San José State University
Department of Psychology
Stat 245, Advanced Statistics, Section 1, Fall 2012

Instructor: Sean Laraway, PhD
Office Location: DMH 311
Telephone: (408) 924-5679 (only available during office hours)
Email: sean.laraway@sjsu.edu
Office Hours: Wednesday, 2-4 p.m.
Class Days/Time: Monday & Wednesday, 4:30-5:45 p.m.
Classroom: DMH 347
Prerequisites: Stat 95 and Stat 115 (or equivalent Elementary and Intermediate Statistics courses)

Web Pages
We will use Desire 2 Learn (D2L) for posting course grades. You will automatically be given access to D2L upon your successful enrollment in the course.

https://sjsu.desire2learn.com/

We will use Piazza for course announcements, postings, questions, and discussions. You will receive an invitation to enroll in Piazza upon your successful enrollment in the course. Please follow the instructions to gain access to Piazza. Use Piazza to ask questions about the course structure, assignments, and material. Do not use email for these types of inquiries. Use email only for personal questions, such as those involving your grade, missing classes, etc. You are responsible for regularly checking the site for announcements, etc.

www.piazza.com

The best method of contacting me is via D2L email. Please allow 1-2 business days for a response. Email will be sent Monday-Thursday from 9 a.m.-5 p.m.

Course Description
This course will cover the following topics: (a) graphical analysis of data; (b) descriptive statistics; (c) hypothesis testing and confidence intervals; (d) t tests for comparing means; (e) one-, two-, and three-factor analysis of variance (ANOVA); (f) one- and two-factor repeated-measures ANOVA; (g) mixed (split-plot) ANOVA; (h) multiple
comparisons tests for ANOVA and RM ANOVA; (i) power analyses and effect size measures for the analyses covered; (j) the general linear model and its assumptions, along with corrections for assumption violations; (k) within-subject, between-subject, and mixed research designs; (l) non-parametric tests; and (m) statistical conclusion validity.

**MA Experimental Goals and Program Learning Outcomes**

**GOAL 1. ADVANCED KNOWLEDGE**

PLO 1.1: Students completing the MA in Psychology program will understand the major theoretical perspectives and research methods across areas of experimental psychology, i.e., Developmental, Social, Cognitive, and Physiological.

**GOAL 2. RESEARCH METHODS & SCHOLARSHIP**

Students completing the MA in Psychology program are required to complete a thesis. The thesis will demonstrate:

PLO 2.1: creative problem solving in the design, implementation of empirical research.

PLO 2.2: demonstrate project management skills in the implementation of empirical research.

PLO 2.3: demonstrate advanced competency in the statistical analysis and interpretation of empirical research findings.

PLO 2.4: be able to communicate (oral and written) their research findings at a professional level.

*Stat 245 contributes to these PLOs*

**GOAL 3. CAREER ENHANCEMENT**

PLO 3.1 Students completing the MA in Psychology program will achieve career enhancement through placement in a doctoral program or acceptance of a position requiring a master's in psychology in the public or private sector.

*Stat 245 contributes to these PLOs*

**Student Learning Objectives (SLOs)**

Upon successful completion of this course, the student will have the ability:

1. To describe the defining features of several experimental designs in the behavioral sciences
2. To recognize and understand the appropriate statistical analyses for these designs
3. To compute, by hand and using computer software (SPSS, Excel, online calculators), the appropriate descriptive statistics, test statistics, confidence intervals, and effect size measures for these analyses
4. To compute power analyses/sample size determinations for various designs
5. To write APA-style results sections to report the results of various statistical analyses
6. To understand the assumptions of the statistical tests, determine if the data meet these assumptions, and make appropriate corrections when they don’t do so
Required Texts/Readings

Textbook

Other equipment / material requirements
1. Scientific calculator (must have square root and exponent buttons)
2. Computer, printer, internet and library access
3. Scantron (882) forms
4. Access to Statistical Package for the Social Sciences (SPSS) software

Classroom Protocol

Classes
Classes will comprise lectures and in-class activities. Attendance is expected and is critical for success in this course. If you miss a class, you are responsible for obtaining the information covered. It is vital that you complete all scheduled readings and assignments before each class. Always bring your text and calculator to class. Do not talk, read, text message, or eat during class. Please arrive to class on time and stay the entire time.

Classroom Protocol

Etiquette
Students are expected to attend class and maintain a level of professional and courteous behavior in the classroom. Respect for the rights and opinions of others is expected. The free and open exchange of ideas is the cornerstone of higher education, but we must always remain respectful of others, even if we disagree strongly with them. Disagreement is acceptable, but discourteousness is not. Behavior that creates a threatening or harassing environment (either online or in class) will not be tolerated. Severe and pervasive disruptions of class activities are a violation of the Student Code of Conduct will be reported to the Office of Judicial Affairs. In short, be cool to one another.


Laptops
In-class laptop use should be restricted to course-related activities (e.g., taking notes). Other activities (e.g., checking email, Facebook®, MySpace®) distract both the instructor and students and will not be tolerated. You will be asked to turn off your laptop if you are engaged in non-class activities and you may be asked to refrain from laptop use for the duration of the course if this behavior continues.
**Cell phones and other electronic devices**

Please be certain to turn off or put in silent mode (not vibrate mode as that is still audible and is distracting) all cell phones, pagers, and any other devices that produce distraction prior to entering the classroom. Cell phones should be put away (e.g., in purses, backpacks, pockets) before class starts. Any student using a cell phone will be asked to leave class.

**Late arrivals**

If you must arrive late or leave early, please do so quietly and with a minimum of distraction. Repeated tardiness will not be tolerated. Please come to class on time.

**I expect you to come to class prepared**

“Prepared” means you have completed the readings and any assignment before class starts.

**Check the course D2L site regularly**

I will make important course announcements, post grades, etc. on the D2L site. If I become ill, I will inform you as soon as I can via D2L. You should check the site before each class.

**Electronics Policy**

Do not use cell phones, foreign language dictionaries, laptop computers, headphones, or any other electronic device during exams. Turn off all pagers, cell phones, headphones, etc. before class. Using cell phones and other communication methods (e.g., text messaging) during class is not allowed. Do not use electronic devices to check email, visit web sites, play games, or send instant messages. Doing so is a distraction to other students and the instructor and will result in expulsion from class.

**Dropping and Adding**

Students are responsible for understanding the policies and procedures about add/drop, academic renewal, etc. Refer to the current semester’s catalog policies section for any add/drop deadlines, policies, and procedures section and specific registration information. Please be aware of the Late drop policy is available. Students should be aware of the current deadlines and penalties for dropping classes.

**Consent for Recording of Class and Public Sharing of Instructor Material, Amends F06-2**

Whereas Common courtesy and professional behavior dictate that someone is notified when being recorded; and audio recording without consent in private settings is prohibited by California Penal code 630-635, and

Whereas Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval; and is already prohibited by California Civil Code 980 a(1), and

Whereas It is desirable to allow flexibility to faculty as to when and how consent is given for recording classes or publicly sharing course material; therefore be it

Resolved That the following items be included in the list of greensheet items
recommended for consideration in the Appendix of University Policy F06-2.

“Common courtesy and professional behavior dictates that you notify someone when you are recording him/her. You must obtain the instructor’s permission to make audio or video recordings in this class. This permission allows the recordings to be used for your private, study purposes only. The recordings are the intellectual property of the instructor; you have not been given any rights to reproduce or distribute the material.”

“Course material developed by the instructor is the intellectual property of the instructor and cannot be shared publicly without his/her approval. You may not publicly share or upload instructor generated material for this course such as exam questions, lecture notes, or homework solutions without instructor consent.”

Therefore, neither recording of class lectures or discussions nor distribution of course materials are allowed. Failure to follow this policy will result in immediate expulsion from the class, a grade of F in the course, and reporting the student to the University and proper authorities for further sanctions/punishment.

Assignments and Grading Policy

Method of instruction

This course will use the classic lecture-discussion format as its primary form of instruction. In addition, this course may use films, web-based content, and in-class activities to supplement lectures. Power Point lecture material for each chapter will be made available online; I will attempt to post lecture notes prior to class. However, sometimes I may be unable to do so. Please remember that I post these notes as courtesy, and I appreciate your patience if notes are not up before class time.

Be advised that due to time constraints not all text material will be covered in lecture. This does not mean that such material is not important, nor does it mean that such material will not appear on exams. You are responsible for all text and lecture material. Students are encouraged to ask questions during class or via the course web site.

Exams

You will have four exams. Exams 1 and 2 will have two parts: (1) an in-class portion and (2) a take-home portion. The in-class portion will assess conceptual issues, whereas the take-home portion will assess application of the material to realistic data sets, the use of SPSS, and the writing of APA-style results sections. Exam 3 and 4 will be entirely take-home exams in similar format to the take-home portions of the other exams. Exam 4 will be due on the day of the Final Exam. Please bring a Scantron form, pencils, and a calculator to the in-class exams. You will be allowed to use your text, notes, and a calculator during exams. For the take-home portion, you will be allowed to work with one other person, if you wish to do so. You will both receive the same grade on the take-home portion.
Final Exam
The Final Exam will be an in-class cumulative exam. You will be allowed to use your text, notes, and a calculator during this exam.

Homework and other assignments
Additional assignments may involve in-class activities, take-home assignments, or other activities depending on time and other considerations. This is a graduate-level course, so you should expect to spend at least 6-9 hrs/week outside of class reading, studying, and preparing for class. You must be present to receive credit for in-class assignments.

Late work
All assignments must be submitted by the scheduled due date. Late assignments will immediately lose 25% of total points for each class period after this date. Assignments more than one class period late will not be accepted. PLEASE DO NOT EMAIL LATE ASSIGNMENTS UNLESS DIRECTED TO DO SO.

Make-up Exams
A make-up exam will only be given if you contact me prior to missing the exam in question and/or you have a documented excuse. A cumulative make-up exam will replace one missing exam score (items will be chosen at random from previous exams). This exam will occur immediately following the Final Exam, so you should be prepared to take both.

Assessment of student learning outcomes
The learning objectives will be assessed via homework assignments, exam questions, and SPSS assignments. These assessment items will involve solving verbal and symbolic quantitative problems involving the results of psychological research.

Grading
Your grade will result from the total number of points that you earn during the semester. Points will be assigned as follows:

Table 1: Assignments and point distributions
<table>
<thead>
<tr>
<th>Assignment</th>
<th>How Many?</th>
<th>Points per assignment</th>
<th>Total Points</th>
<th>% of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>TBA</td>
<td>TBA</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Exams</td>
<td>4</td>
<td>15</td>
<td>60</td>
<td>60%</td>
</tr>
<tr>
<td>Final Exam</td>
<td>1</td>
<td>20</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>100</td>
<td>100%</td>
</tr>
</tbody>
</table>

Table 2: Grading scale
<table>
<thead>
<tr>
<th>Points earned</th>
<th>Percent</th>
<th>Letter Grade</th>
<th>Points earned</th>
<th>Percent</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 98</td>
<td>≥ 98</td>
<td>A+</td>
<td>73</td>
<td>73</td>
<td>C</td>
</tr>
<tr>
<td>93</td>
<td>93</td>
<td>A</td>
<td>70</td>
<td>70</td>
<td>C-</td>
</tr>
<tr>
<td>90</td>
<td>90</td>
<td>A-</td>
<td>68</td>
<td>68</td>
<td>D+</td>
</tr>
</tbody>
</table>
Department of Psychology Writing Policy

The quality of your writing is graded in this class. You will lose points if I cannot understand what you are trying to say. If you are not comfortable writing, you should seek additional assistance (see below). Whenever referencing something you have read, you are expected to provide a complete, APA-style reference. It is assumed that you know, understand, and can properly apply APA-style. If not, it is your responsibility to familiarize yourself with this style guide. Never reference a web site or web source, ever. If you find a good article referred to on the web, get it, read it, and use that original source.

Important!! The Department of Psychology has adopted the policy that designated written assignments will be returned ungraded for substantial errors in grammar, punctuation, spelling, clarity, conciseness, and validity of content. Papers returned will suffer a minimum penalty of 10% on the final grade on rewritten work. The revised paper must be returned within a maximum of seven calendar days and submitted with a copy of the original work. This policy is in effect for all courses 100W and above and by instructor discretion for courses under 100.

Unless otherwise noted, all written assignments must be typed, double-spaced, with 1” margins, and use a standard font (i.e., Arial, Times New Roman, or Helvetica) of size 12. Your name, the semester of the course, and the course name must appear in the upper right corner. Multiple pages must be sequentially numbered and stabled in the upper left corner. Assignments will not be accepted and will be considered “late” until they are consistent with the above policy.

University Policies

Academic integrity

Students should read the University’s Academic Integrity Policy. Your own commitment to learning, as evidenced by your enrollment at San Jose State University and the University’s integrity policy, require you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. Visit the Student Conduct and Ethical Development website.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. At SJSU plagiarism is the act of representing the work of another as one’s own (without giving appropriate credit) regardless of how that work was obtained, and submitting it to fulfill academic requirements. Plagiarism at SJSU includes but is not limited to:

1. The act of incorporating the ideas, words, sentences, paragraphs, or
parts thereof, or the specific substances of another’s work, without giving appropriate credit, and representing the product as one’s own work;
2. And, representing another’s artistic/scholarly works such as musical compositions, computer programs, photographs, painting, drawing, sculptures, or similar works as one’s own.

The following URL will take you to the SJSU library’s plagiarism tutorial. If you have not yet completed this, it is worth your while to do so. http://tutorials.sjlibrary.org/tutorial/plagiarism/index.htm.

For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include in your assignment any material you have submitted, or plan to submit for another class, please note that SJSU’s Academic Policy F06-1 requires approval of instructors.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) to establish a record of their disability.

**Student Technology Resources**

Computer labs for student use are available in the Academic Success Center located on the 1st floor of Clark Hall and on the 2nd floor of the Student Union. The Statistics Lab (DMH 350) contains computers with SPSS (v. 16.0) installed. Computers are also available in the Martin Luther King Library.

**Learning Assistance Resource Center**

The Learning Assistance Resource Center (LARC) is located in Room 600 in the Student Services Center. It is designed to assist students in the development of their full academic potential and to motivate them to become self-directed learners. The center provides support services, such as skills assessment, individual or group tutorials, subject advising, learning assistance, summer academic preparation and basic skills development. Visit the LARC website for more information.

**SJSU Writing Center**

The SJSU Writing Center (Room 126, Clark Hall) is staffed by professional instructors and upper-division or graduate-level writing specialists from each of the seven SJSU colleges. Our writing specialists have met a rigorous GPA requirement, and they are well trained to assist all students at all levels within all disciplines to become better writers. Visit the Writing Center website for more information.
Peer Mentor Center
The Peer Mentor Center is located on the 1st floor of Clark Hall in the Academic Success Center. The Peer Mentor Center is staffed with Peer Mentors who excel in helping students manage university life, tackling problems that range from academic challenges to interpersonal struggles. On the road to graduation, Peer Mentors are navigators, offering “roadside assistance” to peers who feel a bit lost or simply need help mapping out the locations of campus resources. Peer Mentor services are free and available on a drop-in basis, no reservation required. Visit the Peer Mentor Center website for more information.

Tips to help you succeed in Stat 125
1. Attend all classes and take good notes; Type and compile your notes soon after class
2. Start studying at least 2 weeks before each exam
3. Read assigned readings before each class; read each chapter at least twice
4. Regularly review previous material to prepare for the Final Exam
5. Ask questions in class, in office hours, and on the course web site
6. Check the web site daily and read all postings
7. Visit the LARC or Writing Center if you need tutoring or assistance with writing
8. Complete assignments as soon as the relevant information is presented in class
9. Try to apply statistics to your career interests and areas of interest within psychology
10. Form a study group with fellow students

Acknowledgment
This syllabus incorporates materials developed by Dr. Ron Rogers, Dr. Susan Snycerski, Dr. Megumi Hosoda, and the SJSU Center for Faculty Development’s Accessible Syllabus Template. I have been granted permission by the authors to use these materials in whole or in part. I thank them for the use of their materials. I would also like to thank Dr. Bradley E. Huitema for his teaching and mentoring in statistics.

Note on the schedule
This course will follow this schedule to the extent possible. The timing and specific nature of topics and activities may change. You are responsible for being informed of any changes made to the class syllabus. Such changes will be clearly stated in class and will be posted on the class web site before the changes take effect.

Note on SPSS
I will describe how to use SPSS to conduct many of the analyses discussed in class. Information on using SPSS is available online. I will offer help on using SPSS and interpreting SPSS results during class and in office hours. You can obtain access to SPSS by: (1) buying the software from the Help Desk in Clark Hall (RECOMMENDED); (2) visiting the Statistics Laboratory in DMH 350 during office hours; or (3) visiting the King Library or Clark Hall, both of which have SPSS installed on some computers.
Senate Policy S12-3 on student work expectations

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of forty-five hours over the length of the course (normally 3 hours per unit per week with 1 of the hours used for lecture) for instruction or preparation/studying or course-related activities including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.

The credit hour is defined as "the amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutionally established equivalency that reasonably approximates not less than:

(1) One hour of classroom or direct faculty instruction and a minimum of two hours of out-of-class student work each week for approximately fifteen weeks for one semester

(2) A credit hour is assumed to be a 50-minute (not 60-minute) period.

As an example, the expectation of work for a 3-credit course is 150-minutes of direct faculty instruction and a minimum of six hours of out-of-class student work each week.
Table 3: Course Schedule

<table>
<thead>
<tr>
<th>DATE</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-22</td>
<td>• Introduction to Stat 245</td>
<td>• Syllabus</td>
</tr>
<tr>
<td>8-27</td>
<td>• Introduction to Stat 245</td>
<td>• Writing APA-style Results sections</td>
</tr>
<tr>
<td>9-03</td>
<td>• Statistics and experimental design review</td>
<td>• Displaying data</td>
</tr>
<tr>
<td>9-17</td>
<td>• Exam 1 In-class portion (Ch. 1-6)</td>
<td>• Ch. 1-2</td>
</tr>
<tr>
<td>9-24</td>
<td>• Exam 1 Take-Home portion due</td>
<td>• Ch. 3</td>
</tr>
<tr>
<td>10-01</td>
<td>• Power and effect size measures</td>
<td>• Ch. 4-5</td>
</tr>
<tr>
<td>10-08</td>
<td>• One-way ANOVA</td>
<td>• Ch. 6</td>
</tr>
<tr>
<td>10-10</td>
<td>• One-way ANOVA</td>
<td>• Lecture</td>
</tr>
<tr>
<td>10-15</td>
<td>• Exam 2 In-class portion (Ch. 8, 12-16; Cohen, 1992)</td>
<td>• Lecture</td>
</tr>
<tr>
<td>10-17</td>
<td>• Multiple comparisons procedures</td>
<td></td>
</tr>
<tr>
<td>10-22</td>
<td>• Exam 2 Take-Home portion due</td>
<td>• Lecture</td>
</tr>
<tr>
<td>10-24</td>
<td>• Multiple comparisons procedures</td>
<td>• Lecture</td>
</tr>
<tr>
<td>10-29</td>
<td>• Factorial between-subjects ANOVA, 2 IVs</td>
<td>• Ch. 17</td>
</tr>
<tr>
<td>11-05</td>
<td>• Factorial between-subjects ANOVA, 3 IVs</td>
<td>• Lecture</td>
</tr>
<tr>
<td>11-12</td>
<td>• Veteran’s Day – No Class</td>
<td></td>
</tr>
<tr>
<td>11-26</td>
<td>• Mixed ANOVA</td>
<td>• Lecture</td>
</tr>
<tr>
<td>12-03</td>
<td>• Statistical Conclusion Validity</td>
<td>• Lecture</td>
</tr>
<tr>
<td>12-18</td>
<td>• Final Exam, 2:45 – 5:00</td>
<td>• Lecture</td>
</tr>
<tr>
<td>12-18</td>
<td>• Exam 4 Take-Home Due</td>
<td></td>
</tr>
</tbody>
</table>