Course overview:
This course will focus on the cost-effectiveness/cost-benefit analysis (CE/CBA) methods among various economic evaluation methods. CE/CBA is increasingly used to evaluate alternative choices in public health and clinical practice and to enlighten and inform health policy determinations.

In this course, students are introduced to the methods and objectives of CE/CBA, as well as to important study design issues that distinguish these analyses from other clinical research studies. Students will also participate in a lab to learn CE/CBA (decision analysis) software (TreeAge) such that they can perform analyses themselves as a class project.

The objectives of the course are:
1. To understand the concepts of cost and outcome in application to public health programs, policies and interventions
2. To describe steps for designing and conducting CE/CBA evaluation of public health programs, policies and interventions
3. To be able to use decision analytic modeling for CE/CBA evaluation
4. To learn how to tailor CE/CBA evaluation to reflect the interests and concerns of the critical stakeholders
5. To be able to apply “Systems Thinking” when evaluating health and economic consequences of public health programs, policies and interventions

All students will be expected to read all the required readings. Additional recommended readings: are also listed.

Required textbook and recommended books
Required Textbooks:
Recommended Textbooks:
Cost-effectiveness/benefit analysis:

Health Economics:

Microeconomics theory:

Course Requirements: The course has four requirements:
(1) a written (in class; closed book/note) midterm exam that covers the basic concepts of CEA/CBA covered in the first half of the class (20%)
(2) Presentation: (either (A) CE/CBA project using decision analysis and TreeAge software, or (B) Systematic review of previously published CE/CBA, detailed below) (40%),
(3) Final paper (revising a presentation) due June 12 (Th) 5pm (20%), and
(4) participation in class discussion (20%)

Student Presentations and Final Paper:
(1) Options
   (A) CE/CBA project using decision analysis and TreeAge software.
   (B) Systematic review of previously published CE/CBA. In order to pursue this option, there must be at least 5 previously published studies addressing the CE/CBA of a defined health-related question. For students considering this option, they need to discuss with the instructor for approval and further direction.

(2) General instruction
Students will be required to write a 10±2 page (double-spaced in main text (single spaced for tables/figures), 1 inch margin; 11 font Arial) paper of a CE/CBA analysis (note: not just a decision model including effects only). It is best to start thinking about the paper as early in the course as possible. To assist in moving your ideas forward you will be required to write a 1-paragraph overview of your project (due 5pm on April 16), a 1-page overview (structured abstract format) of your project (due 5pm on April 23) and to give a presentation (May 29 or June 5) including your results as well as their public or clinical policy implications. You should not consider this "final" presentation completely "final" as many students find the feedback from other students and faculty helpful in furthering their ideas. Please note there’ll be no feedback from the instructor after your presentation. A final written version of your paper is due on June 12.
(3) Instruction for Student Presentation
(a) Out of 40 points, you will lose 10 points if your presentation time exceeds every 1 minute. Please pay attention to notices from a time-keeper.

Software purchase: TreeAge (Please install in your laptop and bring to Lab sessions)
(1) Students are required to bring a laptop to class and will be using the following software:

(2) How to purchase: (Please purchase and test if the program file opens THIS WEEK, you might need to call TreeAge for help)
(a) Active students with ACADEMIC EMAIL ADDRESS
TreeAge, $45 for a student version (http://www.treeage.com/shop/)
Choose TreeAge Pro Suite among various TreeAge software > choose "Academic Use" > select an option of "Purchase Student Course License ($45.00)"

(b) Non-students
TreeAge, $365 for an annual license (http://www.treeage.com/shop/)
Choose TreeAge Pro Healthcare among various TreeAge software > choose "Academic Use" > select an option of "Purchase Annual License ($365.00)"

Course Structure

4/3/14 (Th): Introduction
(#1) Required Readings:
Drummond et al. text book, (Chapter 1-3)

Suggested Readings:

4/10/14 (Th): (1) Cost effectiveness/utility analysis
(#2) Required Readings:
Drummond et al. text book, (Chapter 5)

(2) Lab 1: Introduction to Decision Trees and Software
- Simplest cost effectiveness analysis
Required Readings:
Lab session note

TreeAge Pro 2012 Users’ Manual: Chapter 4. A Decision Tree Tutorial, p.23-34

Suggested Readings:
4/17/14 (Th):  (1) Cost utility analysis & Economic using patient level data 
(#3) 
Required Readings: 
Drummond et al. text book, (Chapter 6 and 8)

(2) Lab 2: Building a Decision Model Using Formulas
- Sensitivity analysis of cost effectiveness analysis
Required Readings:
Lab session note


Suggested Readings:

4/24/14 (Th):  (1) Economic evaluation using decision analytic modeling & Presentation and use of economic evaluation results 
(#4) 
Required Readings: 
Drummond et al. text book, (Chapter 9-10)

(2) Lab 3: Monte Carlo Simulation of Cost-Effectiveness Analysis
Required Readings:
Lab session note

Suggested Readings:
TreeAge Pro 2012 Users’ Manual: Chapter 32 and 33, p. 387-430.


5/1/14 (Th):  (1) Exercise: Bias direction in the effectiveness estimated by observational data analyses 
(#5) 
Required Readings: 

(2) Cost analysis Part 1: Conversion factor
Drummond et al. text book, (Chapter 4, Section 4.1-4.2)

(3) Examples of Student Projects
Required Readings:
Drummond et al. text book, (Chapter 3)
5/8/14 (Th):  (1) Exercise: Bias magnitude in the incremental cost effectiveness ratio (ICER) (#6)
Required Readings:

(2) Review for the midterm exam

5/15/14 (Th):  Midterm exam (in class, closed book/note) (#7)

5/22/14 (Th):  (1) Cost analysis Part 2: Allocation of overhead cost (#8)
Required Readings:
Drummond et al. text book, (Chapter 4, Section 4.3-4.6)


Suggested Readings:

(For the RFA below, to skim in 15 minutes would be enough)
CDC (2006), Request For Applications (RFA) Number: RFA-IP-06-005
Title: Support and Resources Needed For Universal Childhood Influenza Vaccination: Providers’ Perspective;

(2) Review of the midterm exam

(3) Q&A for Student Presentation and Final Papers

5/29/14 (Th):  Student Presentation 1 (#9)

6/5/14 (Th):  Student Presentation 2 (#10)

6/12/14 (Th):  Due: Paper submission 5pm (#11)