UMass | Dartmouth

Statistical Analysis
POL 580

General Description: See Specific Course Syllabus When Available on Course Site

Course Description:

The purpose of this course is to introduce students to basic statistical concept and techniques commonly applied in public policy research. Basic techniques in understanding descriptive statistics such as difference of means, analysis of variance, cross-tabulation, and probability distribution are explained before moving onto inferential techniques such as correlation and regression analysis. The goal is to learn how to analyze data as well as understand others' findings in order to insulate oneself from political and ideological rhetoric when examining the effectiveness of policies.

Course Requirements:

Textbook:
Boslaugh, Sarah and Paul Andrew Watters. (2012). *Statistics in a Nutshell*. O'Reilly Media, Inc. (uploaded on Blackboard)
*Additional readings as assigned

Discussion Board Assignments: Each week in the appropriately named forum you will complete the weekly assignment as specified by the syllabus and post your work in an individual forum titled with your name. When the assignment is a problem, do not just submit an answer, explain how you solved the problem and explain what your answer means. The discussion forums are public so we all can read them and learn from one another. Posts are due by Sundays at midnight. Dates are included in the syllabus. It is my goal to develop an atmosphere of collaboration and idea exchange. Reading others' solutions and their explanations of how they solved the problem helps us all learn.

Learning Expectations

Course Objectives

At the end of this course, the student will:

1. Present a finished research proposal with a model and a defined hypothesis or set of hypotheses to be empirically tested
2. Understand scholarly research methodology, language, and analysis across social science disciplines

3. Be able to collect and analyze data using the main statistical techniques
4. Understand which statistical method is appropriate for the analysis of specific types of data

Weekly Objectives

Each week we'll proceed in the following fashion:

1. Complete the readings and watch the Youtube video, accompanied by a powerpoint presentation for each lesson with the main facts you are expected to learn from the week's materials.
2. Both the presentation and the recording are uploaded in each week's "Materials" folder
3. The above is done to develop a portfolio of study materials to help you prepare for the exams in this course and also to use for the future in your professional and research endeavors. These powerpoint mini-lectures identify issues that students have identified in the past when solving/answering the homework problems. I have chosen to leave those videos as they are, although they refer to past time periods.
4. At the graduate level you are trained to be a problem solver. In quantitative work, a proactive approach is needed to be successful that goes beyond reading the book. Few Statistics textbooks are "fascinating readings", particularly for non-traditional professional students in social science graduate programs, so please consult other sources as you learn. The point of an open source course delivery is to use all sources as peers and collaborators. My role in this course is to be a facilitator and a colleague, not an authoritative traditional "professor".

Grading Policies

Scale

90-100	A
80-89	B
70-79	C
60-69	D
0-59	F

Basis for Assigning the Course Grade: Participation in class and completing the assigned problems on time will be 5% of your final grade. The cumulative average of those grades will count for 45% of your overall grade. There will be a "take-home" midterm exam and a final exam, both will be "open book / open source". Each will count for 15% of your final grade. The last 20% will be your final research proposal.

- Statistics is a about precision not just in calculation but also in language. Remember that you evaluated by the quality of your writing
    - Spelling and grammar do count
    - Be coherent and succinct
    - Don't plagiarize; respect copyrights
    - Don't depend on a single source when contributing new information from external resources
    - Be professional

Schedule and Calendar

Week 1: AN INTRODUCTION AND DISCUSSION OF RESEARCH PROJECT AGENDA

Readings (uploaded on Blackboard):

- In content folder: "Soft Power" see: Kaschel_2013 and Anguelov, Kaschel_2017.
- In content folder: "Renewable Portfolio Standards" see: Dooley_2016 and Anguelov, Dooley_2019.
- In content folder: "Nursing Home Diversion" see: Frank_2015 and Anguelov, Frank_2020.
- In content folder: "Marijuana Decriminalization" see: McCarthy_2015 and Anguelov_with_McCarthy_2018

Assignment: The uploaded readings are examples of research proposals submitted for this course that we were able to turn into published works. Depending on your interest, pick one folder, read the proposal and the published paper (book chapters) and then offer your thoughts on the evolution process. Assuming your classmates are reading the other papers, explain to them what you read. Focus on the contributive aspects of the idea behind the work. Explain what you notice as the main difference between the proposal and the actual finished product. Share how, in terms of your research proposal from Research Methods, what you read informs you on what to expect from POL 585. During the discussion, I will share the stories behind each project.

Needless to say, the published works were not completed in POL 585. As you notice from the dates, it took years of development to get them out in print. But the foundations were laid first here, in POL 580, with a good understanding of the topic and a thorough literature review. Then, in POL 585, data for the models were gathered, cleaned, and more or less analyzed. By the end of this course, we should know enough statistics to enable you to a) propose models, as exemplified by the proposal papers, so that b) I can help you "build" those models in POL 585.

Week 2: RESEARCH DESGIN / HYPOTHESES / LITERATURE REVIEW

Readings: Boslaugh & Watters: Preface, Chapters 1 and 5
Assignment:

1. Complete the Research Proposal outline uploaded in "Week 2 Materials" folder and post it in the Week 2 discussion board. Respond to 2 classmate proposals with thoughts on their projects. Offer input if you wish, critiques, and ideas.
2. Watch the recording "Google Scholar Saves Your Sanity" also posted in "Week 2 Assignment"

Week 3: MEASUREMENT

Boslaugh & Watters: Chapters 3 and 4 and handout "variable types" uploaded on Blackboard
Assignment: Problems 3.1, 3.2, 3.3

Week 4: NON-PARAMETRIC STATISTICS

Boslaugh & Watters: Chapters 10 and 11
Assignment: Problems 4.1, 4.2, 4.3

Week 5: INFERENTIAL STATISTICS

Boslaugh & Watters: Chapters 6 and 7
Assignment: Problems 5.1, 5.2, 5.3

Week 6: CORRELATION VS. CAUSALITY

Boslaugh & Watters: Chapter 9.

- Assignment: Read: Nikolay Anguelov and Kristin Bryant. (2015). Chapter 3 "Myanmar's Sanction Legacy: The Results of Nonengagement." in Anguelov, N. *Economic Sanctions Vs. Soft Power: Lessons from North Korea, Myanmar, and the Middle East.* New York: Palgrave Macmillan.

Discuss the Tukey Cramer results in the tables. How do you understand the difference in means analysis and how the differences are determined to be statistically significant?

Week 7: MOCK MIDTERM EXERCISE WEEK

In the forum titled “Midterm Discussion Board” are 10 sample questions to give you all an idea of what type of questions will be on the midterm. You can post sample answers in forums, as you do in regular weekly discussions. This forum is not graded and participation is voluntary. As it falls on spring break. It is to offer a venue to help each other in a "study group" format. I will also help.

Week 8: MIDTERM EXAM - I will e-mail you a word document “take-home” type exam on Sunday. You will complete it and e-mail me your answers by (or before) the following Sunday. This time you will individually e-mail me your answers, not post them in a forum. Exams need to be confidential. I require them to be in a word format so that I can use track changes to give you input as I grade. Please, put your name in the title of the document and include it in the subject line of your e-mail. E-mail your work to nanguelov@umassd.edu

Week 8: CAUSALITY – LINEAR REGRESSION

Boslaugh & Watters: Chapter 12
Assignment: Problems 8.1, 8.2, 8.3

Week 9: MULTIPLE LINEAR REGRESSION

Boslaugh & Watters: Chapter 14
Assignment: Find the uploaded 2 output results in Week 9 Materials and in one page, or so, discuss the results. Which model is better?

Week 10: LOGISTIC AND NON-LINEAR REGRESSION

Boslaugh & Watters: Chapter 15
Assignment: Find the uploaded output results in Week 10 Materials. Compare the two outputs and see if you can note some differences in the relationships.

Week 11: CUMMULATIVE REVIEW

As with the mock midterm exam, there is a review questionnaire that is posted in the appropriately named discussion board. You will answer as many of the question as you wish. This time there is a grade for participation; an opportunity to earn extra credit.

Week 12: RESEARCH WEEK

Nothing is due on 4/19. Use the week to work on your research proposals.

Week 13: FINAL PAPER DUE

Please e-mail me your research proposal paper. It is this project that you'll develop in POL 585 and I will read, comment, and offer ideas on data management after the semester is over. As 20% of your grade, the proposal is graded on the thoroughness of your literature review and the justification of the model you are proposing to build and test in POL 585. After the semester ends, we will work together to complete the proposal into a publishable academic piece of research.

Week 14: FINAL EXAM

Other Resources

Attendance Policy

I have no official attendance policy. In graduate school it is up to you to maximize your investment. However, your diligence and alacrity will be duly noted.

Incomplete Policy

According to the university catalogue, an incomplete may be given only in exceptional circumstances at the instructor's discretion. The student must be passing at the time of the request or be sufficiently close to passing. If the work is not completed within one year of the recording of the incomplete grade, the grade will become an F(I). The incomplete policy for this course is that at least 70% of the course must be already completed and an exceptional circumstance (i.e. medical issue) must exist. If you feel you require an incomplete for an exceptional reason, you need to email me and state your reasons for the incomplete in writing. We will then decide on a course of action.

http://www.umassd.edu/nfi/teachingandadvising/coursesyllabus/sampleincompletestatement/

Student Academic Integrity Policy

All UMass Dartmouth students are expected to maintain high standards of academic integrity and scholarly practice. The University does not tolerate academic dishonesty of any variety, whether as a result of a failure to understand required academic and scholarly procedure or as an act of intentional dishonesty.

A student found responsible of academic dishonesty is subject to severe disciplinary action which may include dismissal from the University. The procedure for responding to incidents of academic dishonesty may be found in Section III of this document. You may also refer to the Student Handbook for information about the judicial process.

A high standard of academic integrity promotes the pursuit of truth and learning and respect for the intellectual accomplishments of others. These are values that are fundamental to the mission of this University. Such values are undermined by academic dishonesty.

Academic freedom is a fundamental right in any institution of higher learning. Honesty and integrity are necessary preconditions of this freedom. Academic integrity requires that all academic work be wholly the product of an identified individual or individuals. Joint efforts are legitimate only when the assistance of others is explicitly acknowledged and deemed appropriate by the instructor of the course. Ethical conduct is the obligation of every member of the University community, and breaches of academic integrity constitute serious offenses.

Maintenance of the standards of academic integrity and the successful administration of this policy depend on the mutual cooperation of faculty and students.

Faculty cooperation is essential for successful application of the procedures defined by this Academic Integrity Policy. Faculty members promote academic integrity by making clear on their syllabi their expectations concerning homework assignments, collaborative student efforts, research papers, examinations, computer-based infractions, and the like. Efforts should be made to detect and to prevent cheating and plagiarism in all academic assignments. If faculty members have evidence of academic dishonesty, they are expected to report such evidence promptly.

Students must assume responsibility for maintaining honesty in all work submitted for credit and in any other work designated by the instructor of the course. Students are also expected to report incidents of academic dishonesty to the instructor or dean of the instructional unit.

The intent of this policy is to make clear the standards of academic integrity at UMass Dartmouth.

For additional information on violations, infractions, and consequences visit the UMass Dartmouth Student Academic Integrity Policy at the link below.

http://www.umassd.edu/studentaffairs/studenthandbookintroduction/studentconductpolicies/academicintegritypolicy/

Center for Access and Success

In accordance with University policy, if you have a documented disability and require accommodations to obtain equal access in this course, please meet with the instructor at the beginning of the semester and provide the appropriate paperwork from the Center for Access and Success. The necessary paperwork is obtained when you bring proper documentation to the Center, which is located in Liberal Arts, Room 016; phone: 508.999.8711.

http://www.umassd.edu/dss/

Resources

Tutoring

If you are having difficulty with the class please:

- Post a message on the Discussion Board – be sure to use your classmates for troubleshooting and problem solving.
- Make an appointment to come in and meet with me during my office hours.
- Contact the Academic Resource Center (ARC) for support:

Academic Resource Center, Liberal Arts – Room7
Phone: 508.999.8708, Fax: 508.910.6404

Technical Help
If you are in need of technical assistance the IT Service Desk is available to students.
Claire T. Carney Library, lower level 508.999.8884 (x8884) or Email
Sunday: 12:00pm-2am Monday thru Thursday: 7:30am-2am Friday: 7:30am-11pm Saturday: 9:30am-1pm
Students living in the Residence Halls may also contact the Residential Technology (ResTech) Support Center:
Visit ResTech in Elmwood Hall, lower level
Call the ResTech Help Line at 508.999.8040 (x8040)