Instructor: Sean Laraway, PhD
Office Location: DMH 311
Telephone: (408) 924-5679
Email: sean.laraway@sjsu.edu
Office Hours: Tuesdays & Wednesdays, 3-5 p.m.
Class Days/Time: Thursday, 3:00-5:45 p.m.
Classroom: DMH 226A
Prerequisites: Stat 95 and Stat 115 (or equivalent Elementary and Intermediate Statistics courses)

Faculty and Course Web Page
Course web site: https://sjsu.desire2learn.com/
The best method of contacting me is via D2L email. Please allow 1-2 business days for a response. Email responses will be sent Monday-Thursday from 9 a.m.-5 p.m.

Copies of the course materials may be found on the D2L site and on my personal web You are responsible for regularly checking the D2L for announcements, etc.

Course Description
This course covers (a) the applications of analysis of variance (ANOVA) and related methods to a variety of experimental designs, and (b) the use of these methods in hypothesis testing and estimation of magnitude of effects. Although the primary focus is on the analysis of experimental data, we will also discuss the use of ANOVA to analyze non-experimental data. Some specific topics covered include one-, two-, and three-way ANOVA, multiple comparisons, power, effect size measures, ANCOVA, the general linear model, within- and between-subject designs, and mixed designs.

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 psychology
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 designs
4. To compute power and sample size calculations for these designs
5. To write APA-style results sections to report the results of ANOVA and related analyses

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 getting 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.

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.

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.

Assignments and Grading Policy
Exams
You will have four exams. Exams 1-3 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. Please bring a Scantron form, pencils, and a calculator to each exam. You will be allowed to use your text 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.

Final Exam

The Final Exam will be a regular unit exam, with a similar format to the other exams, except the entire exam will occur in class. This exam will not be cumulative. You will be allowed to use your text and a calculator during this exam.

Homework and other assignments

Additional assignments may involve in-class activities, take-home assignments, online quizzes, or other activities depending on time and other considerations. Expect to spend at least 6-8 hrs/week outside of class 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.

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. 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>Percent of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework</td>
<td>~10</td>
<td>~2</td>
<td>20</td>
<td>20%</td>
</tr>
<tr>
<td>Exams</td>
<td>4</td>
<td>20</td>
<td>80</td>
<td>80%</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 (U passing)</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>
<tr>
<td>88</td>
<td>88</td>
<td>B+</td>
<td>63</td>
<td>63</td>
<td>D</td>
</tr>
<tr>
<td>83</td>
<td>83</td>
<td>B (G passing)</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>

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. 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; form a study group with fellow students
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. Make flashcards for important concepts and terms
8. Visit the LARC if you need tutoring
9. Complete assignments as soon as the relevant information is presented in class
10. Try to apply statistics to your career interests and areas of interest within psychology
Acknowledgment
This syllabus incorporates materials developed by Dr. Ron Rogers, Dr. Susan Sncerski, and the SJSU Center for Faculty Development’s Accessible Syllabus Template. I thank them for the use of their materials. I would also like to thank Dr. Bradley E. Huitema for his teaching and mentoring.

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.

On Exam Days . . .
The in-class portion of Exams 1-3 will last 1.5 hr. Class will resume after the exam.

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; (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.
<table>
<thead>
<tr>
<th>DATES</th>
<th>Topic</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUG 26</td>
<td>• Statistics and experimental design review</td>
<td>• Ch. 1</td>
</tr>
<tr>
<td>SEP 2</td>
<td>• Statistics and experimental design review</td>
<td>• Ch. 1</td>
</tr>
<tr>
<td>SEP 9</td>
<td>• Sources of variability &amp; SS</td>
<td>• Ch. 2</td>
</tr>
<tr>
<td>SEP 16</td>
<td>• Variance estimates &amp; the F ratio</td>
<td>• Ch. 3</td>
</tr>
<tr>
<td>SEP 23</td>
<td>• Analytical comparisons among means</td>
<td>• Ch. 4</td>
</tr>
<tr>
<td>SEP 23</td>
<td>• Simultaneous comparisons</td>
<td>• Ch. 6</td>
</tr>
<tr>
<td>SEP 30</td>
<td>• EXAM 1 (Ch. 1-4, 6)</td>
<td>• Ch. 7</td>
</tr>
<tr>
<td>SEP 30</td>
<td>• The linear model and its assumptions</td>
<td></td>
</tr>
<tr>
<td>OCT 7</td>
<td>• Introduction to factorial designs</td>
<td>• Ch. 8</td>
</tr>
<tr>
<td>OCT 7</td>
<td>• The overall two-factor analysis</td>
<td>• Ch. 9</td>
</tr>
<tr>
<td>OCT 14</td>
<td>• Main effects and simple effects</td>
<td>• Ch. 12</td>
</tr>
<tr>
<td>OCT 14</td>
<td>• The analysis of interaction components</td>
<td>• Ch. 13</td>
</tr>
<tr>
<td>OCT 21</td>
<td>• EXAM 2 (Ch. 7-8, 10-13, Cohen, 1992)</td>
<td>• Ch. 15</td>
</tr>
<tr>
<td>OCT 21</td>
<td>• The analysis of covariance</td>
<td>• Huitema (2010)</td>
</tr>
<tr>
<td>OCT 28</td>
<td>• The analysis of covariance, continued</td>
<td>• Ch. 15</td>
</tr>
<tr>
<td>OCT 28</td>
<td>• Single-factor within-subject designs</td>
<td>• Ch. 16</td>
</tr>
<tr>
<td>NOV 4</td>
<td>• Further within-subject topics</td>
<td>• Ch. 17</td>
</tr>
<tr>
<td>NOV 4</td>
<td>• Two-factor within-subject designs</td>
<td>• Ch. 18</td>
</tr>
<tr>
<td>NOV 11</td>
<td>VETERAN’S DAY</td>
<td></td>
</tr>
<tr>
<td>NOV 18</td>
<td>• EXAM 3 (Ch. 15-18, Huitema, 2010)</td>
<td></td>
</tr>
<tr>
<td>NOV 25</td>
<td>THANKSGIVING HOLIDAY</td>
<td></td>
</tr>
<tr>
<td>DEC 2</td>
<td>• Mixed designs</td>
<td>• Ch. 19-20</td>
</tr>
<tr>
<td>DEC 9</td>
<td>• The overall three-factor design</td>
<td>• Ch. 21</td>
</tr>
<tr>
<td>DEC 15</td>
<td>• EXAM 4 (Ch. 19-21), 2:45 – 5:00</td>
<td></td>
</tr>
</tbody>
</table>