

Fall 2022

Economic evaluation of health programs (PPHS 528)
Department of Epidemiology, Biostatistics and Occupational Health
Course syllabus

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Aims of the course

This 3-credit course aims to: (1) convey an understanding of basic methods used to conduct economic evaluations of health technologies and interventions and their theoretical foundations; (2) enable students to identify the strengths, limitations, and implications of published economic evaluations of health programs; (3) enable students to design, conduct and write a publishable economic evaluation.

Course design

Readings.

The lectures (slides and recordings), together with some readings, constitute the content of the course. These will be available on *MyCourses*. Especially if you are interested in continuing to work in this field after the course, you are encouraged to purchase the textbook: *Methods for the economic evaluation of health care programmes*, 4th edition (2015), by Drummond, Sculpher, Claxton, Stoddart and Torrance, Oxford: Oxford University press. The text book can also be accessed online: <https://ebookcentral.proquest.com/lib/mcgill/detail.action?docID=4605509>

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Course grading

Assignments (60%)	3 assignments, each worth 20% <ul style="list-style-type: none">• Assignment 1: Quantifying costs• Assignment 2: Valuing health states, incremental analysis• Assignment 3: Model-based economic evaluation<ul style="list-style-type: none">○ Students may complete using Excel or R
Midterm (15%)	A timed, open-book, open-note midterm taken online
Term project (20%)	A project completed in groups of 2-3 due at the end of the semester
Class engagement (5%)	Students receive credit by participating in lecture in person or by watch a missed lecture within one week and complete an additional assignment

Need for familiarity with Excel

Basic familiarity with Excel is necessary to complete some questions in the assignments. The level of proficiency required is fairly basic and should not take more than about one or two hours to acquire. If you are not familiar with Excel, please try the free online tutorial that Microsoft has made available:

https://support.office.com/en-us/article/excel-for-windows-training-9bc05390-e94c-46af-a5b3-d7c22f6990bb?wt.mc_id=otc_home&ui=en-US&rs=en-US&ad=US. No need to learn about macros.

Optional use of R

Students have the option of completing their third assignment in R. This is not a requirement, but students who are interested in conducting economic evaluations in after the course ends are encouraged to complete the assignment in R. , Students may also elect to include some modeling and/or data analysis for their final project, which could also use R or another language.

Prior background in economics

Although a prior background in economics is not required for this course, students who have never taken any economics and who do not have a certain aptitude for it (interest in how the health care system and to some extent the economy works, above average grades in math, some facility with abstract thinking such as is found in philosophy) may have more difficulty with this course.

Additional notes

- (1) The mid-term exam will take 90 minutes and will be administered online. You will be given a few days' window during which the test must be taken. Using a feature of *MyCourses*, the test will be timed – once you sit down to take the test, you will have 90 minutes to complete it.
- (2) Assignments are to be submitted on and will be returned on *MyCourses*.
- (3) My wish is to give special attention to those of you who, for any number of reasons (children to care for at home, language difficulties, etc.), are having difficulty with this course. I hope that you will feel free to reach out to me with any difficulties. This will not have a negative effect on your grade – on the contrary, it is likely to lead to a higher degree of motivation and understanding, which is likely to increase your grade.

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- (4) We recognize the contributions Professor Eric Latimer, Research Scientist at the Douglas Mental Health University Institute and Professor in the Department of Psychiatry, who has taught this class for more than a decade. The course design and the vast majority of course materials are based on content he generously shared.

A few comments on pedagogical approach

- (1) Both assignments and a test are given because they help you learn the material in different ways. Assignments make you figure out how to apply the course material to specific problems. This is useful. Tests, if you prepare for them well, make you think about the course material in a more holistic way. How do the different concepts fit together? What is their underlying logic? To do well on the test, it is not enough to memorize the content, you need to understand it.
- (2) I firmly believe that you will benefit greatly from discussing the material with each other. Each of you should join a group who will meet to work on assignments and also, if you so wish, who help each other prepare for the test.

Absences due to COVID-19 or other reasons

It is preferred that you attend class in person when you feel well. If you must miss a class, you do not need to provide notice. Instead, you may watch the lecture and submit the additional assignment via MyCourses within one week of the missed class to receive full participation credit. If you cannot do so due to extenuating circumstances, please let me know.

A few comments on course workload and difficulty

You are likely to find that the workload for this course is about average, and you will learn more, if you keep up with the material. The course introduces many concepts that are specific to the field – in many cases novel even to students with an economics background. Some students find the content challenging. Nonetheless, students who stay in the course engage seriously with the material and the majority get an A or A- as a final grade for the course. Only a few seem to have a great deal of difficulty grasping the concepts and do less well. If you have never taken any economics, never have been particularly interested in how the health care system works, or in any questions related to economic policy, tend to get below average grades in maths, AND have little interest in philosophy or philosophical reasoning, perhaps this course is not the best fit for you.

Language policy and academic integrity

- In accord with McGill University's Charter of Students' Rights, students have the right to submit in English or in French any written work that is to be graded.
- McGill University values academic integrity. Therefore all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see <http://www.mcgill.ca/integrity/> for more information. Also consult: <http://www.mcgill.ca/cio/e-policies>).

Schedule of classes

Classes will be held on Tuesdays and Thursdays from 8:35 AM to 9:55 AM, 2001 McGill College Avenue Room #1140

Thursday, September 1 - Class 1

Introduction

- Need for economic evaluation
 - Basic types of economic evaluation
 - Economic evaluation as a craft rather than an exact science
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Tuesday, September 6 - Class 2

Measuring costs part 1

- Choosing a perspective for an economic analysis
 - The notion of opportunity cost
 - Average, marginal, variable, total costs
 - Adjusting market item prices
 - How long to track costs
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Thursday, September 8 – Class 3

Measuring costs part 2

- Calculating unit costs including when overhead costs need to be allocated
- DRGs and CMGs
- Hospitalization costs available from the Canadian Institute for Health Information (CIHI).

Assignment 1 posted (due Friday, September 16)

Tuesday, September 13 – Class 4

Measuring costs part 3

- Discounting
 - Addressing inflation
 - Translating currencies: purchasing power parity vs currency exchange rates
 - Annuitization of capital expenditures and other methods for taking capital costs into account
 - Valuing productivity gains and losses
 - Valuation of caregiver time
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Thursday, September 15 – Class 5

Measuring benefits, part 1

Different types of effectiveness data

- Quality of life scales
- QALYs
- DALYs
- Discounting benefits as well as costs?

Tuesday, September 20 – Class 6

Measuring benefits, part 2

- Von Neumann Morgenstern utility theory
- Prospect theory

Assignment 1 due Wed, September 21 at 6pm

Thursday, September 22 – Class 7

Measuring benefits, part 3

- Rating scales, standard gamble, time trade-off

Tuesday, September 27 - Class 8

Measuring benefits, part 4

- Multi-attribute utility theory
- Common preference-based instruments: EQ-5D (3L and 5L versions), SF-6D, HUI
- Mapping between non-preference-based and preference-based measures

Thursday, September 29 – Class 9

Measuring benefits, part 5

- Beyond QALYs? Welfarism vs extra-welfarism; the capabilities approach (sections 5.8, 5.9; additional readings including Brouwer et al; Nussbaum; Lorgelly et al.)
- Limitations of QALYs
- The capabilities approach – implications for the future?

Tuesday, October 4 – Class 10

The basics of cost-effectiveness analysis

- Interpreting cost-effectiveness ratios; the net benefits framework
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Thursday, October 6 – Class 11

Cost benefit analysis: Part one

- Introduction to cost benefit analysis
- Willingness-to-pay, willingness-to-accept

Assignment 2 posted (due Friday, October 21)

(No class on Tuesday, October 11 – Fall Reading Break).

Friday, October 14 – Class 12 (Class moved from Tuesday due to reading break on Mon – Wed)

Cost-benefit analysis: Part two

- Discrete-choice experiments
- Potential uses of WTP and DCEs in decision-making

Tuesday, October 18 – Class 13

Economic evaluation using patient level data: Part one

- Nature of economic data
- Quantifying uncertainty

Thursday, October 20 – Class 14

Economic evaluation using patient-level data: Part two

- Net benefit regression

Assignment 2 due Friday October 21 at 6pm

Tuesday, October 25 – Class 15

- Catchup / Midterm review

Take midterm at home on MyCourses. Timed exam, 90 minutes, between 10am Tuesday Oct 25 and 11:59pm Wednesday Oct 26. Open notes/internet. No discussing with peers.

Thursday, October 27 – Class 16

Economic evaluation using decision analytic modeling: Part 1

- Why decision analytic modeling?
 - Constructing a decision tree
 - Probabilities and expected values
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Tuesday, November 1 – Class 17

Economic evaluation using decision analytic modeling: Part 2

- Analyzing a decision tree

Thursday November 3 – class 18

Economic evaluation using decision analytic modeling: Part 3

- Markov modeling – Part 1

Assignment 3 posted (due Friday November 23)

Tuesday, November 8 – Class 19

Economic evaluation using decision analytic modeling: Part 4

- Markov modeling – Part 2

Thursday, November 10 – Class 20

Economic evaluation using decision analytic modeling: Part 5

- Overview of other modeling types

Tuesday, November 15 – Class 21

Economic evaluation using decision analytic modeling: Part 6

- Modeling study workflow
- Open science approach

Thursday, November 17 - Class 22

Ethical and equity considerations

Tuesday, November 22 – Class 23

Guest lecture (TBD)

Thursday, November 24 – Class 24

Concluding observations

- Strengths and limitations of economic evaluation
- Future directions

Assignment 3 due Friday, November 25 at 6pm

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Tuesday, November 29 – Class 25

Class presentations of term projects

Thursday, December 1 – Class 26

Class presentations of term projects

Term projects due on MyCourses Friday, December 9 2022 at 9pm.
