Carleton University
Interdisciplinary Public Affairs Courses
IPAF 2000
Quantitative Approaches to Policy Analysis

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Course Description

This course introduces students to basic methods of quantitative analysis. The course teaches how to describe the world quantitatively; evaluate sources and quality of data; distinguish association from causation; understand tradeoffs, uncertainty, and risk; and how to use estimation and modelling to evaluate claims and test theories. Students will learn a group of related approaches to collecting, interpreting, and presenting information about the world built using relatively simple and familiar logical, numerical, and statistical skills.

Not open to students in any B.Com., B.C.S., B.Eng., B.I.B., B.I.D., B.Math., or B.Sc. program.
Lectures three hours a week, tutorials one and half hour a week.

Recommended Textbook:

Quantitative Literacy : Thinking Between the Lines, 3rd Edition (2018), Bruce Crauder, Benny Evans, Jerry Johnson, Alan Noell, MacMillan Learning, ISBN-10: 1-4641-2512-0; ISBN-13: 978-1-4641-2512-6.

This text was selected since it is well-organized, up-to-date, and covers current and interesting issues in the quantitative analysis of public policies. Even though the textbook has no Canadian content, the lectures will present Canadian data throughout the course, much coming from Statistics Canada.

The textbook should be considered a fundamental course resource and is highly recommended for student success. Having said this, examinations are lecture based. Students are responsible for knowing and mastering all material presented in class and the tutorials, regardless if it is in the textbook or not.

You can also use the 2nd edition (2015) of the textbook.

Evaluation:

There will be two assignments worth 20% of the course grade, one in-class midterm examination worth 40% and a final examination worth 40%.

Course Grade

Assignments	20%
Midterm Exam	40%
Final Exam	40%
Total	**100%**

Students who can document a compelling reason for missing the mid-term examination will be excused and their final grade will be based on their performance in the rest of the course—i.e., the weight of each of the remaining evaluation instruments will rise by a factor of 5/3 (e.g., the final examination weight will become $5/3 \times 40 = 66.67\%$). Students must inform the instructor of such an absence in advance, if possible.

Course Material and Structure

The weekly tutorials develop the material taught in-class the prior week and focus on analysis of empirical data

Chapter and section notations refer to the textbook. Schedule is approximate. There is no tutorial in the first week of classes.

	Date	Topics	Chapter
Class #1,2	Sep 4,11	**CRITICAL THINKING** Mean, median, Simpson's paradox, Logical fallacies, Venn diagrams, Magnitudes and conversions. Metric system.	1
Class #3	Sep 18	**MEASUREMENTS OF GROWTH** Percentage change, functions and graphs, misleading graphs; Linear, exponential and logarithmic functions.	2, 3
Class #4	Sep 25	**COMPOUND INTEREST, PERSONAL FINANCE, INFLATION, NATIONAL ACCOUNTING FRAMEWORK**	4
Class #5,6	Oct 2,9	**INTRODUCTION TO PROBABILITY** Calculation of probabilities, conditional probabilities	5.1, 5.2
	Oct 16	**MIDTERM EXAMINATION**	
Class #7	Oct 30	**INTRODUCTION TO PROBABILITY** The counting principle, permutations, expected values, the law of large numbers and risk assessment	5.3, 5.4, 5.5
Class #8	Nov 6	**STATISTICS : DATA SUMMARIES** Quartiles, boxplots, standard deviation and histograms	6.1
Class #9	Nov 13	**NORMAL DISTRIBUTION, MARGIN OF ERROR** Bell curve, Confidence Interval	6.2, 6.3
Class #10	Nov 20	**STATISTICAL INFERENCE** Statistics of polls, correlation coefficients	6.4
Class #11 Class #12	Nov 27 Dec 4	**STATISTICAL INFERENCE: APPLICATION TO CANADIAN ECONOMIC AND DEMOGRAPHIC DATA, SUPPLY/DEMAND FRAMEWORK IN ECONOMICS**	

Final Exam: The University will schedule the final exam.

Administrative Details

Class members take their own responsibility for non-attendance of classes. Students are welcome to make-up for material missed in class using the course text.

Course Assignments
There will be two course assignments handed out in class. Assignments may be submitted in class on the due date, or electronically via email on the due date. After this time, only hard copy submissions will be accepted.

Late Submission: Assignments submitted after the due date will be penalized 10 percentage points per day.

Plagiarism: Use and quotation of the course textbook is allowed for the course assignments, with no need to cite the course textbook as a reference source. However, students are not allowed to directly copy the work of others for the term assignment, whether from books and articles, Internet sources, other students, or other sources not identified here. Please be aware that plagiarism is a serious offence at Carleton and should be recognized and avoided. For information on how to do so, please see "Pammett on Plagiarism and Paraphrasing" at:

http://www.carleton.ca/economics/courses/writing-preliminaries/.

Examinations
Scientific non programmable calculators are allowed. No Reference Material: Course tests are 'closed-book'; reference material is not permitted. Students may not communicate with each other nor share material during tests. For clarification, please see the statement on tests and examinations in the Academic Regulations of the University, found in the Undergraduate Calendar for the current academic year (http://calendar.carleton.ca/undergrad).

Satisfactory performance criteria
Students must fulfil all of the preceding course requirements in order to achieve a passing grade (D- or higher). Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean. Application to write a deferred final examination must be made at the Registrar's Office.