COURSE OBJECTIVE

- To develop an understanding of all the principles and all the important problems in operations management.
- To become familiar with the analytical tools commonly used to solve operations management problems.

TEACHING STAFF AND COURSE INFORMATION

Instructor	Teaching Assistants (TAs)
Dr. John Miltenburg miltenb@mcmaster.ca RJC-221 phone 905-525-9140 ext. 20559 Office Hours: after class and Tue. 5:30 - 7:00pm	

Class Times and Rooms:
O600 C01/11212 -- Monday 11:30 pm to 2:20 pm, room RJC-236
O600 C02/11214 -- Tuesday 7:00 pm to 9:50 pm, room RJC-214
O600 C03/11215 -- Tuesday 2:30 pm to 5:20 pm, room RJC-313
Please attend lectures in the section where you are registered. Every week all sections cover the same material.

Course Website: http://avenue.mcmaster.ca

Questions about course content must be posted on the Avenue Discussion Board. If you e-mail a question about content to the instructor or TA you will be asked to first post the question on the Discussion Board; then it will be answered.
Questions about grades must be taken discussed first with the TA; only after this is done should the instructor be contacted.

COURSE ELEMENTS

Credit Value:	3	Leadership:	No	IT skills:	Yes	Global view:	Yes
WebCT:	Yes	Ethics:	No	Numeracy:	Yes	Written skills:	Yes
Participation:	No	Innovation:	Yes	Group work:	No	Oral skills:	No

COURSE DESCRIPTION

Operations managers plan, organize, staff, direct and control activities related to the production of products and services. The activities comprising operations management are product and service design, project management, quality management and control, capacity and process planning, location, layout, forecasting, inventory management, aggregate planning, material requirement planning, just in time, lean systems and scheduling. Quantitative tools such as simulation, linear programming and decision theory are used to aid decision making in operations management.

LEARNING OUTCOMES

Upon completion of this course, students will:
- Understand the operations view of processes and supply chains, the operations function, the decisions areas comprising operations management, and the linkages between the business strategy and operations activities;
- Use quantitative tools for analysis and operations decision making.

REQUIRED COURSE MATERIALS

Textbook: Krajewski, L. and Ritzman, L. and Malhotra, M., Operations Management: Processes and Supply Chains, 10th edition, Pearson/Prentice Hall (2013). Used books are okay. Earlier editions should not be purchased. Electronic textbooks should not be purchased--see the 'Exams' item below. The MyOMLab internet feature that comes free with a new textbook will not be used.

The midterm and final exam are open-textbook so every student should have a textbook.

The (free) website for the book is: www.pearsonhighered.com/krajewski/ click 'edition 9/e Companion website'

Software: We expect to use the following software. 1,2 3 are available on Avenue; 4,5 are on the internet; 4 is in the labs.
1. Excel templates: several templates adapted from a package of templates called OM Explorer
2. SimQuick: Excel-template for process simulation
3. MegaStat: Quality Control Chart module and Forecasting module. MegaStat is the Excel-based statistical package used in Q600: Business Statistics.
4. MS Project 2010, 2013 or 2016: Project management software
5. MyMaps in Google Maps: Geographic information system

See the file 'Software used in O600.pdf' at Avenue > Contents for information on accessing and using the software.

EVALUATION

Group Presentations	12 marks	4 marks per presentation for 3 group presentations
Group Discussions	6 marks	2 marks per discussion for 3 group presentation discussions
Quizzes	8 marks	4 on-Avenue quizzes; Thursday 7 pm to Friday 7 pm; see schedule below
In-class simulation	1 mark	All students are expected to participate in the in-class simulation
Midterm Exam	35 marks	(tba) Friday or Saturday
Final Exam	38 marks	(tba) scheduled by MBA Office
Total	100 marks	

The total mark will be converted to a letter grade using the following standard scheme.

Letter grade	Percent	Points	Letter grade	Percent	Points	Letter grade	Percent	Points
A+	90 – 100	12	B+	75 – 79	9	F	00 – 59	0
A	85 – 89	11	B	70 – 74	8			
A-	80 – 84	10	B-	60 – 69	7			

Classes, Exams, Presentations, etc.

Weekly class:
Weekly class is divided into two parts.
Part 1 : During the first 2 hours (approximately) the instructor presents selected material from the weekly course notes (available on Avenue). Students are expected to write notes, use their computers to download problem data from Avenue, and use the course software. Students must configure their computers to access the school's virtual lab. (Instructions are on Avenue.) The remainder of the material in the weekly course notes is not presented in class. Students learn this material on their own by studying the course notes, the textbook, the practice problems, and the podcasts.
Part 2: After a short break, there are 2 student group presentations during the last 60 minutes (approximately) of class. Each presentation is 15 minutes long and is followed a 10-minute question-and-answer-and-discussion initiated by another group.

Students must complete weekly Practice Problems on their own. This may be done after the weekly class, and must be completed before the exams. Detailed solutions and data sets for all Practice Problems are on Avenue.

Quizzes:
Four Quizzes help students keep up with their reading and prepare for the exams. At assigned times (see Schedule below) when selected lectures, chapters in the textbook, and practice problems should be complete, students take a 20-minute (approximately), 14-question (approximately), on-Avenue Quiz. Students have an 24-hour time period (approximately) in which to complete the Quiz (between 7 pm on Thursday and 7 pm on Friday). Quiz questions are based on the textbook, the lecture notes, the lectures, and the practice problems. Questions are descriptive and short calculations. Each Quiz question is worth one mark, so each Quiz has 14 marks. The maximum mark is 10; so students who correctly answer 10 or more questions get 10 out of 10. Students, for example, who correctly answer 8 questions get 8 out of 10. Marks are posted on Avenue. Quizzes are not returned. Students can review their Quiz with a TA during office hours within two weeks of the quiz marks being posted on Avenue. If a student misses a Quiz, then the marks for the missed Quiz will be added to the Final Exam. In the on-Avenue Quizzes (and on-Avenue Exams) students cannot 'go back'. This means students must answer the question when it appears on the computer screen; when students move to the next question they cannot return to a previous question to check their work or answer the question later. This is done to discourage students from sharing their answers.

Exams:
The midterm and final exams are approximately 160 minutes long. The final exam is comprehensive; it covers all the material in the course.

If it is possible each student will have a choice of completing each exam either on-campus (e.g. in an assigned classroom at RJC) or off-campus (e.g. from home) at an assigned time on a Friday or Saturday. Students must work individually on their exams, not in groups. Each exam will be organized approximately as follows. There are three parts: randomly assigned descriptive questions (20 questions/30 minutes), randomly assigned calculation questions (20 questions/60 minutes), randomly assigned long Excel-, MS Project-, SimQuick-, and Google Maps- questions (2 or 3 questions/60 minutes). As with the on-Avenue quizzes the on-Avenue exams are set up so that students cannot 'go back' to previous questions. Answers are checked carefully to make sure students work individually.

If this is not possible then all students will complete each exam at RJC in assigned classrooms at an assigned time on a Friday or Saturday. Each exam will have a 100-minute (approximately) 'problem part', and a 60-minute (approximately) 'computer part'. Students can use their (not electronic) textbook and a McMaster standard calculator (Casio FX-991) or equivalent during both parts, and their own computer during the problem part. Students cannot use an electronic textbook or a photocopy of a textbook or share a textbook or calculator. Students who do not have a textbook can prepare and use a one-page, two-sided crib sheet during the exams.

Students must use their own computer during exams. Their computer must be able to access the school's virtual lab, run the course software located there, access Avenue to download questions and data, and upload answers to Avenue dropboxes. Students must practice and be very familiar with this because no extra time or help will be given.

Students who have received permission from the MBA Academic Services Office (as described later) for missing the midterm exam will have all the marks for the missed exam and all the content on the missed exam (e.g. all the problem part and all the computer part) moved to the final exam. There is no make-up exam.

Projects:
Students are pre-assigned to groups of 6 to 8 students. Each group is pre-assigned to present 3 projects and to be the discussant for 3 projects presented by other groups (see Course Schedule below). Students cannot switch groups or projects. In each class 2 or 3 groups will present their solution for a project; and each group will be the discussant for another group's presentation. Other students are NOT required to attend this part of the class. Some weeks the presentations will be in-camera (i.e. private, other students are NOT allowed to attend) so that no students gain an unfair advantage in completing subsequent projects. Detailed instructions are given at Avenue > Content > Week 0 - Projects.

Other:
The TA (not the instructor) will maintain a record of student grades on Avenue. Concerns with quiz, exam, presentation, discussion, simulation, etc. grades must be discussed with the TA within 2 weeks of the grades being posted on Avenue. Quizzes and exams are not returned and solutions are not taken up in class. Solutions can be viewed with the TA during office hours.

Communication and Feedback

Students who are uncomfortable in directly approaching an instructor regarding a course concern may send a confidential and anonymous email to the respective Area Chair or Director: http://www.degroote.mcmaster.ca/curr/emailchairs.aspx
Students who wish to correspond with instructors or TAs directly via email must send messages that originate from their official McMaster University email account. This protects the confidentiality and sensitivity of information as well as confirms the identity of the student. Emails regarding course issues should NOT be sent to the Administrative Assistant.

Academic Dishonesty

It is the student's responsibility to understand what constitutes academic dishonesty. Please refer to the University Senate Academic Integrity Policy at: http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf
This policy describes the responsibilities, procedures, and guidelines for students and faculty should a case of academic dishonesty arise. Academic dishonesty is defined as to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. Please refer to the policy for a list of examples. The policy also provides faculty with procedures to follow in cases of academic dishonesty as well as general guidelines for penalties. For further information related to the policy, please refer to the Office of Academic Integrity at: http://www.mcmaster.ca/academicintegrity

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work. In other words, it is illegal to: i) copy an entire book, or ii) repeatedly copy smaller sections of a publication that cumulatively cover over 10 percent of the total work's content. Please refer to the following copyright guide for further information: http://library.mcmaster.ca/about/copying.pdf

MISSED EXAMINATION/ TESTS/ CLASS PARTICIPATION

When students miss a regularly scheduled midterm, test or class participation for legitimate reasons as adjudicated by the MBA Academic Services Office, the weight for that midterm/test/participation will be distributed across other evaluative components of the course at the discretion of the instructor. This will be done as described in the section above entitled 'Readings, Assignments, Exams. Documentation explaining an absence must be provided to the MBA Academic Services Office within five (5) working days upon returning to school.

To document absences for health related reasons, please provide the Petition for Relief for MBA Missed Term Work and the McMaster University Student Health Certificate, which can be found on the DeGroote website at: http://www.degroote.mcmaster.ca/MBA/registration.html

University policy states that a student may submit a maximum of three (3) medical certificates per year after which the student must meet with the Director of the program.

To document absences for reasons other than health related, please provide documentation supporting the reason for the absence and the Petition for Relief for MBA Missed Term Work: http://www.degroote.mcmaster.ca/MBA/documents/relief.pdf

Students unable to write a midterm at the posted exam time due to the following reasons: religious; work-related (for part-time students only); representing university at an academic or varsity athletic event; conflicts between two overlapping scheduled midterm exams; or other extenuating circumstances, have the option of applying for special exam arrangements. Such requests must be made to the MBA Academic Services Office at least ten (10) working days before the scheduled exam along with acceptable documentation. Instructors cannot themselves allow students to unofficially write make-up exams/tests. Adjudication of the request must be handled by the MBA Academic Services Office.

All applications for deferred and special final examination arrangements must be made to the MBA Academic Services Office. Failure to meet the stated deadlines may result in the denial of these arrangements. Deferred examination privileges, if granted, must be satisfied during the examination period at the end of the term immediately following. There will be one common sitting for all deferred exams. Please refer to the MBA Calendar for further details.

If any exam is missed without a valid reason, students will receive a grade of zero (0) for that component.

STUDENT ACCESSIBILITY SERVICES

Student Accessibility Services (SAS) offers various support services for students with disabilities. Students are required to inform SAS of accommodation needs for examinations on or before the last date for withdrawal from a course without failure (please refer to official university sessional dates). Students must forward a copy of such SAS accommodation to the instructor immediately upon receipt. If a student with a disability chooses NOT to take advantage of an SAS accommodation and chooses to sit for a regular exam, a petition for relief may not be filed after the examination is complete. The SAS website is: http://sas.mcmaster.ca

Potential Modifications to the Course

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Date	Reading ('Lecture Notes' are on Avenue)	Practice Problems ('Solutions' are on Avenue)	Projects (see Notes below)
1. Apr. 25,26	Ch. 1: Intro. to Operations Ch. 3: Process Strategy Ch. 7 (254-258) -- Layout	Ch.1: disc. questions 3,6; prob. 2,4,8 Ch. 3: disc. question 5; prob. 1,3*,4* *Also use Excel template Ch. 7: prob. 5,6	
2. May 2,3	Ch. 2: Project Management	Ch.2: prob. 1*,5*,8*,17 * Solve manually and use OM Software. For 1 and 5 solve parts c,d given in Practice Problem solutions. Solve all parts of 1 and 5 in MSProject with project start date of February 2, 2014.	
Quiz 1 – Content: Ch. 1, 3, 7 (pp. 254-258), 2; Time: 7 pm Thu. May 5 to 7 pm Fri. May 6			
3. May 9,10	Ch. 2 (cont'd) Ch. 4: Process Analysis	Ch. 4: prob. 3, 6, 11, 20, 21	Project 1 (PM) – P 1, D 2 Project 1 (PM) – P 2, D 1
4. May 16,17	Ch. 5: Quality	Ch. 5: prob. 4, 5*, 6*,7*,8*,23* * Also use Excel template	Project 2 (PM) – P 3, D 4 Project 2 (PM) – P 4, D 3
Quiz 2 – Content: Ch. 4,5; Time: 7 pm Thu. May 19 to 7 pm Fri. May 20			
5. May 23,24 (May 23 holiday class rescheduled to June 6)	Ch. 6: Capacity Mgt Sup. B: Waiting Lines; Simul.	Ch. 6: prob. 1, 5, 8; Sup. B: 1*,2*,3*; *Also use template; Exercises 1b, p.23 and 7a.b., p. 33 of SimQuick Manual.	Project 4 (Q) – P 5, D 6 Project 4 (Q) – P 6, D 5
6. May 30,31	Ch. 7: Constraint Mgt Ch. 8: Lean Sup. A: Decision Making	Ch.7: prob. 3,4 Ch. 8: -- Sup.A: prob. 1,5,7,12,15,16,17	Project 5 (Q) – P 2, D 1 Project 5 (Q) – P 1, D 2
7. June 6 (makeup class for May 23 holiday), no class on June 7 **Midterm Exam** (tba – either Fri. June 10, Sat. June 11, or other) covering Ch. 1 to 5, pp. 254-258 in Ch. 7, Ch. 6 to 8, Su. A,B			
8. June 13,14	Ch. 10: Supply Chain Design Ch. 11: Supply Chain Location	Ch. 10: prob. 2,3; Ch. 11: prob. 1,4,7,12, 18 (use template); GoogleMap Practice Problems in course notes	Project 6 (Q) – P 4, D 3 Project 6 (Q) – P 3, D 4
9. June 20,21	Ch. 9: Inventory Sup. C: Inventory	Ch. 9: prob. 2,4,8,10,11,16,22,23 Sup. C: prob. 2,7*,9*	Project 3 (PM) – P 6, D 5 Project 3 (PM) – P 5, D 6
Quiz 3 – Content: Ch. 9,10,11, Su. C; Time: 7 pm Thu. June 23 to 7 pm Fri. June 24			
10. June 27,28 On-line, in-class simulation (attendance required)			Project 7 (SC) – P 1, D 2 Project 7 (SC) – P 2, D 1
11. July 4,5	Ch. 12: Supply Chain Integration Ch. 14: Forecasting	Ch. 12: 1,4,5 Ch. 14: 7*,11* *Also use template Ex. 14.1 on last page of Ch.14 course notes	Project 8 (SC) – P 3, D 4 Project 8 (SC) – P 4, D 3
12. July 11,12	Ch. 15: Plan. and Scheduling Ch. 16: Resource Planning	Ch.15sch: prob. 2*,11*,12,16*,Johnson's Rule problem; Ch.16: prob. 1,8*,14*,21 * Also use templates	Project 9 (SC) – P 5, D 6 Project 9 (SC) – P 6, D 5
Quiz 4 – Content: Ch. 12,14,15,16; Time: 7 pm Thu. July 14 to 7 pm Fri. July 15			
13. July 18,19	Sup. D: Linear Programming Ch. 13:Supply Chain Sustain.	Sup. D: prob. 2*,7*,8* *Also solve using Excel Solver Ch. 13: disc. quest. 2, prob. 2	
14. July 25 to 30 **Final Exam** (day and time to be scheduled by MASO) covering entire course			

Notes:
1. Projects: P- presentation Group, D – Discussion group, PM – project management project, Q – quality project, SC- supply chain project. "*in camera*" presentations are only open to the Presenting groups and Discussant groups. Other students cannot attend; they can attend later presentations on the same project topic.
2. If a class is cancelled then a make-up class will be scheduled on the next available Friday from 11:30-2:30. An announcement will be posted on Avenue.