San José State University  
Department of Psychology  
Stat 245, Advanced Statistics, Section 1, Summer 2013

Instructor: Sean Laraway, PhD
Office Location: DMH 311
Telephone: (408) 924-5679 (only available during office hours)
Email: sean.laraway@sjsu.edu
Office Hours: M, W 4-5 p.m.
Class Days/Time: M, W 5:00-8:45 p.m.
Classroom: Clark Hall 131
Prerequisites: Stat 95 and Stat 115 (or equivalent Elementary and Intermediate Statistics courses)

Web Pages
We will use Canvas for posting course grades. You will automatically be given access to Canvas upon your successful enrollment in the course.

https://sjsu.instructure.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 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 in univariate statistics: (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) within-subject, between-subject, and mixed research designs; and (k) statistical conclusion validity.

**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**


The text can be purchased online or in the Spartan Bookstore. You must purchase the textbook. I will allow you to use the 6th Edition, if you choose to do so.

**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
5. Laptop (not required, but recommended for in-class activities)

**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. Please bring your
laptop to every class, as we will use computers to analyze data.

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 Piazza site regularly
I will make important course announcements on Piazza. If I become ill, I will inform you
as soon as I can via Piazza. 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 will use in-class activities to supplement lectures. 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 Piazza.

**Exams**

You will have four exams. Exams 1 and 2 will be taken in class. 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 these individual exams. Exams 3 and 4 are take-home exams, although I will give you some class time to work on them. You may work in teams for the take-home exams.

**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. You may work in teams for this exam.

**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 hrs/week working on this course, including reading, studying, completing assignments, and preparing for class.** You must be present to receive credit for in-class assignments, unless you make arrangements with me.

**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.

**Assessment of student learning outcomes**

The learning objectives will be assessed via quizzes, homework assignments, and exam questions. These assessment items will involve solving verbal and symbolic quantitative problems involving the results of behavioral 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>
<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>Assignments</td>
<td>TBA</td>
<td>TBA</td>
<td>25</td>
<td>10%</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>15</td>
<td>15</td>
<td>10%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>100</td>
<td>100%</td>
</tr>
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</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>
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<tr>
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<td>B+</td>
<td>63</td>
<td>63</td>
<td>D</td>
</tr>
<tr>
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<td>83</td>
<td>B</td>
<td>60</td>
<td>60</td>
<td>D-</td>
</tr>
<tr>
<td>80</td>
<td>80</td>
<td>B-</td>
<td>&lt; 60</td>
<td>&lt; 60</td>
<td>F</td>
</tr>
<tr>
<td>78</td>
<td>78</td>
<td>C+</td>
<td></td>
<td></td>
<td></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 (Times or Times New Roman) 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 stapled 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

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The **University's Academic Integrity policy**, located at http://www.sjsu.edu/senate/S07-2.htm, requires 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. The **Student Conduct and Ethical Development website** is available at http://www.sjsu.edu/studentconduct/.
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. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have submitted, or plan to submit for another class, please note that SJSU's Academic Integrity Policy S07-2 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](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the Disability Resource Center (DRC) at [http://www.drc.sjsu.edu/](http://www.drc.sjsu.edu/) to establish a record of their disability.

**Student Technology Resources**

Computer labs for student use are available in the Academic Success Center at [http://www.at.sjsu.edu/asc/](http://www.at.sjsu.edu/asc/) located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiotape players; sound systems, wireless microphones, projection screens and monitors.

**SJSU Peer Connections**

The Learning Assistance Resource Center (LARC) and the Peer Mentor Program have merged to become Peer Connections. Peer Connections is the new campus-wide resource for mentoring and tutoring. Our staff is here to inspire students to develop their potential as independent learners while they learn to successfully navigate through their university experience. Students are encouraged to take advantage of our services which include course-content based tutoring, enhanced study and time management skills, more effective critical thinking strategies, decision making and problem-solving abilities, and campus resource referrals.

In addition to offering small group, individual, and drop-in tutoring for a number of undergraduate courses, consultation with mentors is available on a drop-in or by appointment basis. Workshops are offered on a wide variety of topics including preparing for the Writing Skills Test (WST), improving your learning and memory, alleviating procrastination, surviving your first semester at SJSU, and other related topics. A computer lab and study space are also available for student use in Room 600 of Student Services Center (SSC).
Peer Connections is located in three locations: SSC, Room 600 (10th Street Garage on the corner of 10th and San Fernando Street), at the 1st floor entrance of Clark Hall, and in the Living Learning Center (LLC) in Campus Village Housing Building B. Visit Peer Connections website at http://peerconnections.sjsu.edu for more information.

SJSU Writing Center

The SJSU Writing Center is located in Suite 126 in Clark Hall. It 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. The Writing Center staff can be found at http://www.sjsu.edu/writingcenter/about/staff/.

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 Piazza site daily and read all postings
7. Visit Peer Connections 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 Snyderski, 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 & Laptops

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 must have access to SPSS for this class. You may purchase the software from the Help Desk in Clark Hall. If you have a laptop, you should bring it to every class, as we will conduct analysis in class using SPSS. You should install SPSS on your laptop.

**Definition of a Credit Hour**

Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 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, clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus. As an example, the expectation of work for a 3-credit course is 150 minutes of direct faculty instruction and six hours of out-of-class student work each week.

**Stat 245 Advanced Statistics Summer 2013 Course Schedule**

(Note that this schedule is tentative and may change with fair warning)

**Table 3: Course Schedule**

<table>
<thead>
<tr>
<th>DATE</th>
<th>Topic</th>
<th>Reading</th>
<th>Due</th>
</tr>
</thead>
<tbody>
<tr>
<td>06/03</td>
<td>• Introduction to Stat 245&lt;br&gt;• Writing APA-style Results sections&lt;br&gt;• Statistics and experimental design review&lt;br&gt;• Displaying data&lt;br&gt;• Common measures of central tendency &amp; variability&lt;br&gt;• Intro to SPSS</td>
<td>• Syllabus&lt;br&gt;• Supplement&lt;br&gt;• Ch. 1-2&lt;br&gt;• Ch. 3&lt;br&gt;• Ch. 4-5</td>
<td>• Come to class</td>
</tr>
<tr>
<td>06/05</td>
<td>• The Normal Distribution &amp; assessing normality&lt;br&gt;• z scores</td>
<td>• Ch. 6</td>
<td>• Buy &amp; Install SPSS</td>
</tr>
<tr>
<td>06/10</td>
<td><strong>Exam 1</strong>&lt;br&gt;• Sampling distributions, hypothesis testing, and confidence intervals&lt;br&gt;• Testing differences in means with one and two samples</td>
<td>All previous material&lt;br&gt;• Ch. 8&lt;br&gt;• Ch. 12-14</td>
<td></td>
</tr>
<tr>
<td>06/12</td>
<td>• Power and effect size measures&lt;br&gt;• One-way ANOVA&lt;br&gt;• Multiple comparisons procedures</td>
<td>• Ch. 15, Cohen (1992)&lt;br&gt;• G*Power&lt;br&gt;• Ch. 16</td>
<td>• Install G*Power</td>
</tr>
<tr>
<td>Date</td>
<td>Exam</td>
<td>Material since Exam 1</td>
<td>Supplement</td>
</tr>
<tr>
<td>-------</td>
<td>------</td>
<td>-----------------------</td>
<td>------------</td>
</tr>
</tbody>
</table>
| 06/17 | **Exam 2**  
  - Factorial between-subjects ANOVA, 2 IVs |  
  - Ch. 17 |  
  - Ch. 17 |  
  - **Exam 3 (6/21)** |
| 06/19 |  
  - Factorial between-subjects ANOVA, 2 IVs |  
  - Ch. 17 |  
  - Ch. 17 |  
  - **Exam 3 (6/21)** |
| 06/24 |  
  - Repeated Measures ANOVA, 1 and 2 IVs |  
  - Ch. 18 |  
  - **Exam 4 (7/03)** |
| 06/26 |  
  - Mixed ANOVA |  
  - Supplement |  
  - **Exam 4 (7/03)** |
| 07/01 |  
  - Correlation & simple regression |  
  - Ch. 9-10 |  
  - **Exam 4 (7/03)** |
| 07/03 |  
  - **Final Exam** |  
  - All previous material  
  - Cohen (1990) |  
  - Comments on Cohen (1990) |