

# ECON 4700 A

## Measurement Economics

### 2022 Early Summer (May - June)

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<b>Office hours:</b>	I will be available by appointment through video conferencing, email, and other means.
<b>Class schedule:</b>	Monday and Wednesday 18:05 to 20:55.
<b>Class location:</b>	Tory Building Room 210
<b>First Class:</b>	May 9 <sup>th</sup> .
<b>Last Class:</b>	June 15 <sup>th</sup>
<b>Statuary holiday:</b>	May 23 (no class)
<b>Final exam period:</b>	June 20 <sup>th</sup> to 26 <sup>th</sup>
<b>Final exam deferral:</b>	July 22 – 24
<b>Term paper:</b>	Due on June 17 <sup>th</sup> @ midnight.
<b>Other dates:</b>	May 20 <sup>th</sup> - Last day to withdraw from late summer courses with a full fee adjustment. Withdrawals after this date will result in a permanent notation of WDN on the official transcript. June 17 <sup>th</sup> - Last day for academic withdrawal from early summer courses and Last day for handing in term assignments, subject to any earlier course deadline.
<b>Prerequisite(s):</b>	(ECON 2030 with a grade of C- or higher or ECON 2003 (no longer offered) with a grade of C- or higher. <i>Students who believe they have taken a similar background course or courses from another university must provide appropriate documentation to the Department of Economics Undergraduate Administrator.</i>

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An inspirational quote that captures I think the spirit of this course:

“[...] when you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely in your thoughts advanced to the state of science, whatever the matter may be. <sup>[1]</sup>”

“We're not putting full weight on that data and it has to be said that it doesn't entirely feel right that investment is, as measured, falling at a time when we see continued strengthening investment intention. [...] I was much more comfortable with the data in Canada. <sup>[2]</sup>”

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## 1. Course description

The main focus of this course is to learn how economic activity is measured and how the corresponding indicators and variables are constructed. Much of the focus is on national accounting and index numbers but other measurement and data topics are also covered such as seasonal adjustment, productivity, employment and unemployment, poverty and inequality, environmental accounting, the balance of payments, and international comparisons.

## 2. Course objectives and some contextual information

The main objective of the course is to introduce the expanding and fascinating field of economic measurement to students. In the end, you will have acquired a solid foundation in the fundamentals in this important field of economics by having explored the multiplicity of sources of economic data as well as their construction, uses and of course their limitations.

Measurement economics is perhaps one of the lesser-known areas of study within the broader field of economics. It remains nevertheless certainly one of the most important ones. In today's economy, data availability is increasing at an exponential rate while, at the same time, new and more sophisticated data gathering techniques are evolving. Concomitantly, more policy questions are being raised and these need to be addressed, more trends must be analyzed and often acted upon, new and better economic and social programs are being developed, and more accurate forecasts must be made. This is precisely when good economic intelligence and reliable data play a pivotal role. Indeed, only when the performance of the economy is accurately measured and understood can its scarce resources be efficiently targeted and channeled to those sectors where they will have the most impact and do the greatest good.

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[1] William Thomson (Lord Kelvin) (1927)

[2] Mark Carney, The Telegraph 26 Nov 2013.

The importance of good data for an economist (and for society) was well articulated in a speech by David Dodge, a past Governor of the Bank of Canada, when he addressed the Conference of European Statisticians in 2003 (a bit dated but still relevant today unfortunately):

*“Basically, we need to understand the reasons for these differences in productivity levels and growth, if we are to formulate appropriate policy responses. But if the data are not comparable, then we do not know how much of a problem we really have to begin with.”*<sup>[3]</sup>

Much of the material thought in this course remained obscure for many years by the economics profession. It was never made available within a standalone course in most undergraduate economics programs in this country or abroad. This all changed however in the 1990s with the release of the Boskin Commission Report (which we will discuss during this course) in which one of the following recommendations was made:

*“These professions should treat training in data collection, data analysis, and interpretation more seriously and give it more space and attention in the standard curriculum. There should be more emphasis on measurement and sampling issues in the training of economists and statisticians. Effort should also be put into improving the ties between professionals in government and their academic and business colleagues. The academic world needs to be cognizant of the important work done by its colleagues in government who provide them with much of the “raw material” for their subsequent analyses and show more appreciation of their efforts and understanding of the constraints under which they are laboring.”*<sup>[4]</sup>

The perils and far-reaching consequences of mis-measuring the economy were made quite evident when the Boskin Commission report from the US showed that the cumulative effect over a 10-year period of a biased (or mis-measured) Consumer Price Index was in the order of \$270 billion.

Note also how the role and the central place of data figured in a previous Canadian Federal budget speech.

*“Good policy is impossible without good data. If we are to lift children out of poverty, we must first understand the cause. If we are to provide quality health care for seniors, we must know how many seniors there are and what services they need. If we want to protect minority languages, we need to know where they are spoken. Literally nothing that governments do can be done well without good data. That’s why, led by my colleague the Minister of Innovation, Science and Economic Development, our government wasted no time in bringing back the long-form census.”*

*And we’re going to do more. Often, when we ask for the evidence needed to make informed decisions, we find it just doesn’t exist. For example, we know that many Canadians, particularly British Columbians, are concerned about the effect of foreign ownership in the housing market. Unfortunately, the problem isn’t fully understood. More information is needed. To fill this data gap, and so many others like it, we will support Statistics Canada so that it can improve our understanding of important problems and help us all make better decisions.”*

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[3] [www.bank-banque-canada.ca/en/speeches/2003/sp03-8.html](http://www.bank-banque-canada.ca/en/speeches/2003/sp03-8.html)

[4] [www.ssa.gov/history/reports/boskinrpt.html#cpi8](http://www.ssa.gov/history/reports/boskinrpt.html#cpi8)

Or the sudden wave of interest in GDP, when big-name economists such as Joseph Stiglitz, Amartya Sen and Jean-Paul Fitoussi argue in their book, *Mismeasuring Our Lives: Why GDP Doesn't Add Up*, that the estimate is a deeply flawed indicator of well-being.

Articles such as these and other ones have also caught the eye of not just economists but also the mainstream press.

*“On November 5, 2010, the Ghana Statistical Services announced that it was revising the GDP estimates upwards by over 60 percent, suggesting that in previous GDP estimates, economic activities worth about US\$13 billion had been missed. After the revision, a range of new activities were accounted for, and as a result Ghana was suddenly upgraded from a low-income country to a lower-middle-income country.”*<sup>5</sup>

The subject of this course is well positioned to address a growing need for more focused training in the discipline of economics where measurement, the understanding the numbers (so-to-speak), and developing more and better ones, play a central role in today's economics curriculum.

### 3. Approach to teaching

There will be two weekly lectures where the topics drawn from the outline will be presented and discussed. PowerPoint slides will be the basis for delivering most of the material. The slides are available on Brightspace. About once a week we will go through some of the major statistical releases from Statistics Canada and other similar organizations. The sessions will be delivered in person (it's about time).

Lecture time is at a premium, so it must be used efficiently. You cannot be taught everything in the classroom. A great deal of your learning will take place outside the regular classroom time. At a minimum you should plan on investing 2 hours (and more) outside the classroom for each hour in class. Remember, we are cramming a whole semester into about 6 – 7 weeks, so this course will be intensive. However, based on comments that I received from previous years students, you will learn a great deal of useful material.

Ideally students will have done some of the suggested readings before coming to class and have some questions for discussion prepared, thus ensuring that you get the most benefit from the lectures and the material.

Emphasis during the course will be on Canadian economic statistics. Statistics Canada is by far the leading producer and promoter of these data. Access to almost all socio-economic statistics is done through a central data portal which is found on the Statistics Canada website; it is a good source for consulting and accessing these data. Other data sources will also be explored either through the assignments and/or in class.

I would like to emphasize that the reading material that I share with you (either with links in the PowerPoint slides, on Brightspace or by other means) can be qualified as required reading and

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<sup>5</sup> <https://academic.oup.com/afraf/article-abstract/112/446/138/10183/Briefing-For-richer-for-poorer-GDP-revisions-and?redirectedFrom=fulltext>

therefore, you can expect that this material will be part of your preparation for the exam. Simply reading the PowerPoint slides will not suffice if you are striving for a good grade.

#### 4. Required textbook and reading material

A textbook that adequately covers this course' subject matter has yet to be written (although I do plan on writing one in the future). However, much of the material for this course is drawn from the (mostly free) sources cited below. I also make available on Brightspace a reading list, which is updated regularly, that includes this material and other supplementary readings.

##### 1. **The System of Macroeconomic Accounts Statistics: An Overview**

We will be working with certain parts of this book during the semester.

- **Author/Editor:** International Monetary Fund
- **Publication Date:** August 29, 2007
- **Electronic Access:** Free Full text (PDF file size is 1033 KB).  
<http://www.imf.org/en/Publications/Pamphlet-Series/Issues/2016/12/31/The-System-of-Macroeconomic-Accounts-Statistics-An-Overview-19789>
- **ISBN/ISSN:** 9781589066205/0538-8759
- **Summary:** Designed to meet the basic needs of economists and statisticians, this pamphlet is unique in providing an explanation of the key principles underlying macroeconomic statistics when viewed as an integrated system. It highlights the interrelationships between the various sectors and provides a bridge linking the various macroeconomic accounts statistics-national accounts, balance of payments, government finance statistics, and monetary and financial statistics-to assist the reader in understanding the main concepts underlying these statistics. It does so by simplifying many of the concepts, explaining common features and differences, showing how the four key statistical areas harmonize, and providing examples to demonstrate the practical application and uses of the concepts within the conceptual framework.

##### 2. **A Practical Introduction to Index Numbers**

We will be working with certain parts of this book during the semester.

- **Author/Editor:** Jeff Ralph, Rob O'Neill, Joe Winton
- **Publication Date:** August 2015
- **Electronic Access:** Available for loan as an eBook from the library (ARES). If you wish to purchase (\$), you can do so online from various booksellers.
- **ISBN/ISSN:** 978-1-118-97781-1
- **Summary:** From inflation and GDP to retail sales and share prices, many of the most important economic statistics are published as index numbers. Official statistics based on index numbers are used by almost every country in the world. The representation of data in index numbers form is a valuable statistical technique for understanding and communicating change; it allows useful comparisons to be made that would not otherwise be possible. This book provides a comprehensive introduction to measuring change with index numbers.

### 3. Understanding Economic Statistics: an OECD perspective

I will sometimes make reference to certain parts of this book during the semester.

- **Author/Editor:** OECD
- **Publication Date:** August 29, 2007
- **Electronic Access:** Free Full text (PDF file size is 1033 KB). [http://www.oecd-ilibrary.org/economics/understanding-economic-statistics-an-oecd-perspective\\_9789264046986-en](http://www.oecd-ilibrary.org/economics/understanding-economic-statistics-an-oecd-perspective_9789264046986-en)
- **ISBN/ISSN:** 9781589066205/0538-8759
- **Summary:** Drawing on OECD statistics in particular, 'Understanding Economic Statistics: an OECD perspective' shows readers how to use statistics to understand the world economy. It gives an overview of the history, key concepts and the main providers of economic statistics. A detailed chapter provides a comprehensive picture of the main statistical activities of the OECD. Finally, the book explores the crucial issue of quality assurance and the implications for public trust.

### 4. User Guide: Canadian System of Macroeconomic Accounts (13-606-G)

- <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=13-606-G&ObjType=2&lang=en&limit=0>

### 5. Improving the Coverage of Official Statistics in Undergraduate Economics Textbooks

- <https://www2.bc.edu/robert-murphy/talk/WorldCongress.pdf>

### 6. Teaching Index Numbers to Economists

- <http://www.tandfonline.com/doi/full/10.1080/23322039.2015.1115625>

### 7. Applied Statistics

- <https://silo.tips/download/applied-statistics-economic-statistics>

## 5. Outline (lecture topics)

### 1) General introduction and overview to measurement economics (6 - 9 hours)

- a) Some data sources (Canadian and International)
- b) Tools used for data analysis such as Ms Excel.
- c) Key indicators from Statistics Canada
- d) Basic statistics/sampling
- e) Seasonal adjustment
- f) Some classification systems of economic activity
- g) Other related topics

### 2) Price indices and the cost-of-living (6 - 9 hours)

- a) Uses
- b) Basic index number theory
- c) The theory of the cost-of-living
- d) The consumer price index and its problems
- e) Other price indices (excluding implicit price indexes)
- f) Challenges and solutions facing index number compilers

- 3) **The national accounts: Gross domestic product and productivity (12 - 15 hours)**
  - a) Exploring the system of national accounts
  - b) Measuring current price and constant price GDP
  - c) The implicit price indices of GDP
  - d) What is wrong with GDP?
  - e) Input-output / supply-use tables in theory and practice including corresponding multipliers.
  - f) Measuring productivity
- 4) **Measuring employment and unemployment (3 hours)**
- 5) **Purchasing Power Parity statistics (3 hours)**
- 6) **The Census and other social indicators (3 hours)**
- 7) **Topics of recent research and /or interest in the field of measurement economics such as environmental statistics (Time permitting).**

## 6. Required work

There will be 3 non-research assignments during the term. More details about these assignments will follow. Typically, the assignments will consist in finding and extracting data, analyzing, and producing graphs and tables by using analytical tools such as MS Excel and STATA. I also plan on having you explore the latest and greatest piece of free software for data analysis that is available today: Tableau. I should also emphasize that there will be a lot of learning-by-doing with these assignments, which means that some of the work goes beyond what was thought during class. You will typically have 2 weeks to complete the assignments. Late assignment past the due date will be penalized 10% per late day up to two days after which time the assignment will not be accepted.

Each student must also write an individual research assignment of about 10 to 15 pages (excluding graphs and tables) based on a given measurement topic. More details about what is expected will be discussed early in the semester. Given the short time frame you must work with, I suggest that you start the paper sooner than later.

This course has one final exam which is cumulative (covers the material from the beginning), which will be made up of mostly multiple-choice questions and perhaps some applied exercises. Note the material for the exam will be drawn from the assignments, the PowerPoint slides presented in class, and the assigned readings. Do not wait until the day before the exam to start your reviewing the material, you might not find the outcome to your liking.

Please be aware that **plagiarism is a serious offence at Carleton University and should be recognized and avoided.** For further information on how to do so, please consult the Academic Integrity and Offenses of Conduct webpage : <https://carleton.ca/economics/courses/writing-preliminaries/academic-integrity-and-offenses-of-conduct/>

## 7. Assessment

The various components of the course will have the following weights:

Assignments (3 × 10 %):	30 % (you cannot be excused from an assignment; if you cannot turn in the assignment for any reason, let me know at least a day before the deadline otherwise your assignment will not be accepted; we will then decide on the appropriate course of action for turning in the assignment)
Research paper:	25 %
Final Exam (open book):	45 % (Online through Brightspace with no e-proctoring)
<b>Total</b>	<b>100%</b>

This % grade will then be converted into the alphabetical grade system using the standard equivalences, as outlined in Section 2.3 of the Academic Regulations of the University in the Undergraduate Calendar.

Students must fulfil all of the preceding course requirements in order to achieve a passing grade (D- or higher). Failure to write the final examination when the student has achieved satisfactory performance during the term will result in a grade of 'F' until an appeal to write the deferred final exam is granted. A change of grade will be submitted when the deferred final exam has been written and the marks are available. See Academic Regulation 2.3 for the official meanings of these grades.

Absence from any examination or test must be justified at the latest on the day of the examination. As for assignments and the paper, I do not accept medical reasons for not submitting them on time.

Note that for those that have missed the final exam due to a medical reason and that this absence has been supported by a medical certificate and accepted, that a deferral can be granted (see dates above). To write a deferred final exam, students must contact the Registrar's Office located in Tory Building. [www.carleton.ca/registrar/special-requests/](http://www.carleton.ca/registrar/special-requests/)

With regards to the final grade, please note the following: *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.*

## 8. Other information

Accommodation Students with disabilities needing academic accommodation are required to contact a coordinator at the Paul Menton Centre to complete the necessary *letters of accommodation*. To ensure that sufficient time is available to make arrangements, the student must then make an appointment to discuss their needs with the instructor at least two weeks prior to any necessary accommodation.

Students requiring academic accommodation due to a religious obligation or who are pregnant or who become pregnant should also feel free to come and discuss their concerns with the instructor.

They are also strongly encouraged to contact Equity Services to obtain the necessary *letters of accommodation* as soon as possible.

The latest information on this topic if you should need academic accommodations can be found under this link: <https://students.carleton.ca/course-outline/>

### 9. Communicating with me and among ourselves

The tool of choice for this will be the discussion forum in Brightspace. This is a group discussion platform that you can use to communicate among yourselves and with me. If your issue is more personal in nature, you can post your question as “anonymous” in the forum or if need be, an email would be acceptable under these circumstances. After using it for a while you will quickly appreciate the virtues of this tool as opposed to emails.