

**STAT 313 APPLIED EXPERIMENTAL DESIGN AND REGRESSION MODELS
FALL 2019**

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Office Hours: Monday 2:10-3:30p, Wednesday 2:10-3:30p, Thursday 2:10-3p OR by appointment

****You are encouraged to stop by office hours for a short ‘get to know you chat’ (~10 minutes) at some point during the first two weeks of class. Please remember that you do not need an appointment to come to the office hours posted above.*

COURSE PREREQUISITE: Successful completion of STAT 217, 218, 312 or equivalent.

REQUIRED MATERIALS:

- *Computer Access –You must have regular access to a computer. Course information/handouts/notes/data sets/readings will be posted on PolyLearn.*
- *We will use the software package JMP for all data analysis.*
- *You are expected to bring your course notes and calculator to class everyday*

LEARNING OBJECTIVES: The student should be able to:

- a. Understand and know how to use the following designs in analysis of variance:
 1. One-way classification
 2. Randomized blocks
 3. Latin squares
 4. Two-factor and three-factor completely randomized designs
- b. Be able to make multiple comparisons of population means.
- c. Understand the basics of simple linear and multiple regression including:
 1. Residual analysis
 2. Lack of fit
 3. Transformations
 4. Tests for normality
 5. Indicator variables
- d. Understand and know how to use variable selection techniques in regression.
- e. Understand and know how to use analysis of covariance with one factor classification.

This is an inclusive class that welcomes and values participation from individuals of all identities, which includes but is not limited to: race, ethnicity, culture, religion, gender, sexual orientation, language, national origin, age, immigration status, physical/emotional/developmental ability, and socio-economic status.

POLYLEARN All notes, hand-outs, homework, data sets, etc. will be posted to PolyLearn. Course notes will be posted weekly. Please print a copy and bring to class each week. You should get in the habit of checking regularly for announcements. It is **your** responsibility to check PolyLearn for homework/announcements etc. in the event that you miss class.

GRADING:

Homework, Reading Quizzes, Prelabs and Assignments	20%
Midterm Exams	2 x 25% each
Final Exam	30%

HOMEWORK, READING QUIZZES, PRELABS & OTHER ASSIGNMENTS: Short homework/assignments will be given periodically. You may work with a partner (no more than 2 people). If you decide to work with a partner, please turn in only one copy of the homework with both names. These assignments may be submitted via PolyLearn, or you may be asked to turn in a hard copy. Regardless, only neat, legible, well organized, and on-time assignments will be graded. Late homework assignments will NOT be accepted. If you plan to miss class on the day an assignment is due, you should turn it in before the due date. In addition to homework, there may be other assignments such as PolyLearn Reading Quizzes and Prelabs. Occasionally, you may be asked to turn in a Lab. All homework and other assignments will together count as 20% of your course grade.

EXAMS: There will be 2 midterm exams; each worth 25% of your grade. You must bring a calculator. It is not permitted to use the calculator on a cell phone. Make-up exams will be given only for compelling reasons when submitted in writing at least one week prior to the exam. Make-up exams must be taken before the regularly scheduled exam time. Should you fall ill or have some unavoidable conflict the day of an exam email me immediately or call my office or the Stat office (756-2709). With documented evidence of your illness or conflict, arrangements will be made to rescale the evaluation process.

FINAL EXAM: There will be a comprehensive final exam worth 30% of your course grade. You must bring a calculator. Note: Do NOT make travel arrangements that conflict with the final date and time.

ACADEMIC INTEGRITY: It is assumed that all work turned in for this course is the work of the student whose name appears on that work. Cheating on a quiz or exam will result in an F in the course and will be reported to the Office of Student Rights and Responsibilities (<http://www.osrr.calpoly.edu/>). Penalties for other forms of cheating will be at the instructor's discretion. Go to <http://www.osrr.calpoly.edu/plagiarism> for information on the CPSU academic honesty policy.

Students with disabilities are encouraged to contact me during office hours to discuss their disability related needs. Use of Disability Resource Center services, including testing accommodations, requires prior authorization by the DRC and compliance with approved procedures.

Tentative Course Schedule: STAT 313, Fall 2019 (subject to change)

Week	Topics	M	T (35-111B)	W	R (35-111B)	F
9/19, 9/20	Preliminaries				Class begins	
Week 1 9/23 – 9/27	Chpt 1: Sources of variation, modeling, random assignment, types of conclusions		LAB 1: Memory Study		LAB 2: Starry Nights	
Week 2 9/30 – 10/4	Chpt 1: Statistical significance; Comparing 2 groups – simulation and t-tests; Comparing 2+ groups		LAB 3: Starry Nights Inference		LAB 4: Golden Squirrels	
Week 3 10/7 – 10/11	Chpt 1: Comparing 2+ groups;		Review LAB	Exam 1 <i>(could move to Thursday, Oct 10)</i>	LAB 5: Melting Chips	
Week 4 10/14 – 10/18	Chpt 2: matched pairs; blocking; adjusting for confounding;		LAB 6: Strawberry Storage		LAB 7: Alcohol consumption & depression	
Week 5 10/21 – 10/25	Chpt 3: factorial studies; interaction		LAB 8: Pig Growth		LAB 9: Optimizing Beer Ads	
Week 6 10/28 – 11/1	Chpt 3: interaction;		LAB 10: Hopelessness & Exercise			
Week 7 11/4 – 11/8	Chpt 4: simple linear regression		Exam 2		LAB 11: Fatty Acid	
Week 8 11/11 – 11/15	Chpt 4: regression with quant and cat variables	Veteran's Day No Classes	LAB 12: Fatty Acids Inference		LAB 13: Smoking & Lung Capacity	
Week 9 11/18 – 11/22	Chpt 4: regression with 2+ categories Chpt 5: regression with multiple quantitative variables		LAB 14: Patient Satisfaction		LAB 15: Biodiesel	
11/25 – 11/29		Thanksgiving	Break	No	Classes	
Week 10 12/2 – 12/6	Chpt 5: regression with multiple quantitative variables		LAB 16: Brain Size & IQ			
Finals' Week 12/9 – 12/13		8am Section 7:10a – 10a		9am Section 7:10a – 10a		