

San José State University
Department of Mathematics and Statistics
Math 261A Regression Theory and Methods, Section 1, Fall 2019

Course and Contact Information

Instructor:	Guangliang Chen
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Office Hours:	MW 1-2:30pm, and by appointment
Class Days/Time:	MW 10:30-11:45am
Classroom:	MH 233
Prerequisites:	Math 129A (with a grade of B or better), Math 163* and Math 167R* (*may be taken concurrently)

Faculty Web Page and MYSJSU Messaging

Course materials such as syllabus, handouts, notes, assignment instructions, etc. can be found on [Canvas Learning Management System course login website](http://sjsu.instructure.com) at <http://sjsu.instructure.com>. You are responsible for regularly checking with the messaging system to learn of any updates.

Course Description

Math 261A is a graduate course in regression theory and methods. It provides an overview of the most commonly used regression techniques such as simple and multiple linear regression, use of categorical variables in regression, model diagnostics, variable transformations and nonlinear regression techniques. Other topics discussed include variable selection, regression trees, logistic regression and statistical inference for regression models. The theoretical aspects of the models are discussed. Practical applications include data analysis with the statistical software package R.

Textbook

Montgomery, Peck & Vining, Introduction to Linear Regression Analysis. 5th edition, 2012. ISBN: 978-0-470-54281-1. This text is available as an e-book (for free) through the SJSU library.

Technology Requirements

A scientific calculator is required for use on homework assignments and exams. Calculators that can compute Normal, t, F, and chi-squared distribution probabilities and quantiles (e.g., TI-84) are preferred. Access to a computer that runs R (a freely available statistical software that runs under Windows, Mac and Linux environments) is required for homework assignments.

Course Requirements and Assignments

Course requirements include weekly homework assignments, two midterm exams, and a final exam.

You are expected to attend all classes and actively participate in classroom discussions which often lead to a deeper understanding of the concepts and are also strongly associated with course grade.

Success in this course is based on the expectation that students will spend at least 6 hours per week outside of class time in studying.

Final Examination or Evaluation

The course will end with a comprehensive final exam. More details will be given near the end of the semester.

Grading Information

Students may collaborate on homework but must write independent solutions according to their own understanding. Copying and other forms of cheating will not be tolerated and may result in a failing grade for the course, combined with other disciplinary actions from the university.

You must submit homework on time to receive full credit. Late submissions within two days of the due time will receive a penalty of 20% (if within 24 hours of deadline), or 50% (if within 48 hours of deadline).

Submissions that are late for more than two days (48 hours) will not be accepted for any reason.

No make-up exam will be given if you miss a midterm exam. If you have a legitimate excuse such as illness or other personal emergencies and can provide documented evidence, then the percentage of the midterm will be incorporated into the final.

You must show all your work for both homework and tests. Note that it is your work (in terms of correctness, completeness, and clarity), not just your answer, that is graded. Thus, correct answers with no or poorly written supporting steps may receive very little credit.

The weights in determining the semester average are:

- Homework: 15%
- Midterm 1: 25%
- Midterm 2: 25%
- Final exam: 35%

I expect to use the following cutoffs for assigning your course grade (I reserve the right to slightly adjust these percentages in order to better reflect the actual distribution of the class in the end):

<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>	<i>Grade</i>	<i>Percentage</i>
<i>A plus</i>	<i>98 to 100%</i>	<i>B plus</i>	<i>86 to 89%</i>	<i>C plus</i>	<i>73 to 75%</i>		
<i>A</i>	<i>93 to 97%</i>	<i>B</i>	<i>80 to 85%</i>	<i>C</i>	<i>68 to 72%</i>	<i>D</i>	<i>60 to 65%</i>
<i>A minus</i>	<i>90 to 92%</i>	<i>B minus</i>	<i>76 to 79%</i>	<i>C minus</i>	<i>65 to 67%</i>	<i>F</i>	<i>0 to 59%</i>

Classroom Protocol

- The class starts on time, so please do not be late.
- If you miss a class, you are responsible for finding out what's said/done in that class (such as new announcement, deadline change, etc.) and responding accordingly.
- Please make sure to turn off or mute your cell phone during class.
- Please do not perform irrelevant or distracting activities in class.
- Academic dishonesty at any level is not tolerated and will be surely reported to the Office of Student Conduct (per SJSU policy).

University Policies

Per University Policy S16-9 (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant information to all courses, such as academic integrity, accommodations, dropping and adding, consent for recording of class, etc. is available on Office of Graduate and Undergraduate Programs' [Syllabus Information web page](http://www.sjsu.edu/gup/syllabusinfo/) at <http://www.sjsu.edu/gup/syllabusinfo/>".

Math 261A Regression Theory and Methods, Fall 2019, Course Schedule

This schedule is subject to change with fair notice in class and also through Canvas messaging system.

Class	Date		Topic	Textbook
1	AUG 21	W	Introduction and overview	Chapter 1
2	26	M	Simple linear regression	Chapter 2
3	28	W	Simple linear regression	
4	SEP 4	W	Simple linear regression	
5	9	M	Multiple linear regression	Chapter 3
6	11	W	Multiple linear regression	
7	16	M	Multiple linear regression	
8	18	W	Model adequacy checking	Chapter 4
9	23	M	Model adequacy checking	
10	25	W	Buffer/Review	
11	30	M	Midterm 1	
12	OCT 2	W	Transformations and weighting	Chapter 5
13	7	M	Transformations and weighting	
14	9	W	Diagnostics for leverage and influence	Chapter 6
15	14	M	Polynomial regression models	Chapter 7
16	16	W	Polynomial regression models	
17	21	M	Polynomial regression models	
18	23	W	Indicator variables	Chapter 8
19	28	M	Indicator variables	
20	30	W	Indicator variables	
21	NOV 4	M	Buffer/Review	
22	6	W	Midterm 1	
23	13	W	Variable selection and model building	Chapter 10
24	18	M	Variable selection and model building	
25	20	W	Validation of regression models	Chapter 11
26	25	M	Multicollinearity	Chapter 9
27	DEC 2	M	Multicollinearity	
28	4	W	Multicollinearity	
29	9	M	Buffer/Review	
Final exam	12	R	9:45am – noon	