**UNIVERSITY OF PITTSBURGH**

**SCHOOL OF EDUCATION**

**DEPARTMENT OF ADMINISTRATIVE AND POLICY STUDIES**

**EDUC 3100 - 1035: Introduction to Quantitative Methods:**

**Descriptive & Inferential Statistics**

**Course number: 23816**

**2019 Fall Term (2191)**

**CLASS** Time:Tuesdays, 4:30 PM to 7:10 PM

**INFORMATION:** Dates: 27 August - 15 December 2018

Location: 314 Bellefield Hall

**INSTRUCTOR:** M. Najeeb Shafiq

Professor of Education, Economics & International Affairs

**INSTRUCTOR** Phone: (412) 648-1832

**CONTACT**: Email: [mnshafiq@pitt.edu](mailto:lpage@pitt.edu)

**INSTRUCTOR**  Please email to schedule a meeting

**OFFICE HOURS:**

**TEACHING** Aizat Nurshatayeva

**ASSISTANT (T.A.):** Doctoral Student in Administrative & Policy Studies

**T.A. CONTACT** Email: [ain7@pitt.edu](mailto:ain7@pitt.edu)

**INFORMATION:** Office: LRDC 801a

**T.A. OFFICE HOURS:** Mondays, 3:00 - 6:00 PM

**OVERVIEW**

This is a course designed primarily for graduate students who anticipate future applications of quantitative methods for education policy analysis. The emphasis throughout the course is on real world data preparation and analysis using the Stata statistical software package. At the conclusion of this course, you will be prepared to produce descriptive and inferential statistics using data collected under simple to more complex survey designs.

**OBJECTIVES**

1. Have students appreciate how descriptive statistics and inferential statistics are a fundamental component of every quantitative study or report.
2. Enable students to become sophisticated consumers of descriptive studies and inferential statistics in reports on education. Students will also appreciate the difference between correlation and causation.
3. Enable students to be producers of descriptive studies and reports of education issues. This entails:
   1. Take a data set and a research question
   2. Figure out what statistical analysis would be most appropriate to answer the question
   3. Conduct such an analysis
   4. Present the findings in a way that is both technically accurate and generally accessible
   5. Understand and articulate the limitations associated with the analyses
4. Prepare students with the basic statistical literacy that is required from incoming students in graduate programs in the social and behavioral sciences. In other words, this course will prepare students to take graduate courses in quantitative methods across various departments.

**PREREQUISITES**

There are no prerequisites for this course. No prior experience with Stata is required.

**COURSE TEXTS AND PARTICIPANT RESPONSIBILITIES**

**Required text:**

Agresti, Alan (2017). Statistical Methods for the Social Sciences, Fifth Edition. Upper Saddle River, NJ: Pearson Prentice Hall.

Other readings and course materials will be made available through CourseWeb at <http://courseweb.pitt.edu>. Please log into CourseWeb prior to each course meeting to check for additional information and materials for class.

**Recommended texts:**

Acock, Alan (2016). A Gentle Introduction to Stata, Fifth Edition. College Station, TX: Stata Press.

Huck, Schuyler (2011). Reading Statistics and Research, Sixth Edition. Boston: Pearson.

Hoy, Wayne (2009). Quantitative Research in Education: A Primer. Thousand Oaks, CA: Sage.

Murnane, Richard and John B. Willett (2010). Methods Matter: Improving Causal Inference in Educational and Social Science Research. New York: Oxford University Press.

**GRADING**

Class attendance and participation 10%

Problem sets 15%

Assignment 1 25%

Assignment 2 25%

Project 25%

TOTAL 100%

**Class participation:** To obtain maximum credit for class attendance and participation, students must attend all classes and actively participate in all class discussions and activities.

**Problem sets:** Problems will come primarily, but not exclusively, from the course texts and will provide an opportunity to work with the key statistical concepts covered in the course. Problem sets will be due at the start of the next class. Grades will be assigned on a 0-1 scale where 0 means completely wrong or did not complete on time, 1 means partially correct or completely correct. Typically, no credit is given for late assignments.

**Assignments:** There will be two longer assignments during the semester. Through each assignment, students will receive a data set and a sequenced set of questions to guide a statistical analysis and prompt an analytic write up in clear and technically accurate prose. Assignments will provide students with the opportunity to gain practice with the steps of conducting applied data analyses and will place an emphasis on skills of writing with statistics. To help focus energies, page limits will be indicated. Further information will be provided in the assignments themselves.

**Final Project:** The final project will be based on a comprehensive educational data set provided to the class. From the *2012 National Household Education Survey—Parent and Family Involvement* dataset, which will contain many more variables than could be incorporated into a single analysis, students will identify and answer a research question of interest. Students will submit a final report that motivates the research question and presents descriptive and inferential statistical analyses conducted to answer that question. Students may not collaborate with others.

**Grading**

92% or above -- A

86% to 91% -- A-

80% to 85% -- B +

75% to 79% -- B

70% to 74% -- B-

65% to 69% -- C +

60% to 64% -- C

55% to 59% -- C-

54% and below -- F

**GROUPWORK**

You are encouraged to discuss problem sets with other students but you must write your final answers yourself, in your own words. Solutions prepared “in committee” or by copying or paraphrasing someone else’s work are not acceptable. All computer output you submit must come from work that you have done yourself. Please indicate on your problem sets the names of the students with whom you worked. However, you may not engage in groupwork for the assignments and final project.

**DEPARTMENTAL GRIEVANCE PROCEDURES**

The purpose of grievance procedures is to ensure the rights and responsibilities of faculty and students in their relationships with each other. When a student in ADMPS believes that a faculty member has not met his or her obligations (as an instructor or in another capacity) as described in the Academic Integrity Guidelines, the student should follow the procedure described in the Guidelines by (1) first trying to resolve the matter with the faculty member directly; (2) then, if needed, attempting to resolve the matter through conversations with the chair/associate chair of the department; (3) if needed, next talking to the associate dean of the school; and (4) if needed, filing a written statement of charges with the school-level academic integrity officer. [Dr. Michael Gunzenhauser is the Associate Dean and Integrity Officer.]

**ACADEMIC INTEGRITY**

Students in this course will be expected to comply with the University of Pittsburgh's Policy on Academic Integrity. Any student suspected of violating this obligation for any reason during the semester will be required to participate in the procedural process, initiated at the instructor level, as outlined in the University Guidelines on Academic Integrity. This may include, but is not limited to, the confiscation of the examination of any individual suspected of violating University Policy. Furthermore, no student may bring any unauthorized materials to an exam, including dictionaries and programmable calculators.

**DISABILITY SERVICES**

If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both the instructor and Disability Resources and Services no later than the second week of the term. You may be asked to provide documentation of your disability to determine the appropriateness of accommodations. To notify Disability Resources and Services, call (412) 648-7890 (Voice or TTD) to schedule an appointment. The Disability Resources and Services office is located in 140 William Pitt Union on the Oakland campus.

**STATEMENT ON CLASSROOM RECORDING**

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student’s own private use.

**TENTATIVE COURSE OUTLINE AND CLASS SCHEDULE**

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| --- | --- | --- | --- |
| **Class** | **Date** | **Topic** | **Assignment Schedule** |
| 1 | 27-Aug | Introduction to Quantitative Research |  |
| 2 | 3-Sept | Sampling and Measurement |  |
| 3 | 10-Sept | Descriptive Statistics (Tables, Graphs, Measures of Central Tendency and Measures of Variability) |  |
| 4 | 17-Sept | Descriptive Statistics (Measures of Position and Correlation) |  |
| 5 | 24-Sept | Probability Distributions |  |
| 6 | 1-Oct | Probability Distributions (contd.): Sampling Distributions | Assignment 1 distributed |
|  | 8-Oct | \*No classes (Fall Break) |  |
| 7 | 15-Oct | Statistical Inference: Estimation |  |
| 8 | 22-Oct | Statistical Inference: Significance Tests | Assignment 1 due in class and by email |
| 9 | 29-Oct | Comparison of Two Groups |  |
| 10 | 5-Nov | Comparison of Two Groups (contd.) |  |
| 11 | 12-Nov | Association between Categorical Variables | Assignment 2 distributed  Final project distributed |
| 12 | 19-Nov | Linear Regression & Correlation |  |
|  | 26-Nov | \*No Class (Thanksgiving Break) |  |
| 13 | 3-Dec | Linear Regression (conclusion), Review & Final Project Consultation | Assignment 2 due in class and by email |
| 14 | 10-Dec | Final Project Workshop |  |
|  |  |  | Final Project due  14-Dec by email |