MIE1623: Introduction to Healthcare Engineering

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Office hours: By appointment only

Textbook: none

Prerequisites: APS1005 or basic OR background recommended.
Students who do not have a background will be required to do some extra reading on some topics available on the website.

Lectures: Monday 12:10 - 15:00 in room MC 306

First class: January 4, 2016.

Course description

This course illustrates the use of industrial engineering techniques in the field of healthcare. Common strategic, tactical, and operational decision-making problems arising in healthcare will be approached from an operations research perspective. Unique aspects of healthcare compared to other industries will be discussed. Real-world datasets will be provided to illustrate the complexity of applying standard operations research methods to healthcare.

Course goals

- Learn to recognize healthcare problems that can be solved with OR
- Learn important metrics that must be considered in healthcare
- Learn to balance competing objectives and stakeholders
- Learn how to assess efficiency in healthcare systems

Grading

Assessment	Weight	Date
Homework (5 assignments, 12% each)	60%	See schedule of topics
Project	35%	Monday, April 4
Project presentation	5%	Monday, April 4

Schedule of topics: The schedule of topics below is subject to change without notice.

Week	Date	Lecture	Due
1	Jan 4	Intro to course Benchmarks Public health planning	
2	Jan 18	Facility location and layout	
3	Jan 25	Waitlist management, staffing, forecasting	Assignment 1
4	Feb 1	Health and human resources, Aging and System Dynamics	
5	Feb 8	Staffing assignments, queuing theory	Assignment 2
6	Feb 15	READING WEEK	
7	Feb 22	Surgical scheduling	
8	Feb 29	Patient flow, supply chain (90 minute class)	Assignment 3
9	Mar 7	Case mix planning, simulation, system dynamics, related software	
10	Mar 14	Resource management, capacity planning	Assignment 4
11	Mar 21	Class cancelled	
12	Mar 28	Public Health	Assignment 5
13	Apr 4	Project 7presentations	Project