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HECO 675 Economic Evaluation and Simulation Modeling

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HECO 675: Economic Evaluation and Simulation Modeling
Spring 2020

Department of Health Services Administration
College of Professional Sciences
Xavier University

Credit Hours: 3 Graduate Credit Hours
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HECO 675 Course Description:

This course will introduce the development, methodological approach, and application of quantitative models used to inform health care decisions. The course will emphasize decision trees and Markov models and introduce agent based modeling techniques. Approaches to uncertainty in the model will be addressed through one-way, and probabilistic sensitivity analyses. The course will consider the application and presentation of the model to stakeholders with an emphasis on the ethical use and proper disclosure of the limitations inherent in the data and methods. [Domain C: Health economics and evaluation, SLOs 13-16.]

Course Objectives:

Upon the successful completion of this course, students should be able to:

- Prepare & synthesize complex data to for use in a simulation model
- Develop a simulation model using appropriate study design for the research question
- Interpret the results of their simulation model and make recommendations

Textbooks:

Drummond M, et al. Methods for the Economic Evaluation of Health Care Programmes. Oxford: Oxford University Press, 2015 4th Edition. ISBN-10: 0199665885 (you should have this book by now)

Briggs A, et al. Decision Modelling for Health Economic Evaluation. Oxford: Oxford University Press, 2006. ISBN-13: 9780198526629

Students are expected to obtain a copy of TreeAge Software (www.treeage.com) for students.

Course Outline: (Subject to change as needed but will be generally followed)

Week (Dates)	Topic	Assigned Reading(s) / Assignment(s)
Module 1	Course Orientation / Use of Economic Evaluation in Decision Making	Briggs Chapter 1 Drummond Chapter 3 Husereau D. et al. Consolidated Health Economic Evaluation Reporting Standards (CHEERS)—Explanation and Elaboration: A Report of the ISPOR Health Economic Evaluation Publication Guidelines Good Reporting Practices Task Force. Value in Health. 2013;16:231-250 Discussion 1: Use of Economic Evaluation in Healthcare Decision Making
Module 2a	Decision Analysis & Decision Trees	Drummond Chapter 9 Assignment 1: Critical Appraisal of Economic Evaluation Discussion 2: CA of Economic Evaluations
Module 2b	TreeAge – Decision Analysis and Decision Trees	Project Assignment 1: Project Topic Statement
Module 3a	Markov Models Manchester United is Over Rated	Briggs Chapter 3 Siebert U, Alagoz O, Bayoumi AM, et al. State-transition modeling: A report of the ISPOR-SMDM modeling good research practices task force-3. Value Health 2012;15:812-20 Assignment 2: Decision Trees
Module 3b	TreeAge – Markov Models	Discussion 3: Markov Models Assignment 3: Exercise 2.5 from Briggs Project Assignment 2: Sign up for 30 minute session with Instructor. Be punctual.
Module 4a	Uncertainty & Sensitivity Analysis	Briggs Chapter 6 Briggs AH, Weinstein MC, Fenwick E, et al. Model parameter estimation and uncertainty analysis: A report of the ISPOR-SMDM modeling good research practices task force-6. Value Health 2012;15:835-42. Assignment 4: Markov Modelling TreeAge
Module 4b	TreeAge – Uncertainty & Sensitivity Analysis	Discussion 4: Uncertainty Analysis Project Assignment 3: Model Diagram, Parameter Listing with Definitions, Figure and Table Listing
Module 5a	Reporting on Economic Evaluations	Briggs Chapter 5 Drummond Chapter 10

		Eddy DM, Hollingworth W, Caro JJ, et al. Model transparency and validation: A report of the ISPOR-SMDM modeling good research practices task force-4. Value Health 2012;15:843-50. Project Assignment 4: Sign up for 30 minute session with Instructor. Be punctual.
Module 5b	TreeAge: Reporting on Economic Evaluations	Discussion 5: Reporting on Economic Evaluations
Module 6	Discrete Event Simulation	Karnon J, Stahl JE, Brennan A, et al. Modeling using discrete event simulation: A report of the ISPOR-SMDM modeling good research practices task force-4. Value Health 2012;15:821-27. Discussion 6: Discrete Event Simulation Assignment 5: TreeAge Practice
Module 7	Group Project	Project Assignment 5: Final Report Discussion 7: Reflection on Group Project

Note: Assignment due dates will be posted in Canvas. The dates above are guidance purposes only. The above schedule is subject to change. Any changes will be posted in Canvas

Assessment & Evaluation:

Assignments:

All assignments will have a description that is available via Canvas. The assignments apply the readings and materials posted on Canvas through real-world problems. The assigned dates noted in Canvas are intended to help you stay on track with completing your work for this course. All assignments for this course will be submitted electronically through Canvas unless otherwise instructed.

Discussion(s):

Discussions are a way for you to engage with each other and the instructor about the course content. Generally, each module will have a question that links to the discussion board. You can also access each discussion board by clicking on the button in the course navigation links. In order to get full credit for each discussion, you will need to post a thoughtful, well-written response in accordance to the guidelines specified in the Discussion Rubric.

Project:

The group project is intended to (1) allow the course instructor to evaluate your understanding of the concepts and techniques of the course, (2) give you an opportunity to gain experience, (3) properly interpret the results. While there is the potential for the projects to develop into a publishable paper, that is not the goal within the course. They should be considered as pilots, although in some cases they might come close to a “finished product.” The full project description is posted in Canvas.

Summary of Assessment Schedule:

Module	Assessment	Points
1	Discussion 1	20
2	Discussion 2	20
	Assignment 1	90
	Project Assignment 1	50
3	Discussion 3	20
	Assignment 2	90
	Assignment 3	90
	Project Assignment 2	70
4	Discussion 4	20
	Project Assignment 3	100
	Assignment 4	90
5	Discussion 5	20
	Project Assignment 4	70
6	Discussion 6	20
	Assignment 5	90
7	Project Assignment 5	120
	Discussion 7	20
	Total Points	1000

Note: Due dates will be posed in Canvas. The above schedule is subject to change. Any changes will be posted in Canvas.

Grading Scale:

A	930-1000	C	700-769
A-	900-929	F	< 700
B+	870-899	IP	In progress
B	830-869	E	Incomplete
B-	800-829	VF	Virtual Failure
C+	770-799		

Late Assignment Policy:

Late submissions will accrue a penalty of 10% per day the submission is late. A submission is considered one day late if it is submitted past the identified due date/time. It is considered two days late if it is submitted any more than 24 hours past the identified due date/time, and so forth. This includes weekends! Once a submission is more than 5 days late, it will become a zero and will not be accepted for credit.

Announcements:

Announcements will be posted in CANVAS on a regular basis. They will appear on your Canvas dashboard when you log in and/or will be sent to you directly through your selected method of notification. Please make certain to check them regularly, as they will contain any important information about upcoming projects, changes to the syllabus or class concerns.

University Level Graduate Policies:

<https://catalog.xavier.edu/>

**HOT TOPIC! Academic Honesty: Read this section in the XU Catalogue, linked above.
Please ask if you have questions regarding intellectual property rights.**

Technical Requirements:

- Internet connection (DSL, LAN, or cable connection desirable)
- Access to Canvas through a supported Web browser (Internet Explorer, Firefox, Safari). To ensure that you are using a supported browser and have required plug-ins please run the Check Browser Tool from the Technology Services Web site.
- Check your computer against Xavier's suggested minimum computer requirements:
<http://www.xavier.edu/ts/students/Computer-Recommendations.cfm>

If you need technical assistance at any time during the course or to report a problem with Canvas, contact the HELP Desk at (513) 745-HELP/4357 or visit the HELP Desk Web site, or contact Canvas at 855-778-9967.

Graduation Requirements:

Graduation requirements include completion of the program with a GPA of 3.0, or "B," or higher, no outstanding academic probation requirements, and satisfactory completion of a capstone project. A grade of "B-" or better is required in all courses. Courses in which a "C" is received must be repeated at the student's expense and may extend the length of the program.

Accommodations:

The Office of Academic Support offers tutoring, Supplemental Instruction (SI), and study groups. For information about these services, contact Stephanie Daniels at 745-3214 or danielss3@xavier.edu. The OAS is located on the fifth floor of the Conaton Learning Commons, Suite 514. ARENSAL IS THE BEST EPL TEAM

Students with Disabilities

Any student who feels he/she may need an accommodation based on the impact of a documented disability should notify the course instructor and contact Cassandra Jones in the Office of Disability Services at 745-3280 or e-mail jonesc20@xavier.edu to coordinate reasonable accommodations.