- Use manual computations and SPSS computer software to calculate and interpret descriptive and inferential statistics.
- Understand the rationale underlying the manual computations that yield statistics.
- Determine from the characteristics of the data the appropriate statistical procedure to use.
- Understand hypothesis testing procedures (e.g., the null and alternative hypotheses, statistical significance, Type I and Type II errors), and related ideas (e.g., power, effect size).
- Compute effect sizes and evaluate power statistically for various experimental / data scenarios.

- Interpret and understand statistical results in most Psychology journal articles in terms of the investigator's research hypothesis.

Grades.

Exams (80% of course grade). There will be 5 exams (16% each) over the course of the semester. All exams may consist of a combination of multiple-choice questions, computation problems, and short essay. Exams will be non-cumulative. Students will need to bring a #2 pencil and an eraser on exam days. Each exam will be graded on a scale of 0 – 100 points.

See below, under *Excused Absence Policy*. Any student's request for reviewing an exam must be scheduled within 1-week after the grade for the exam has been posted.

Homework Assignments: (18% of course grade). Homework assignments will be posted in Moodle. They will provide students with an opportunity to engage in thinking about statistical concepts and to practice computations. Adequate relevant information about each homework delivery and grading scheme will be provided as soon as each assignment is posted in Moodle. Homework assignments may consist of a combination of multiple-choice questions, computation problems, and short essay. Some homework problems will be also done in SPSS as well as by hand. SPSS assignments are designed to highlight and emphasize concepts discussed in the class and to introduce students to the ways that computers are used by researchers for statistical analyses. Written responses to the assignment questions must be thorough and detailed, showing comprehension of the question. SPSS assignments must be thoroughly annotated, including information about the formula used by SPSS and information specific to the conceptual aspects of each analysis. Students should plan on spending 4-10 hours a week to complete these problems. Because students who fail to stay current with homework assignments rarely pass this course, students are encouraged to be diligent about completing the assignments, and solicit assistance and/or clarification about practice problems from the instructor by email or during office hours whenever necessary. To earn high marks all responses should be as clear as possible and all problems requiring computations must show each computational step. All computations must be done using definitional formulas rather than computational formulas. Definitional formulas are provided in the textbook and in the PowerPoint Lecture Outline Slides. These formulas promote the greatest understanding of statistical computations and conceptual underpinnings. Homework assignments completed using formulas from other textbooks or courses will not be accepted.

Submission of Homework. Please put your full name on each page of the homework assignment. Stapling the pages is required. Homework must be turned in by the due date at the beginning of the class. Make sure you make a copy of your homework for your records, and another copy to bring with you to class to check on the correctness of your answers, and to correct any mistake. The solutions to the homework assignments will be explained and discussed in class the day they are due. If any special circumstance prevents you from turning in the homework in class, take a legible picture (e.g., with your smartphone) of all the pages of your homework, and send them to the instructor before the beginning of the class in which they are due. Then, turn in your homework next class. Homework received late will not be accepted unless the student meets with the instructor to discuss circumstances. Any student's request for reviewing a homework assignments must be scheduled within 1-week after the grade for the assignment has been posted

Class attendance: (2% of course grade). Attendance will be recorded at the beginning of each class (Less than 60% attendance = 0 %, 60%-80% attendance = 1 %, more than 80% attendance = 2 %).

Grade Calculation: Your final grade will be determined by the exams, homework assignments, and class attendance. All activities will be graded on a 0-100% scale, and averaged to find out %grade in the class. This %grade will then be transformed to the official OU grading scale (0.0-4.0). Percentage conversions to OU

grades are presented in the table below.

% grade	OU Grade
100	4
99	4
98	3.9
97	3.9
96	3.8
95	3.8
94	3.8
93	3.7
92	3.7
91	3.6
90	3.6
89	3.5
88	3.4
87	3.4

% grade	OU Grade
86	3.3
85	3.3
84	3.2
83	3.2
82	3.1
81	3.1
80	3
79	2.9
78	2.8
77	2.7
76	2.6
75	2.5
74	2.4
73	2.3

% grade	OU Grade
72	2.2
71	2.1
70	2
69	1.9
68	1.8
67	1.7
66	1.6
65	1.5
64	1.4
63	1.3
62	1.2
61	1.1
60	1
≤59	0

Policies, Guidelines, and Recommendations.

Academic Conduct. Oakland University students are expected to exhibit behavior consistent with the University’s standards of academic integrity and honesty. Please review Oakland Student Code of Conduct (<https://wwwp.oakland.edu/deanofstudents/>). The instructor expects students to respect his right to teach, and students’ desire to learn, in a safe and non-distracting environment. As such, students are not permitted to use their phones during class or to use their computers for anything other than note-taking. Please also refrain from other rude behaviors such coming to class late or leaving early, reading books or newspapers during class, or talking while the instructor or your classmates are speaking. The instructor reserves the right to ask the student to leave class if he feels the student is being a distraction to the learning process.

In order to maximize academic equity and honesty, the work that you submit must be your work entirely. In addition, you must not allow other students to look at or copy your work.

Policy on Academic Misconduct. The University’s regulations that relate to academic misconduct will be fully enforced. Any student suspected of cheating and/or plagiarism will be reported to the Dean of Students and, thereafter, to the Academic Conduct Committee for adjudication. Anyone found guilty of academic misconduct in this course may receive a course grade of 0.0, in addition to any penalty assigned by the Academic Conduct Committee. Students found guilty of academic misconduct by the Academic Conduct Committee may face suspension or permanent dismissal. The full policy on academic misconduct can be found in the General Information section of the Undergraduate Catalog.

Departmental Policy for Resolution of Student Academic-Related Concerns. The student has an obligation to attempt to resolve all academic-related concerns with the instructor. If a suitable solution cannot be reached, then the student should consult the Department of Psychology Procedure for the Resolution of Student Academic-Related Concerns at <https://www.oakland.edu/Assets/Oakland/psychology/files-and-documents/Undergrad-Advising/Resolution%20of%20Student%20Concerns-04-2017-approved%20full%20doc.pdf>.”

Excused Absence Policy. Expected excuses need to be discussed with the instructor at least 1 week before the date scheduled for the exam. Unexpected absences due to major life events require immediate notification to the instructor and proof of reason for the absence. Students who must be absent from class

due to University representation events (e.g., athlete, manager or student trainer in NCAA intercollegiate competitions, or participation as a representative of Oakland University at academic events and artistic performances approved by the Provost or designee) are also subject to these policies (see the OU Excused Absence Policy: <http://wwwp.oakland.edu/provost/policies-and-procedures/>). Students should take all make-up exams within one week of the missed exam (unless there are extenuating circumstances; e.g., illness that prevents you from attending school). To maintain the integrity of the testing and grading processes for all students, students taking make-up exams may receive an alternative exam, including exams that consist only of computation problems. Students are encouraged to discuss their circumstances with the instructor as soon as possible, enabling appropriate and ethical make-up arrangements. See course schedule for tentative exam dates.

Audio Recording Policy. Students who wish to audio-record lectures may request permission to do so. These recordings may only be used for the purpose of personal study. Students may not share these recordings with other individuals without the consent of the professor. At the conclusion of the semester, students may request permission to keep these recordings if needed, otherwise it is expected that all audio-recordings will be deleted from all electronic recording and storage devices.

Special Considerations. A student with a documented learning or physical disability must contact the Office of Disability Support Services, 103A North Foundation Hall, (248) 370-3266, and inform the professor of special needs during first week of classes. For more information, visit <http://www.oakland.edu/dss>.

Veteran Support Services. The office of Veteran Support Services (VSS) is responsible for giving support services to more than 300 veterans, service members, and dependents of veterans. VSS is staffed with personnel who are veterans and current or former students. Any student veteran or dependent of a veteran requiring assistance with navigating the Veterans Administration, understanding service-related benefits, or requires referrals to campus and community resources should contact one of the Veterans Liaisons by visiting 116 North Foundation Hall, or phoning 248-370-2010. <http://wwwp.oakland.edu/veterans/>

Oakland University Drop Policies. The University add/drop dates can be found on the website for the Office of the Registrar (<http://www.oakland.edu/registrar>, under “Registration”). It is the student’s responsibility to be aware of course drop deadlines.

Faculty Feedback. As a student in this class, you may receive “Faculty Feedback” in your OU e-mail if your professor identifies areas of concern that may impede your success in the class. Faculty Feedback typically occurs during weeks 2-5 of the Fall and Winter terms, but may also be given later in the semester and more than once a semester. A “Faculty Feedback” e-mail will specify the area(s) of concern and recommend action(s) you should take. Please remember to check your OU email account regularly as that is where it will appear.

Moodle. Class materials will be distributed through Moodle. Please, take the time to become familiar and learn how to use Moodle. You can access Moodle from the OU main site by clicking “Moodle” on the top banner. If you do not know how to use Moodle, from the Moodle login page you can click “Help” and use the tutorials presented by the IT department (Mozilla Firefox is the recommended browser for Moodle).

E-mail policy: I would greatly appreciate if every time you send me an email you make sure to add [PSY 2510] at the beginning of the Subject field, and to identify yourself with your first and last name either in the body of the message or with your signature at the end of it.

Class Attendance. Poor attendance is rarely associated with a passing grade in this course. Students are urged to attend each lecture. Announcements are made at the beginning of class, so students who arrive late will miss important announcements. Hence, students are encouraged to arrive on time so that they don't miss critical updates.

Please Stay Current. Students who get behind in course requirements typically have an extremely difficult time catching up. Students who fall hopelessly behind find themselves failing, and, consequently, having to repeat statistics. Please avoid this.

Winter 2018 Important Dates: <http://wwwp.oakland.edu/registrar/important-dates/>

(Tentative) Course Schedule:

Dates	Topic
Jan 3, 5	Course Introduction Chapter 01: Frequency Distributions Chapter 02: Measures of Central Tendency and Variability
Jan 8, 10, 12	Chapter 02: Measures of Central Tendency and Variability Chapter 03: Key Ingredients for Inferential Statistics Chapter 04: Introduction to Hypothesis Testing
Jan 17, 19	<i>Homework Assignment due (Chapters 1, 2)</i> Chapter 04: Introduction to Hypothesis Testing
Jan 22, 24, 26	<i>Homework Assignment due (Chapter 3)</i> Chapter 04: Introduction to Hypothesis Testing Chapter 05: Hypothesis Testing with Means of Samples Exam 1: Friday, Jan 26 (Chapters 1, 2, 3)
Jan 29, 31; Feb 2	-Review Exam 1- <i>Homework Assignment due (Chapter 4)</i> Chapter 05: Hypothesis Testing with Means of Samples
Feb 5, 7, 9	Chapter 05: Hypothesis Testing with Means of Samples Chapter 06: Understanding Statistical Significance <i>Homework Assignment due (Chapter 5)</i>
Feb 12, 14, 16	Chapter 06: Understanding Statistical Significance Chapter 07: Introduction to the t-test and t-test for Dependent means <i>Homework Assignment due (Chapter 6)</i> Exam 2: Friday, Feb 16 (Chapters 4, 5, 6)
Feb 19, 21, 23	Winter Recess
Feb 26, 28; Mar 2	-Review Exam 2- Chapter 07: Introduction to the t-test and t-test for Dependent means Chapter 08: Independent Means t-test
Mar 5, 7, 9	<i>Homework Assignment due (Chapter 7)</i> Chapter 08: Independent Means t-test Chapter 09: Introduction to Analyses of variance
Mar 12, 14, 16	<i>Homework Assignment due (Chapter 8)</i> Chapter 09: Introduction to Analyses of variance Exam 3: Friday, Mar 16 (Chapters 7, 8)
Mar 19, 21, 23	-Review Exam 3- <i>Homework Assignment due (Chapter 9)</i> Chapter 10: Factorial Analyses of variance
Mar 26, 28, 30	Chapter 10: Factorial Analyses of variance Chapter 13: Chi-Square test
Apr 2, 4, 6	<i>Homework Assignment due (Chapter 10)</i> Chapter 11: Correlation Exam 4 (Chapters 9, 10)
Apr 9, 11, 13	-Review Exam 4- <i>Homework Assignment due (Chapter 13)</i> Chapter 11: Correlation Chapter 12: Prediction (regression)
Apr 16	<i>Homework Assignment due (Chapters 11, 12)</i>
Mon, April 23	FINAL EXAM (12:00 – 3:00:PM) (Chapters 11, 12, 13)