

Registered students please go here for the most recent syllabus, readings and assignments:

<https://hserv.washington.edu/courses/course/view.php?id=129>

Sample Syllabus Summary:

The assignments and readings are from a previous Quarter. They will most likely change – use as an example ONLY.

**University of Washington
Extended MPH Degree Program
HSMGMT 566
Decision Support Models for Health Services
Summer 2007
(June 18 – June 22)**

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Text: *Introductory Management Science*, by Hillier, and Hillier, Second Edition, Irwin/McGraw Hill.

Software: excel, excel files on CD included in the text and available at text web site:
www.mhhe.com/hillier2e , excel “add-in” *solver*.

Course Notes: I have prepared course notes that I use during lecture. To facilitate note taking, etc., hardcopies of these notes have been prepared for you.

Labs and Help Sessions: We have reserved the **computer lab, 12:30pm-5:30pm**, for the week of our course. We plan to use this time to help you with excel work and to demonstrate the excel programs on the text’s CD that we will use. The first hour (or so) will be class instruction, followed by small group and, if needed, individual instruction.

Course Description: This course covers a selection of quantitative tools, techniques, and models to aid in decision making, with an emphasis on their applications to health care organizations. It provides an introduction to the classical tools of operations research and operations management, including linear programming, project management, and queuing models. It emphasizes the managerial use of these techniques and interpretation of their results on examples rather than their mathematical derivations, and makes use of excel spreadsheets to handle some of the technical details and lengthy calculations.

Learning Objectives: The overall learning objective of this course is to expose participants to management science models to aid in decision making in the health sciences arena. At the course’s conclusion, participants will be able to recognize opportunities to apply these models, analyze results, and compare options. Specific examples of course activities and their learning objectives are:

- Application of linear programming to determine the optimal allocation of resources (budget, bed days, RN staff, radiology capacity, etc.) to various DRG's in hospitals. At the conclusion of this exercise, the participants will be able to formulate a resource allocation problem and interpret the results, evaluating marginal costs and returns for changes in available resources.

- Use of linear programming for workforce scheduling to staff nurses on a hospital floor requiring 24-hour coverage with uneven shift requirements and required skill mix. At the conclusion of this exercise participants should be able to formulate a workforce scheduling problem, recognize the impact of demand load on staffing, and demonstrate the impact on staffing of skill mix requirements.
- Staffing a phone center to achieve a variety of service level goals. At the conclusion of this exercise the participants should be able to compare staffing levels in terms of the impact of service levels attained and demonstrate how changes in utilization affect system performance.
- Waiting line models to consider staffing levels in an ER to achieve a level of readiness. At the conclusion of this exercise the participants should be able to evaluate the tradeoffs between potentially idle resources and response times.
- Waiting line models for placement of ambulances to assure an acceptable service level in terms of wait times and utilization. At the conclusion of this exercise the participants should be able to compute system performance measures such as average wait times and probability that a wait time exceeds a target and recognize how utilization is related to these measures.
- Waiting line models to compare different queue configurations for pharmacies. At the conclusion of this exercise the participants should be able to compare configurations and evaluate them in terms of system cost, which includes both the cost of staffing and the cost of waiting that results from staffing and configuration choices.
- Use of priority queues in a walk-in health clinic. At the conclusion of this exercise the participants should be able to demonstrate how priority queues differ from non-priority queues and analyze when each may be appropriate.

Class Policy: Grading will be based on: (1) four problem sets and (2) a take-home exam available the morning of Friday, June 22, and due Monday morning, June 25.

The problem sets are due at the start of class on Tuesday, Wednesday, Thursday, and Friday. We will use part of our daily lab times to work on these problems. These may be worked on together but each of you should hand in your work separately. I have prepared my solutions for these problems sets and these will be posted each morning.

The exam will cover chapters. 2, 4, 5, 8, 9 and 14. This is to be done *individually*. It is available the morning of Friday, June 22, and you will have that day's class time to work on the exam. We plan to have the computer lab available to you that morning. It is due Monday morning, June 25, submitted on-line via our Moodle systems (instructions for submitting the exam on-line as an excel file will be available). It requires use of excel spreadsheets and of excel templates that came with your text. I will grade your exams and return them promptly.

