

DSO 529: Advanced Regression Analysis, Spring 2021

Instructor: Dawn Porter	TA: Sarah Bangerth
Class Time: Tuesday/Thursday, 2:00 – 3:20pm PST	Email: bangerth@marshall.usc.edu
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Office Hours: Thursdays, 11:00am – 12:30pm PST and by appointment	

Course goals/Learning Objectives.

Students successfully completing this course will be able to:

1. Explain more advanced topics in Multiple Regression Analysis, Survey Analysis, and several Time Series Analysis methods.
2. Carry out analyses of practical problems in estimation and testing of the above using the JMP computer software package.
3. Describe applications of the above procedures to Finance, Marketing, and other business fields.

Learning Objectives.

- Students will understand basic probability and be able to use common discrete and continuous distributions for modeling.
- Students will learn to use Excel to simulate random variables (generate samples from a distribution).
- Students will learn techniques for deciding what probability distribution represents given data.
- Students will be able to apply tools and theorems to make probability calculations when an underlying distribution is not known.

Prerequisites.

Intermediate level course in statistical methods (GSBA 545 or 506 or equivalent) covering the basics of statistical inference, confidence intervals, and univariate tests and techniques. I will spend a few days of review solidifying the Hypothesis Testing and Simple Regression concepts you should have covered in your prior course. A “practice test” covering these relevant basics that you should have mastered by the end of these review classes will be posted on Blackboard. If you feel that you do not have a sufficient grasp of these concepts, please come see me and we will figure something out!

Textbook. Gujarati and Porter (4th ed.) 2009, Essentials of Econometrics, McGraw Hill Irwin.

Software.

We will mainly be using the JMP software to perform the Regression Analyses procedures. Marshall has a site license for the JMP software and you can download it to your computer for free from <https://itservices.usc.edu/stats/jmp/>. Make sure you choose the proper platform for your computer. If you are not familiar enough with JMP, I will post a JMP Usage & Guidelines handout available on the course Blackboard site.

Classroom Policies.

Class attendance and participation is important to develop a coherent view of the material covered in the course. Unless accommodated as described in (b) below, attendance and active participation is expected at synchronous Zoom class sessions. Please note: all sessions will be recorded and posted in Blackboard.

- a) Students are expected to have cameras on during the synchronous Zoom sessions, and preferably use headsets or earphones to ensure the best audio quality. Please advise me if you have circumstances under which you will not be able to meet these expectations.
- b) If you are in a time zone that prevents you from being able to attend the Zoom sessions synchronously, please contact me so you will not be penalized.

During synchronous Zoom sessions, the following netiquette is expected. Please do:

- a) Log into class early or promptly
- b) Arrange to attend class where there is a reliable internet connection and without distractions
- c) Dress respectfully and practice your professional telepresence for video business meetings.
- d) If you use a virtual background, please keep it respectfully professional.
- e) Display both your first and last name during synchronous class meetings.
- f) Respectfully minimize distractions by muting and or turning off video if necessary.
- g) Engage in appropriate tone and language with instructors and classmates.

Please try *not* to:

- a) Engage in a simultaneous activity not related to the class.
- b) Interact with persons who are not part of the class during the class session.
- c) Leave frequently or not be on camera for extended periods of time.
- d) Have other persons or pets in view of the camera.

Grading & Deliverables.

Five Homework Assts (6% each)	30%
Take-Home Midterm Exam	30%
Take-Home Final Exam	35%
Attendance & Participation	5%

Homework Assignments.

Students are allowed to work with a group (no more than 4 people) for all 5 assignments. Please let me know who will be in your group by Friday, February 5 so I can update Blackboard as your submissions will be uploaded there.

Tentative Course Schedule & Topics

Week	Date	Topic	Reading	Due/Other
1	1/19	Introduction/Review	Appendix D	
	1/21	Review of Hypothesis Testing	Appendix D	
2	1/26	Two Sample Testing	Class Slides	
	1/28	Regression Review I	Chapters 2 & 3, 4.1 – 4.7	
3	2/02	Regression Review II – Transformations	Chapter 5	
	2/04	LAB DAY: Bring computers		
4	2/09	Logistic Regression I	Chapter 12.6	HW 1 due
	2/11	Weighted Least Squares I	Chapter 9	
5	2/16	NO CLASS: WELLNESS DAY		
	2/18	LAB DAY: Bring computers		
6	2/23	Weighted Least Squares I	Chapter 9	
	2/25	Weighted Least Squares II	Chapter 9	HW 2 due
7	3/02	Autocorrelation	Chapter 10	
	3/04	Time Series I	Chapter 10	
8	3/09	Time Series II	Chapter 10	HW 3 due
	3/11	LAB DAY: Bring computers		
9	3/16	NO CLASS (Midterm)		Take-Home Midterm
	3/18	Time Series II/Review/Catch up		
10	3/23	Time Series III	Chapter 12	
	3/25	LAB DAY: Bring computers	Chapter 12	
11	3/30	Time Series IV	Class Handout	
	4/01	LAB DAY: Bring computers		
12	4/06	Panel Data Analysis	Class Handout	HW 4 due
	4/08	LAB DAY: Bring computers	Chapter 11	
13	4/13	Panel Data Analysis II	Class Slides	
	4/15	LAB DAY: Bring computers	Class Slides	
14	4/20	Chi Square Analysis & One-Way ANOVA	Class Slides	HW 5 due
	4/22	NO CLASS: WELLNESS DAY	Class Slides	
15	4/27	Clustering I & Clustering II		
	4/29	LAB DAY: Bring computers		
	5/6	Take-Home FINAL due at noon		

Statement of Academic Conduct and Support Systems

Academic Conduct: Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems: Counseling and Mental Health - (213) 740-9355 – 24/7 on call, studenthealth.usc.edu/counseling.

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call, suicidepreventionlifeline.org. Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call, studenthealth.usc.edu/sexual-assault. Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office of Equity and Diversity (OED) - (213) 740-5086 | Title IX – (213) 821-8298, equity.usc.edu, titleix.usc.edu.

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298, usc-advocate.symplicity.com/care_report. Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity | Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776, dsp.usc.edu. Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.