Decision Analysis in Health Care

This course provides an overview of techniques used by clinicians and health services researchers to understand medical decision making under uncertainty. Participants will learn how to structure decision analysis questions, construct decision trees, and analyze outcomes using probability. Using a combination of lectures and computer labs, the course will cover practical and ethical issues in decision analysis as well as its theoretical basis.

Faculty and Staff
Course Directors: Hassan Ghomrawi, PhD, MPH, hag2008@med.cornell.edu
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Requirements and Grading:
Class attendance and participation: 20%
Lab attendance and assignments: 15%
Mid-term quiz: 15%
Final examination: 50%

Meeting Times/Locations:
Lectures: Wednesday 5:00-6:30PM
Location: A-250
Labs: Thursday 5:00-6:30PM
Location: Library Computer Lab (downstairs in library)

Student Responsibilities:

Required textbook:

Other required course materials: You must log-in to Blackboard (http://blackboard.cornell.edu/) using your CWID and password and changing ID type to WCMC-CWID to download all course materials (lecture handouts, articles that are required readings, lab assignments and solutions). There will be no hard copy handouts available at lectures or labs. Lecture handouts will be posted on Blackboard the day before lecture; it is your responsibility to print out these handouts if you want to have them available during the lecture.

Supplementary books (most will be posted on Blackboard):


**Attendance**: You are required to sign in on the attendance sheet at each class and to hand in lab assignments. If you do not sign in, you will be recorded as absent.

**Lab Assignments**: You may complete lab assignments individually or in groups. If for some reason you miss lab, hard copies of completed lab assignments will also be accepted up until 5PM the Monday following the lab in a box at the Department of Public Health reception desk on the second floor of 402 East 67th Street. No late lab assignments will be accepted after this time.

**Excel Program**: Some lab assignments will require you to use Excel. If you are not familiar with Excel or have not used it recently, we strongly recommend that you complete the following Excel Tutorials on your own during the first week of class:

- If you are new to Excel, complete the following tutorial – Excel 2010 Tutorial HD – Simple Formulas [http://www.youtube.com/watch?v=JJPis-lITAw](http://www.youtube.com/watch?v=JJPis-lITAw)
- If you have used Excel in the past but are new to Excel 2010, complete the following tutorial – Excel 2010 – New features [http://www.youtube.com/watch?v=9uB3Y3JC2Nw&feature=related](http://www.youtube.com/watch?v=9uB3Y3JC2Nw&feature=related)

**Mid-term quiz**: A take-home midterm quiz will be handed out after the third lecture (2/8/12). It will be due the following afternoon as you arrive at lab on 2/9/12.

**Final exam**: There will be a take-home final exam consisting of a decision analysis problem for which you will be required to create a decision tree, calculate probabilities, and justify conclusions. The examination will be handed out after the fifth lab (Review) on 2/23/12 and will be due at the beginning of the last lab (intro to TreeAge software) on 3/1/12.

**Week 1**
1/22/14 Lecture 1: Introduction to Decision Analysis: HG, NH
Reading: Sox Chapter 3; Weinstein and Fineberg Chapter 1; Kassirer et al., Decision Analysis: A Progress Report. Annals of Internal Medicine, 1987; 106(2): 275-291

1/23/14 Lab 1: Probability Problem Sets HG

**Week 2**
1/29/14 Lecture 2: Structuring Decisions and Decision Trees HG

1/30/14 Lab 2: Giant Cell Arteritis Case Study NH, HG
Reading: Handout

**Week 3**
2/5/14 Lecture 3: Sensitivity Analysis NH
Reading: Sox Chapter 9; Clemen Chapter 5

**MIDTERM QUIZ Distributed**
2/6/14 Lab 3: Using Excel for Manipulating Trees NH, AE
Reading: http://gunston.gmu.edu/healthscience/708/ReviewExcel.htm
MIDTERM QUIZ Due

Week 4
2/12/14 Lecture 4: Diagnostic Testing NH, HG
Reading: Sox Chapters 4 & 10

2/13/14 Lab 4: Case Study using Bayes Theorem HG, NH
Reading: Handout

Week 5
2/19/14 Lecture 5: Value of Information HG
Reading: Kirkwood Chapter 3 – The Value of Information:
http://www.public.asu.edu/~kirkwood/DASstuff/decisiontrees/index.html

2/20/14 Lab 5: Review HG, AE
FINAL EXAM Distributed

Week 6
2/26/14 Lecture 6: Ethical and Policy Considerations NH, HG
Reading: Sox Chapter 11; Groopman Chapter 6: Uncertainty of the Expert

2/27/14 Lab 6 Introduction to TreeAge HG, AE
FINAL EXAM Due