

## DSO 529: Advanced Regression Analysis, Spring 2022

**Instructor:** Dawn Porter  
**Class Time:** Tuesday/Thursday, 12:30 – 1:50pm PST in JKP 112  
**Email:** [dcporter@marshall.usc.edu](mailto:dcporter@marshall.usc.edu)  
**Office Hours:** Wednesdays, 12:00pm – 1:00pm PST (Zoom) and by appointment

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### 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 (4<sup>th</sup> 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.

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**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	1/11	Introduction/Review	Appendix D	
	1/13	Review of Hypothesis Testing	Appendix D	
2	1/18	Two Sample Testing	Class Slides	
	1/20	Regression Review I	Chapters 2 & 3, 4.1 – 4.7	
3	1/25	Regression Review II – Transformations	Chapter 5	
	1/27	LAB DAY: Bring computers		
	1/30			<b>HW 1 due</b>
4	2/01	Binary Logistic Regression	Chapter 12.6	
	2/03	Ordinal Logistic Regression	Class Slides	
5	2/08	LAB DAY: Bring computers		
	2/10	Weighted Least Squares I	Chapter 9	
	2/13			<b>HW 2 due</b>
6	2/15	Weighted Least Squares II	Chapter 9	
	2/17	Weighted Least Squares III	Chapter 9	
7	2/22	Autocorrelation	Chapter 10	
	2/24	Time Series I	Chapter 10	
	2/27			<b>HW 3 due</b>
8	3/01	Time Series II	Chapter 10	
	3/03	LAB DAY: Bring computers		
9	3/08	NO CLASS (Midterm)		<b>Take-Home Midterm</b>
	3/10	Time Series II/Review/Catch up		
	3/15 3/17	NO CLASS – SPRING BREAK		
10	3/22	Time Series III	Chapter 12	
	3/24	LAB DAY: Bring computers	Chapter 12	
11	3/29	Time Series IV	Class Handout	
	3/31	LAB DAY: Bring computers		
12	4/05	Panel Data Analysis I	Class Handout	
	4/07	LAB DAY: Bring computers	Chapter 11	
	4/10			<b>HW 4 due</b>
13	4/12	Panel Data Analysis II	Class Slides	
	4/14	LAB DAY: Bring computers	Class Slides	
14	4/19	Chi Square Analysis	Class Slides	
	4/21	One-Way ANOVA	Class Slides	
	4/24			<b>HW 5 due</b>
15	4/26	Clustering I & Clustering II		
	4/28	LAB DAY: Bring computers		
	5/5			<b>Take-Home FINAL</b>

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## 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](http://policy.usc.edu/scampus-part-b). Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on [Research and Scholarship Misconduct](#).

Students and Disability Accommodations: USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at [osas.usc.edu](http://osas.usc.edu). You may contact OSAS at (213) 740-0776 or via email at [osasfrontdesk@usc.edu](mailto:osasfrontdesk@usc.edu).

### Support Systems:

- Counseling and Mental Health - (213) 740-9355 – 24/7 on call [studenthealth.usc.edu/counseling](http://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](http://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](http://studenthealth.usc.edu/sexual-assault). Free and confidential therapy services, workshops, and training for situations related to gender-based harm.
- Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086 [eetix.usc.edu](http://eetix.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](http://usc-advocate.symplicity.com/care_report). Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.
- The Office of Student Accessibility Services (OSAS) - (213) 740-0776 [osas.usc.edu](http://osas.usc.edu). OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.
- USC Campus Support and Intervention - (213) 821-4710 [campussupport.usc.edu](http://campussupport.usc.edu). Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.
- Diversity, Equity and Inclusion - (213) 740-2101 [diversity.usc.edu](http://diversity.usc.edu). Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.
- USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call [dps.usc.edu](http://dps.usc.edu), [emergency.usc.edu](http://emergency.usc.edu). Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.
- USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call [dps.usc.edu](http://dps.usc.edu). Non-emergency assistance or information.
- Office of the Ombuds - (213) 821-9556 (UPC) / (323-442-0382 (HSC) [ombuds.usc.edu](http://ombuds.usc.edu). A safe and confidential place to share USC-related issues with a University Ombuds who will help you to explore options or paths to manage your concern.
- Occupational Therapy Faculty Practice - (323) 442-3340 or [otfp@med.usc.edu](mailto:otfp@med.usc.edu), [chan.usc.edu/otfp](http://chan.usc.edu/otfp). Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.