

**SCHOOL OF BUSINESS  
RUTGERS UNIVERSITY – CAMDEN  
MANAGEMENT SCIENCE I  
52:620:321:03 (48114)**

**Semester:** Spring 2011

**Instructor:** Dr. Chon-Huat Goh

**Class:** T, Th 11:00a.m – 12:20 p.m.

**Classroom:** FA227

**Office Hours:** T, Th. 1:30–3:00 p.m. or by appointment.

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**Course Description**

Management Science I is an introduction to quantitative models used in managerial decision making. It is a well-established discipline in a range of management contexts including manufacturing, services and the public sector. A variety of techniques are used in the modeling of business problems with the dual objective of i) better understanding the system in question and ii) making best – or “near-best” – decisions. Management science methods have been successfully applied to solve various problems ranging from scheduling maintenance for large vehicle fleets, distribution of inventory, to capital budgeting in large corporations.

By the end of this course, you will be able to:

- Identify various management science methods used in real-world business
- Formulate a range of managerial business decisions as quantitative models
- Use computer software to identify and analyze solutions of these models
- Provide meaningful solutions that solve some real-world problems.

**Text:** *Introduction to Management Science*; Anderson, Sweeney, Williams and Martin, 12<sup>th</sup> edition, Thomson: South-Western (ISBN: 0-324-39980-4).

**Computer Software: QM for Windows.** You are not required to purchase this software as it is available for your use in campus labs. A demo version is also available for download at the link below. While only 3 modules are enabled (Forecasting, Linear Programming, Waiting Line), the demo version will allow you to complete some of the assignments from home: [http://wps.prenhall.com/bp\\_weiss\\_software\\_1/0,6750,91664-,00.html](http://wps.prenhall.com/bp_weiss_software_1/0,6750,91664-,00.html)

**Optional Materials:** Graph paper for solving problems requiring a graphical solution procedure.

**Class Materials:** Can be obtained via <http://crab.rutgers.edu/~cgoh/MAN321>

**Teaching Methodology:** Rather than spend limited class time repeating textbook material, much of the class time will be devoted to activities that flesh out the material presented in the text. Therefore, it is necessary that you read, or at least glanced, all the assigned textbook material *before* coming to class. In addition, doing all homework exercises on-time, consulting with the professor immediately when you need help, regular attendance, punctuality, and class participation are strongly recommended actions for the student to excel in this course.

**Syllabus updates and other course communication:** All updates and changes to the syllabus, and other important communications will be communicated in class and via e-mail. Please remember to check your Rutgers e-mail account for any updates. *Handouts, if any, will be brought to class only once, and may not be available in hard copy thereafter.*

**Examinations:** There will be two (80 minute) exams and a final. Each of the three non-cumulative exams will be in-class and is designed to test understanding of the facts and concepts of the course. There will be an in-class review session before each exam. For each exam, students are allowed to bring one letter-size page of self-prepared notes (front and back) with his/her name on the top right hand corner. The notes must be submitted along with the exam to receive full credit.

**Make-up exams** are *strongly discouraged* and will only be permitted for circumstances beyond your control. Any student who missed the exam without prior approval of the instructor or a compelling reason will receive a zero grade for that exam.

**Academic integrity:** Violations of academic integrity (e.g., copying or facilitating copying during exams) will be subject to the appropriate penalty. See <http://www.camden.rutgers.edu/RUCAM/Academic-Integrity-Policy.php> for more details.

**Cell Phones:** Students are required to **turn off** their cell phones while they are in class unless there is an emergency.

**Evaluation / Grading Policy**

Exam 1	20%	90-100%	A
Exam 2	20%	80-89%	B
Exam 3	35%	70-79%	C
Project*	10%	60-69%	D
Quizzes / Activities**	10%	0-59%	F
Participation***	5%		
<b>Total</b>	<b>100%</b>	<b>Cutoffs for B+ and C+ determined at end of term</b>	

- \* The **project** is a QM-based assignment and will be explained before Exam 2.
- \*\* There will also be **activities and quizzes** to evaluate comprehension of the content from the most recent class and relevant suggested problems.
- \*\*\***Participation** will primarily be judged by your attendance and completion of in-class practice exercises/problems

Students are *strongly encouraged* to attend **all** classes and complete **all** assigned problems, which is imperative for gaining sufficient understanding. Attendance will be taken at all classes and unexcused absences will impact your participation grade. The cumulative nature of the material presents a significant challenge for those who fall behind, so please avoiding falling into that trap. This is a class where **you learn by doing**. Please at least attempt to do the work on your own before consulting others. Self-Test solutions and answers to even-numbered problems are in Appendix D of the text.

### Tentative Schedule

<b>Date</b>	<b>Topic</b>	<b>Reading</b>	<b>Suggested Problems</b> ( #* = <i>in-class exercise</i> )	<b>Possible Quiz / Activity</b>
Jan 18	Introduction to Management Science	Ch. 1	<i>Chapter 1:</i> 10, 11*, 12, 14, 16*	<b>Jan 20 (A)</b> (LP Formulation)
Jan 20-27	Formulating and Graphing Linear Programming Problems	Ch. 2	<i>Chapter 2:</i> 1*, 3*, 6, 10, 11*, 12, 17*, 20, 28, 39*	<b>Feb 1 (A)</b> (LP Formulation)
Feb 1-8	Sensitivity Analysis(SA) Computer Solutions	Ch. 3	<i>Chapter 3:</i> 5*, 6*, 7, 8, 9, 10*, 11, 23	<b>Feb 3 (Q)</b> (Graphical Solution)
Feb 10-15	LP Applications <i>Exam 1 Review</i>	Ch. 4 Ch. 5.1	<i>Chapter 4:</i> 4*, 8*	<b>Feb 10 (Q)</b> (Sensitivity Analysis)
<b>Feb 17</b>	<b>Exam 1 (Chapters 1-3)</b>			
Feb 22- Mar1	The Simplex Method	Ch.17, on CD	<i>Chapter 17:</i> 4, 6*, 8, 10*	<b>Mar 8 (Q)</b> (Simplex Method)
<b>March 12-20: Spring Recess</b>				
Mar 3-22	Multi-Criteria Decisions (Goal Programming) <i>Exam 2 Review</i>	Ch. 14.1 and 14.2	<i>Chapter 14:</i> 2a, 7a*	<b>Mar 22 (A)</b> (Goal Programming)
<b>March 24</b>	<b>Exam 2 (Chapters 4, 5.1, 17)</b>			
Mar 29-31	Distribution and Network Flow Models	Ch. 6.1- 6.3	<i>Chapter 6:</i> 1*, 2, 3, 9*, 11*, 17*, 20	
<b>April 5</b>	<b>Last day to DROP with a “W”</b>			
Apr 5-19	Project Scheduling (PERT/CPM)	Ch. 9	<i>Chapter 9:</i> 3, 6*, 7, 13*, 15, 18*	<b>Apr 5 (Q)</b> (Transp. Prob.)
<b>Apr 19</b>	<b>QM Project Due</b>			
Apr 21-28	Waiting Line Models	Ch. 11	<i>Chapter 11:</i> 1-3*, 4, 5, 6, 7*	<b>Apr 19 (Q)</b> (PERT/CPM)
April 28	<i>Exam 3 Review and Wrap-up</i>			<b>Apr 28 (Q)</b> Waiting Line Models
<b>May 5</b> (2-4 pm)	<b>Exam 3 (Chapters 14.1-14.2, 6.1-6.3, 9, 11)</b>			