

Instructor: Professor John Miltenburg miltenb@mcmaster.ca MGD-406 extension 23943
Office Hours: Tuesdays 10-12

Course Description:

This course has two emphases: operations management problems and management science tools to solve these problems. Five problem areas are studied: forecasting, inventory models, production planning, project planning, and operations scheduling. Three tools are studied: mathematical programming, calculus, and networks. There are 12 classes and a final exam. Class is Wed., 9:00-12:00, MGD-421.

Before class study the assigned material and answer the assigned problems. (See the course website.) Complete answers by hand, and, whenever reasonable, use Excel and other software (e.g. Lindo, MS Project) to do routine calculations.

Each week one student or the instructor leads the class. The leader meets the instructor during Tuesday office hours to review the leader's answers. Afterwards the leader makes any necessary changes to her/his answers. The leader makes copies of her/his answers for the class and during class presents these answers and some interesting insights into the problems or solution algorithms. All students hand in their answers at the end of class. The instructor grades the answers using a (1, ½, 0) scale for each question (1 – good answer, ½ – weak answer, 0 – very weak answer). Students may make corrections or add notes to their answers during class but these must be made with a red pen.

Each student must also prepare one Excel macro to solve one or more problems from the material they will present to the class. The macro must be finished before the class presentation. The macro must be entirely self-explanatory. The macro should, if possible, build on the work done by previous students from this year's class and the class in 2004. (See the course website.) Instructions and details will be given in class.

Textbook: Elsayed, E.A., and T.O. Boucher, *Analysis and Control of Production Systems*, Prentice Hall, 1994.

Course Website: www.business.mcmaster.ca/courses/q790/

Evaluation: 11 assignments (??), 2 or 3 presentations (??), macro (??), final exam (??)

<u>Mark:</u>	0-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-100
<u>Grade:</u>	F(0)	C-(1)	C(2)	C+(3)	B-(4)	B(5)	B+(6)	A-(7)	A(8)	A+(9)

Week	Class Schedule**	Leader
1	Chapter 1. Introduction Lecture – Introduction to Mathematical Integer Programming for Scheduling	1 – J.M.
2	Chapter 7. Job Sequencing and Scheduling: Flow Shops (pp. 290-317) Lecture – The Traveling Salesman Problem	2
3	Chapter 7. Job Sequencing and Scheduling: Job Shops (pp. 317-330, 336-343)	3
4	Chapter 7. Job Sequencing and Scheduling: Production Lines (pp. 344-374) Lecture – Markov Chain models	4
5	Chapter 2. Forecasting and Time-Series Analysis, pp. 7-43, 51-53	5 – J.M.
6	Chapter 3. Inventory Systems: Deterministic demand (pp. 63-86, 116-123) Lecture – Inventory systems, Calculus in deterministic problems	6
7	Chapter 3. Inventory: Probabilistic demand – continuous review (pp. 87-95, 100-109) Lecture – Calculus in probabilistic problems	7
8	Chapter 3. Inventory Systems: Probabilistic demand – periodic review, single period (pp. 95-100, 109-115)	8
9	Chapter 4. Aggregate Production Planning (pp. 134-159, 164-167, 171) Lecture – Common 'sub-problems' in Operations Management	9
10	Chapter 5. Material Requirements Planning, pp. 179-217. Also section 8.4 in Chapter 8.	10
11	Chapter 6. Project Planning and Scheduling: Unlimited resources (pp. 230-253) Lecture – Project management with limited resources	11
12	Chapter 6. Project Planning and Scheduling: Limited resources (pp. 253-263, 266-272)	12

**Weekly Assignment Questions: See handout or the course website.