College of Arts & Sciences
Department of Psychology
Oakland University

PSY 2510, Statistics in Psychology (15124)
4 Credits, Winter 2018

Instructor

Dr. Sela
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Office hours: Thursday 5:00-6:00pm at AFC, by appointment (see p. 7)
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Course Meeting Time and Location

Tue/Thu 7:30-9:17pm, Anton Frankel Center (Mt. Clemens), room 202

Course Description

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

Statistical techniques are used to summarize data in order to answer questions or evaluate research hypotheses. In psychological research, the behavior of a group of people or animals (a sample) is transformed into numbers (data). A statistic is computed using this data that indicates whether the researcher's data provides support for the research hypothesis being examined. The arithmetic computations of statistics will be covered in this course, necessitating a background in basic math and basic algebra. The theoretical and interpretational components of psychological statistics also comprise a significant portion of this course. Emphasis will be placed on fostering an understanding of (1) when it is appropriate to use particular statistical procedures; (2) the arithmetic calculation of statistics and the rationale underlying the use of these computations; and (3) the interpretation of the statistical quantities with respect to the specific research hypothesis being examined. Important concepts and step-by-step examples of statistical computations will be presented in lectures. A primary goal of lab activities is to enhance the meaningfulness and relevance of course material. In addition, students will be introduced to the use of computers to obtain statistics.

Note: Formerly titled PSY 251. Students who took PSY 251 may not repeat this course except for grade improvement.

Course Prerequisites: PSY 250 or PSY 2500 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 MTH 0662 or placement in a higher mathematics course

Required Text: Aron, Coups, & Aron. (2013). *Statistics for Psychology*, 6th Ed. NY: Prentice Hall. Access code to MyLab Statistics.

Additional readings and videos will be posted to Moodle

Other Course Materials:

- Texas Instruments 30Xa or 30Xa-Solar. The T-80 graphing calculators may *NOT* be used for this course.
- SPSS for Windows (Student version 15+)

Course Procedures: Lectures, discussions, videos, in-class activities

Outcomes and Learning Objectives
By the end of this course, you should be able to:

- Understand basic statistical concepts
- Manually compute and use SPSS to calculate and interpret various descriptive and inferential statistics.
- Understand hypothesis testing procedures (e.g., the null and alternative hypothesis; Type I and Type II errors; statistical significance).
- Understand and calculate effect sizes and statistical power.
- Understand the rationale underlying manual computations.
- Determine the appropriate statistical technique to use based on the characteristics of the data.
- Interpret the data relative to the researcher's hypothesis.
- Understand the results of the research published in Psychological research articles.

Cross-Cutting Capacities: Critical thinking, effective communication

Policies & Expectations

Lectures. I use PowerPoint slides to display figures, graphs, and summaries of main points. These slides will be available to you after each class via Moodle, but they should not be considered an alternative to attending class or to note taking. Although I have prepared formal presentations for each class, you should not feel like you are a spectator. Please ask questions and provide comments. It will make the class more enjoyable for everyone

Attendance. Poor attendance is rarely associated with a passing grade in this course. Students are urged to attend each lecture. In-class attendance will be recorded. 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 – nobody wants to take this course twice or three times.

Classroom Behaviors, Courtesy, and Etiquette: Students are expected to conduct themselves as respectful adults, and in a manner conducive to an environment of academic integrity, respect for the educational process, and the safety and well-being of all members of the community. Students are expected to be courteous of their classmates and instructor. Basically, treat others as you would like them to treat you. Any form of disrespect will not be tolerated.

Please arrive promptly for class. If you must arrive late or leave early, take a seat close to the door and minimize disruption to the lecture / discussion. Turn all electronic devices to "off" or "silent" mode. If electronic disruptions become a problem, the instructor reserves the right to ban them from the classroom. Excessive lateness, use of electronic devices, and/or other distracting/disrespectful behaviors may result in loss of points and/or being asked to leave the classroom. Please refrain from distractions such as talking to your neighbor.

Adherence to the *Student Code of Conduct* will be expected. Violations of this code will be reported to the Dean of Students. Find the Code of Academic and Student Conduct (including Academic Dishonesty regulations) here: http://wwwp.oakland.edu/studentcodeofconduct/student-code-of-conduct/conduct-regulations/

Add/Drops & Incompletes: The University add/drop and incomplete grade policies will be explicitly followed. It is the student's responsibility to be aware of the University deadline dates for adding or dropping the course. Students can add into the class without the instructor's signature up to a week after the first class. No extra students will be added into the class. The student is responsible for checking the registration website for openings in the class.

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/

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.

Audio Recoding 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.

Excused Absence Policy: University excused absences applies to participation as an 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. For the OU excused absence policy, see http://wwwp.oakland.edu/provost/policies-and-procedures/

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.

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

Evaluation & Grade Determination

Your performance in this course will be evaluated via a combination of assessment techniques, including tests, homework, exams, and in-class activities.

Tests (MyStatLab): There will be a pre-test and post-test for each chapter on MyStatLab. Pre-tests are not worth any points, but you must complete them with 85% or higher (you have unlimited attempts) to access the post-tests (of the same chapter) which are worth 5 points each. You have 1 attempt for each post-test, and it must be taken on a desktop computer or laptop in one sitting. Your lowest post-test score will be dropped. You cannot make up tests for points after the due date.

Homework (MyStatLab): There will be homework assigned on MyStatLab for each chapter. Homework problems give students the opportunity to engage in thinking about statistical concepts and to practice computations. Students should plan on spending 4-8 hours a week doing these problems. Completion of homework assignments is critical for success in this class. If you find that you are confused about a problem, make sure you get help as soon as you can as the problems build upon each other. You may attempt each homework question 3 times before the due date. Your lowest score will be dropped. You cannot make up homework for points after the due date.

In-Class Activities and labs: There will be in-class activities and/or labs for each chapter, including worksheets and practice problems. Some activities and labs will be started in class, but completed outside of class. Some problems must be done in SPSS as well as manually. Attach your SPSS printout with your name printed on it, and answer all of the questions presented. In addition, indicate in writing what the SPSS output shows and how it corresponds to the statistical procedure under consideration (annotation). Photocopies of SPSS printouts will not be accepted – only original printouts.
To earn high marks, all verbal 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, and using sample formulas rather than population formulas (e.g., n-1 in the denominator for SD), unless instructed otherwise. Definitional formulas are provided with this syllabus, in the textbook, and in the PowerPoint Lecture Outline Slides. These formulas promote the greatest understanding of statistical computations and conceptual underpinnings. Activities completed using formulas from other textbooks or courses is not acceptable.
Submission of ICAs and Grading. Students may choose to use the last four digits of their OU ID number if they are concerned about privacy issues. Otherwise, please put your full name on each activity and lab. Stapling loose pages is required. Electronic copies of activities and labs will *NOT* be accepted.

Your lowest score will be dropped. You cannot make up ICAs and labs for points after the due date.

Exams: There will be 3 non-cumulative exams in class. Each exam will consist of several short essay and computation problems and 20-60 multiple-choice questions.

Final Exam: There will be a cumulative (comprehensive) final exam about all the material learned throughout the semester.

Make-up Exam Policy: If you miss exam 1, 2, or 3 for any reason, you will be able to take a make-up exam immediately following the final exam, during the final exam period. You will not be given more than the allotted time for the final exam period to finish all your exams, so *I do not recommend taking another exam unless you must*. If you miss the final exam, you will not be able to make it up unless you can provide documentation of an extreme emergency (such as hospitalization). I reserve the right to deny you a make-up exam if you do not contact me before the exam, with appropriate professional documentation.

Summary of Course Points and Grade:

	How many (after drop)?	Points each	Points total	% of Course Grade
MyStatLab Post-Tests	12	5	60	9%
MyStatLab Homework	12	5	60	9%
In-Class Activities and Labs	10-15		100	15%
Exams	3	100	300	45%
Final Exam	1	150	150	22%
	Total points possible in course		670	100%

To calculate your percentage grade, use this formula:

$$\frac{\text{Sum of points you earned}}{\text{Sum of points possible to earn}} \times 100 = \%\ \text{grade}$$

The following scale will be used to determine the final grade:

100% (4.0)	95% (3.8)	90% (3.5)	85% (3.3)	80% (3.0)	75% (2.5)	70% (2.0)	65% (1.5)	60% (1.0)
99% (4.0)	94% (3.7)	89% (3.5)	84% (3.2)	79% (2.9)	74% (2.4)	69% (1.9)	64% (1.4)	<59% (0.0)
98% (3.9)	93% (3.7)	88% (3.4)	83% (3.2)	78% (2.8)	73% (2.3)	68% (1.8)	63% (1.3)	
97% (3.9)	92% (3.6)	87% (3.4)	82% (3.1)	77% (2.7)	72% (2.2)	67% (1.7)	62% (1.2)	
96% (3.8)	91% (3.6)	86% (3.3)	81% (3.1)	76% (2.6)	71% (2.1)	66% (1.6)	61% (1.1)	

Course Schedule (dates subject to change with notice)

Wk	Date	Day	Reading	Topic	Due in MyLab Stats by 11:55pm
1	4-Jan	Thu	Syllabus	Introductions	
2	9-Jan	Tue	Ch. 1	Introduction to Statistics: Concepts, Manual Computations, and Software (SPSS) Levels of Measurement & Frequency Distributions	
	11-Jan	Thu	Ch. 2	Descriptive Statistics: mean, variance, standard deviation	Homework, Pre-Test, and Post-Test for Ch. 1
3	16-Jan	Tue	Ch. 3	Inferential Statistics: Z-scores, normal curve, probabilities, populations, samples.	Homework, Pre-Test, and Post-Test for Ch. 2
	18-Jan	Thu	Ch. 4	Hypothesis Testing I (Core Logic)	Homework, Pre-Test, and Post-Test for Ch. 3
4	23-Jan	Tue	Ch. 5	Hypothesis Testing II (Sample Means)	Homework, Pre-Test, and Post-Test for Ch. 4 Homework, Pre-Test, and Post-Test for Ch. 5 (due 24-Jan)
	25-Jan	**Thu**		**Exam #1 (Ch. 1 - 5)**	
5	30-Jan	Tue	Ch. 6	Understanding Statistical Significance: Effect Size, Decision Error, & Power	
	1-Feb	Thu			
6	6-Feb	Tue	Ch. 7	Introduction to the t-test & t-test for Dependent Groups	
	8-Feb	Thu			Homework, Pre-Test, and Post-Test for Ch. 6
7	13-Feb	Tue	Ch 8	Independent Groups t-test	Homework, Pre-Test, and Post-Test for Ch. 7
	15-Feb	Thu			
8	*20-Feb*	*Tue*		*WINTER BREAK*	
	22-Feb	*Thu*			
9	27-Feb	Tue		Review	Homework, Pre-Test, and Post-Test for Ch. 8
	1-Mar	**Thu**		**Exam #2 (Ch. 6 - 8)**	
10	6-Mar	Tue	Ch 9	Introduction to the Analysis of Variance	
	8-Mar	Thu		Structural Approach to Analysis of Variance	
11	13-Mar	Tue	Ch 10	Factorial Analysis of Variance	Homework, Pre-Test, and Post-Test for Ch. 9
	15-Mar	Thu			
12	20-Mar	Tue	Ch 13	Chi-Square Tests	Homework, Pre-Test, and Post-Test for Ch. 10
	22-Mar	Thu		Review	Homework, Pre-Test, and Post-Test for Ch. 13

13	27-Mar	Tue		**Exam #3 (Ch. 9, 10, 13)**	
	29-Mar	Thu	Ch 11	Correlation	
14	3-Apr	Tue			
	5-Apr	Thu	Ch 12	Regression, SS-Error, R2, & Multiple Regression (Prediction)	Homework, Pre-Test, and Post-Test for Ch. 11
15	10-Apr	Tue			
	12-Apr	Thu		Review	Homework, Pre-Test, and Post-Test for Ch. 12 (due 11-April)
16	17-Apr	Tue		Review	
	24-Apr	**Tue**		**Final Exam (Comprehensive) 7:00-10:00pm**	

Study Suggestions (supported by research)

You should read and prepare regularly throughout the semester. Begin by reviewing the lecture notes and assigned readings. Your exams and quizzes are structured to assess your understanding of these materials. In addition to reading, be sure to review other study resources (such as videos posted to Moodle, class notes, and summaries in the textbook). Students learn in different ways, take full advantage of the diverse resources available to you.

- **Before each lecture**: Skim the chapter so you have a general framework for the material that we will discuss.
- **During the lecture**: Pay attention, ask questions, and take notes. Research shows that taking notes by hand (as opposed to taking notes on a laptop) increases long-term retention of material, especially conceptual information (Mueller & Oppenheimer, 2014; study posted on Moodle) – thus, I encourage you to print the lecture notes and complete them by hand. Refrain from talking to your classmates and engaging in other distracting activities during lecture. If you do not encode the information – you will not remember it!
- **After class**: Go back and read the textbook chapter carefully. Use the chapter summaries to assess your understanding of the material. Summarize each section in your own words (about 4-6 sentences) and compare your notes to those at the end of each major section and chapter. If your summaries are similar to those presented in the textbook, you know you are on the right track. Finally, come up with original examples for concepts, and make them personally meaningful to you (for example, if you love animals you could make your examples about animals), as this is a good way to store the information in long-term memory.

I strongly recommend you space your work, setting aside a few hours each day most days of the week, as this has been shown to increase long-term memory as well. In terms of class participation, reading, reviewing, and completing course assignments and quizzes, expect to spend at least 8 hours per week on this course.

Class Lecture / Discussion: You must attend class to do well in this course. Some class time will be devoted to review and explanation of topics from the assigned readings. You will also be expected to ask questions, discuss course topics and critical issues, and participate in activities in order to deepen your understanding of psychology. Class lectures / discussions clarify topics, pose questions, and provide examples to facilitate understanding and critical thinking for course material. PowerPoint slides highlight key course concepts and provide an organizational overview for your study of each chapter. After each chapter is covered in class (or part of a chapter, see course schedule on the first page of this document), you should thoroughly read the chapter in the book and integrate the lecture material with the textbook content (see Study Suggestions above). Your knowledge of assigned reading and lecture material will be assessed regularly through quizzes, activities, and exams.

Videos: Brief video clips illustrating psychological concepts or research will be posted to Moodle throughout the semester. Your understanding of video content will be assessed on chapter quizzes and class exams. Take notes on key concepts as you are viewing the clips for later review.

Study group: Many students find it helpful to study with other people, so I encourage you to engage with your classmates and challenge each other. Contacting other students will also be useful if you need to make up missed material.

Email & Office Hours

Email is the best way to contact me – ysela@oakland.edu – and I usually respond within 24-48 hours.

To ensure a respectful and professional communication, please follow these guidelines when you are writing an email to me (or any other instructor):

- In the subject line, include the course number and section, your first and last name, and the topic you are writing about.
- In the body of the email, begin with a polite greeting, addressing the instructor in the same way they refer to themselves (for example: "Hello Dr. Sela,").
- Then, clearly state your question or concern. Provide as much relevant information as you can.
- Describe what you have done so far to try and get this information (e.g., searched the syllabus, asked a classmate).
- Finally, write your email in proper English, and proof read it for grammar, spelling, and tone.

- For a more detailed (and entertaining) discussion, read How to Email Your Professor, which will explain how to use this template →

Dear [1] Professor [2] Last-Name [3],

This is a line that recognizes our common humanity [4].

I'm in your Class Name, Section Number that meets on This Day [5]. This is the question I have or the help I need [6]. I've looked in the syllabus and at my notes from class and online and I asked someone else from the class [7], and I think This Is The Answer [8], but I'm still not sure. This is the action I would like you to take [9].

Signing off with a Thank You is always a good idea [10],
Favorite Student

Office Hours: Please send me an email before coming in so I can be prepared for our meeting. In your email, let me know when you would like to come in (Thursday 5:00-6:00 pm), and what you would like to discuss. If you would like to meet at another time, I am happy to arrange this with you. I will confirm receipt of your email within 24 hours.

Reason for coming in to office hours:	You should bring:
Asking specific questions or clarifying concepts after you have gone through the material yourself	Your textbook, lecture notes, and reading notes that you have taken while reviewing the material
Reviewing quizzes, exams, or assignments that have been graded	Pen and paper to take notes with
Assessing study habits and discussing how to improve them after you have tried the suggestions on p. 6 of the syllabus	A list of study habits you have already tried and any materials you have been using, such as flash cards, your textbook, lecture notes, and reading notes