2021

QUAN 201: Quantitative Reasoning and Society

CUNY School of Professional Studies

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QUAN 201 - QUANTITATIVE REASONING AND SOCIETY

General Education

SPS College Option

COURSE DESCRIPTION

An interdisciplinary introduction to the ways in which data can be used to enhance thinking and decision-making capacities, including using simple statistical techniques, creating visual representations of quantitative data, deriving accurate conclusions from quantitative data, and using data effectively in analyses and arguments. Assignments build capacity to evaluate and write clearly about quantitative evidence using methods for analyzing and communicating about data that do not require complex mathematics. SPS College Option. No pre- or co-requisites

COURSE OVERVIEW

This School of Professional Studies College Option course will strengthen your quantitative proficiencies: basic mathematical skills as well as the analytic approaches needed for interpreting data-based information. You will learn about sources of data, research processes, how to question generalizations and interpret the numbers you see in the news, in print, and hear in your day to day.

Through the application of quantitative skills, analysis and the practice of writing, this course aims to enhance your competencies within your discipline and also make you a more informed citizen.

COMMON CORE LEARNING OUTCOMES REINFORCED

Students will learn to:

1. Read and listen critically and analytically, including identifying an argument's major assumptions and assertions and evaluating its supporting evidence.
2. Demonstrate research skills using appropriate technology, including gathering, evaluating, and synthesizing primary and secondary sources.
3. Support a thesis with well-reasoned arguments, and communicate persuasively across a variety of contexts, purposes, and audiences.
4. Interpret and draw appropriate inferences from quantitative representations, such as formulas, graphs, or tables.
5. Gather, interpret, and assess information from a variety of sources and points of view.
6. Evaluate quantitative evidence and arguments critically.
7. Produce well-reasoned written or oral arguments using data to support conclusions.

COURSE LEARNING OUTCOMES

a. Manipulate data sets to create data displays in chart or graph form.
b. Perform simple quantitative analysis of data (averages, range/spread).
c. Derive accurate conclusions from data analysis.
d. Prepare papers and presentations that incorporate data displays as evidence and relate analysis of data to current issues and debates.

REQUIRED TEXTS AND TECHNOLOGY

This is a Zero Textbook Cost (ZTC) course. All required readings will be provided free of charge through the course site. Office Software (i.e. Microsoft Office [2007 and newer], LibreOffice.org, OpenOffice.org).

ATTENDANCE/CLASS PARTICIPATION

This class will depend on your active participation in the online environment. Logging in at least twice a week is expected for your discussion board participation. Logging in at least three times a week is strongly encouraged. This requirement supports a cooperative learning experience (see ***Discussions*** below). You will be called upon to participate in discussions, contribute your ideas, and otherwise join in class activities. Simply participating once per week will not ensure a perfect participation grade - only students who consistently provide thoughtful and insightful critical analysis of the media that is being discussed will receive such grade. Learning in this class results from being present; there are no make-up assignments for missed participation once a discussion board or assignment is passed.

ASSIGNMENTS

The first three weeks of the course will be overview: Approaches to decision-making and data analysis, including Excel tutorials, practice reading and interpreting charts & graphs. Following the introductory weeks, the course will consist of four three-week modules, each requiring students to read widely on a current topic, work with data, submit preliminary assignments on the Discussion Board and Course Blogs, and produce position and analytical papers on current topics, using visual representations of data to support decisions about and analysis of issues.

Discussions/Blogs

Discussion assignments require that students read module texts and view online media materials relevant to the unit topic. Discussion Board Assignments are scaffolded steps in research and data analysis building toward the larger projects. Students' contributions to the discussion will be graded on (1) the extent to which they incorporate information and concepts from resource materials, (2) the depth, understanding and thoughtfulness reflected in their contributions, (3) the frequency with which they contribute ideas and respond to the ideas of others in the class. *LOs 1,3,4,5,6 will be addressed.*

Weekly Quizzes

The first two weeks of each module requires completion of a 10 question quiz each week. Quiz questions are based on the readings and media from the module, as well as the cumulative quantitative reasoning you've developed to that point. Each quiz is based on 100%, and in order to receive full credit for the

quiz you must earn at least an 80%. You are given opportunities to retake each quiz until you achieve the 80% or above grade, before the week's deadline. *LOs 1,4,6 will be addressed.*

Excel Chart

Basic Microsoft Excel skills development is a key component of your learning outcomes. You will exercise skills in writing formulas, using functions and creating and modifying charts (graphs). In Module 1.3 you are asked to create a chart, using data provided to you. This assignment will be graded and feedback will be provided. This is the first assignment in which your chart producing skills will be graded, providing you a foundation upon which to build this skill. *LOs 4,5,6 will be addressed.*

Signature Assignments (Projects)

There are four (4) major assignments throughout the semester, including a final project. Each project will involve the analysis of an issue using both text (journal articles, media publications and organization websites), video, and data sets. Detailed guidelines for the completion of each project are be provided in each module, including steps to be followed and how the final project should be presented. *All LOs will be addressed.*

GRADING AND ASSIGNMENTS

Discussion Board/Blogs (10)	30 points each (300)	30%
Weekly Quizzes (10)	10 points each (100)	10%
Excel Chart	40 points	4%
Signature Assignments (3)	120 points each (360)	36%
Final Project	200 points	20%
Total	**1000**	**100%**

GRADING DISTRIBUTION

A	93-100
A-	90-92.9
B+	87-89.9
B	83-86.9
B-	80-82.9
C+	77-79.9
C	73-76.9
C-	70-72.9
D	60-69.9
F	Below 60

ACCESSIBILITY AND ACCOMMODATIONS

The CUNY School of Professional Studies is firmly committed to making higher education accessible to students with disabilities by removing architectural barriers and providing programs and support services necessary for them to benefit from the instruction and resources of the University. Early planning is essential for many of the resources and accommodations provided. For more information, please see: Disability Services on the CUNY SPS Website.

ONLINE ETIQUETTE AND ANTI-HARASSMENT POLICY

The University strictly prohibits the use of University online resources or facilities, including Blackboard, for the purpose of harassment of any individual or for the posting of any material that is scandalous, libelous, offensive or otherwise against the University's policies. Please see: "Netiquette in an Online Academic Setting: A Guide for CUNY School of Professional Studies Students."

ACADEMIC INTEGRITY

Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the educational mission of the City University of New York and the students' personal and intellectual growth. Please see: Academic Integrity on the CUNY SPS Website.

TUTORING

CUNY SPS offers all students a variety of tutoring services, free of charge, both online and in person. Please see: Tutoring.

STUDENT SUPPORT SERVICES

If you need any additional help, please visit Student Support Services.

HELP DESK

For assistance with access to CUNY SPS and CUNY computing resources, please see the Help Desk website for contact details and semester hours.

ENCOURAGEMENT NOTE:

I hope you enjoy this course as much as I enjoy teaching it. If you are having any problems, questions, or just want to talk, I encourage you to contact me via the phone, or email. I want to talk to you, even though this is an online course! Do not let small problems during the semester grow to a crisis at the end. It's always easier to correct problems as they arise than to untangle a mess.

COURSE SCHEDULE

Key to reading the weekly schedule:

Ex – Exercise
PP – PowerPoint
R – Reading
V – Video

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
Module 1 **Introduction to the Quantitative** **Introduction to Quantitative Reasoning and Working with Data (Basic Statistics and Visualizing Data)**			
Weeks 1-3	• R – C. Wheelan, Naked Statistics Ch 1, What's the point of statistics? • R – E. Tufte, Data Analysis for Politics and Policy Ch 1, Introduction to data analysis • V - Demo: Excel – Introduction • V - Demo: Excel – Cells	✓Discussion 1.1 – Introduction ✓Module 1.1 Quiz	Wednesday – Discussion Board Posting (BDP) - Introduction Sunday – Discussion Board Response (DBR) – Introduction Sunday – Module 1.1 Quiz
	• PP - Lecture Notes: Basic Statistics • Ex - Khan Academy: Measures of Central Tendency • R - InnovAiT: Basic Statistics (Goodbye to the gobbledegook) • V - Demo: Excel Formulas • V - Demo: Excel Functions	✓Discussion 1.2 – Mediated Information ✓Module 1.2 Quiz	Wednesday – DBP – Mediated Information Sunday – DBR – Mediated Information Sunday – Module 1.2 Quiz
	• R - Tufte: Visual and Statistical Thinking • R - Statistics Canada: Using Graphs • R - Junk Charts Blog	✓Assignment: Create and interpret a simple chart in MS Excel	Wednesday – DBP Find your own JunkChart

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
	• V - Beauty of Data • V - Demo: Excel Charts • Ex – Microsoft's Excel Tutorials: Creating Charts • Web resources on (1) calculating basic summary statistics and (2) creating charts and graphs using Excel.		Sunday – Find your own JunkChart Sunday – Blog Comment Find your own JunkChart

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
Module 2 **Crime Data: Understanding Data Sources** **Understanding the sources of data, the human/social character of data, and calculating basic summary statistics through a crime measurement case study**			
Weeks 4-6	• R - D. Huff, How to Lie with Statistics Ch 10, *Talking back to statistics* • R - C. Wheelan, Naked Statistics, Ch 3, *Deceptive Description* • R - Beirne & Messerschmidt, Criminology Ch 2, *The Measurement of Crime* • PP - Research Lecture Notes: a quick overview of what characterizes social research • R - Belmont Report • R - Berine & Messerschmidt: The Measurement of Crime • V - Uniform Crime Report Table Builder • V - Assignment Preparation	✓Discussion 2.1 – Facts of Life ✓Signature Assignment A, Part 1 ✓Module 2.1 Quiz	Wednesday – DBP – Facts of Life Sunday –Signature Assignment A, Part 1 Sunday – DBR – Facts of Life Sunday – Module 2.1 Quiz

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
	• R - Zimring & Fagan, *The Search for Causes in an Era of Crime Declines: Some Lessons from the Study of New York City Homicide* • R - Eterno & Silverman, *The NYPD's Compstat: Compare Statistics or Compose Statistics?* • R - Baker & Goldstein, *Police Tactic: Keeping Crime Reports Off Books* • R - Rashbaum, *Retired Officers Raise Questions on Crime Data* • PP - APA formatting and Style Guide	✓Discussion 2.2 – Reporting Crime ✓Signature Assignment A, Part 2 ✓Module 2.2 Quiz	Wednesday – DBP – Reporting Crime Team Sunday –Signature Assignment A, Part 2 Sunday – DBR – Reporting Crime Team Sunday – Module 2.2 Quiz
	• PP - APA formatting and Style Guide	<u>Signature Assignment A</u>: *Crime Trend Lines* This assignment requires you to work with official crime data from New York City and Los Angeles to conduct comparative analysis, summary statistics, create charts (graph) and make an argument about crime data. You will use the module readings to write a critical analysis and comparison, as well as search for additional texts to support your argument(s).	Sunday – Signature Assignment A – *Crime trend Lines*

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
Module 3 **Cancer Concerns: Understanding Probability & Risk** **Breast Cancer Screening research and opinion case study through quantitative concepts**			
Weeks 7-9	• R - J Paulos Innumeracy Ch 2, *Probability & coincidence* • R- G Gigerenzer Calculated Risks Ch 3, *Innumeracy* • V - D. Spiegelhalter - Tails, You Win: The Science of Chance • Ex - Monty Hall Paradox	✓Blog – Monty's Probability ✓Signature Assignment B, Part 1 ✓Module 3.1 Quiz	Wednesday – Begin Collection of data for Final Project Sunday –Signature Assignment B, Part 1 Sunday – Module 3.1 Quiz
	• R - Bleyer & Welch, *Effect of Three Decades of Screening Mammography on Breast Cancer Incidence* • R - P. Orenstein, *The Problem with Pink* • R - National Cancer Institute: Breast Cancer Surveillance Consortium • R - American Cancer Society: Cancer Statistics • V - Inside the National Cancer Institute: A Conversation with Barry Kramer	✓Discussion 3.2 – Risk Assessed ✓Signature Assignment B, Part 2 ✓Module 3.2 Quiz	Wednesday – DBP – Risk Assessed Sunday –Signature Assignment B, Part 2 Sunday – DBR – Risk Assessed Sunday – Module 3.2 Quiz
	• PP – APA Formatting and Style Guide	<u>Signature Assignment B</u>: *Casting your vote on risk* Present an informed analysis and argument for/against screening mandates. The argued position will be supported by the use of appropriate data visualizations and statistics sourced from module components.	Sunday – Signature Assignment B – *Casting your vote on risk* Sunday – Midterm Reflection

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
Module 4 **Spaces in Transition – Population & Spatial Studies** **Using Census data to understand populations, social and spatial change**			
Weeks 10-13	• R - About the US Census Bureau • R - Waite & Reist, *Reengineering the census of population and housing in the United States* • R - Hitlin, Brown & Elder, *Measuring Latinos: Racial vs. Ethnic Classification and Self-Understandings*	✓Discussion 4.1 –Census ✓Signature Assignment C, Part 1 ✓Module 4.1 Quiz	Wednesday – DBP – Census Sunday – Part 1 of Signature Assignment C Sunday – DBR – Census Sunday – Module 4.1 Quiz
	• R - Few, *Introduction to geographical data visualization* • R - Rupasingha & Goetz, *Social and political forces as determinants of poverty: A spatial analysis* • R- Roberts, *In Harlem, blacks are no longer a majority* • Ex - American Fact Finder: US Census Bureau • V - Social Explorer: Mapping Tool	✓Signature Assignment C, Part 2 ✓Module 4.2 Quiz	Sunday – Part 2 of Signature Assignment C -Statistics Sunday – Module 4.2 Quiz
	• PP - How to Create a Good PowerPoint Presentation • V - How to Avoid Death by PowerPoint • V - Recording Presentation	Signature Assignment C: *Spaces in transition* Work with Census data to evaluate the population changes of a select community. The presented analysis will be comprise of charts and maps that tell a visual story of the changes.	Sunday – Signature Assignment C – *Spaces in transition* Sunday – Presentation Narration Guide Sunday – Peer Evaluation of Signature Assignment C

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
Module 5 **Big Data and Personalization** **Using web-based personal use documentation and data to assess the personal and social**			
Weeks 14-16	• R- Kosinskia, Stillwella, and Graepelb, *Private traits and attributes are predictable from digital records of human behavior* • R - T Spring, *Good-bye to privacy?* • R - L Grossman, *If you Liked This…* • R - C. Wheelan, Naked Statistics, Ch. 4: Correlation • V - TED Talk: The quantified Self	✓Module 5.1 Quiz	Sunday – Module 5.1 Quiz
	• V - Predictive Analytics Explained • R - Netflix Blog Post: *Netflix Recommendations* • R - J Rutenberg, *Data you can believe in* • R- Teaster: Will You Graduate? Ask Big Data • R- Bits Blog (NYTimes) Special Edition: Big Data	✓Discussion 5.2 – Big Data	Wednesday – DBP – Big Data Sunday – DBR – Big Data Sunday – Module 5.2 Quiz Sunday – Annotated Bibliography Sunday – Individual Data
	Datasets: • Personal User & Class-Level Data (self-produced)	Final Project: *Data becomes you* You will track your personal web activity, share this data, analyze individual user data and research sources to support your interpretations and conclusions about the *personal* experience. Analyzing aggregated class-level data will produce a more macro analysis of the social implications	Wednesday – Blog Comments Sunday – Final Project Due DRP – Letter to Successors Peer Evaluation

WEEKS/ DATES	READINGS/VIDEOS	ASSIGNMENTS	IMPORTANT AND DUE DATES
		of the experiences. The work will be composed into a presentation.	