

OR/MATH 441 – Deterministic Operations Research – Fall 2012

George Mason University

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Class Room: Nguyen Engineering Building 1103

Class Hours: Friday 10:30am–1:10pm

Course Website: Course material will be continually updated on Blackboard at <http://mymason.gmu.edu>.

Note: The course home page will include the syllabus, lecture notes, assignments, a calendar of important dates (e.g., midterm and final exam), and other important information. Information may change during the course of the semester so check regularly.

Prerequisites: MATH 203

Course Text: Winston, *Operations Research: Application and Algorithms*, 4th edition, 2004, Thompson, ISBN 0-534-38058-1.

Software: MPL, available from www.maximal-usa.com

Course Objectives:

- To build a general understanding of the role of deterministic models in operations research and become familiar with the relevant methodologies and application areas
- To emphasize quantitative modeling of processes in service and manufacturing industries, government, health care, and other application areas, with an introduction to algorithmic approaches of analysis and optimization including linear and integer programming
- To develop a working knowledge of developing optimization models and solving them using a modeling language
- To set a foundation for advanced studies in operations research

Summary of Specific Topic Areas:

- History of Operations Research
- Model building and linear programs
- Optimization methods including the simplex method, branch-and-bound, and others
- Sensitivity analysis
- Specialized models including: transportation, assignment, shortest-path problems, and other network models
- Integer programming
- Nonlinear programming

Important Note:

We will move at a fast pace. The rate of introduction of new concepts is quite high in this course. Do not delay understanding the early material. Put the TA's and my office hours to good use. We are here to help. The homework is very important for understanding; do it conscientiously.

Grading:

There will be regular homework assignments (approximately 1/week), which will carry 25% of the total grade. All assignments are due at the beginning of class on the due date with a 20% reduction in the grade for each day late (up to a maximum of 3 days late after which the grade will be zero). Assignments will be accepted in hardcopy format only. There will be a midterm exam that will count for 25% of the total grade. There will be a course project on modeling and solving a real-world problem that will be 15% of the total grade. The Final Exam carries 25% of the total grade (make-up tests and exams will only be given for students with [University-approved absences](#)). 10% of the grade will be based on in-class participation and in-class assignments. In summary the breakdown is:

Homework Assignments: 25%
Midterm Exam: 25%
Course Project: 15%
In-Class Assignments and Participation: 10%
Final Exam: 25%

You have one week, after receiving a grade for a test or assignment, to appeal the grading. You will need to submit the regrade request in writing. The entire assignment/test will be regraded.

Using the overall weighted average accumulated on all assignments, midterm, course project, in-class participation and final exam, the final course grade will be determined as follows:

$97 \leq A+ \leq 100$	$93 \leq A < 97$	$90 \leq A- < 93$
$87 \leq B+ < 90$	$83 \leq B < 87$	$80 \leq B- < 83$
$77 \leq C+ < 80$	$73 \leq C < 77$	$70 \leq C- < 73$
$67 \leq D+ < 70$	$63 \leq D < 67$	$60 \leq D- < 63$
	$F < 60$	

Academic Integrity Policy:

GMU is an Honor Code university; please see the Office for Academic Integrity for a full description of the code and the honor committee process. The principle of academic integrity is taken very seriously and violations are treated gravely. Dishonesty is unfair to everyone, especially those who do their work honestly. Academic dishonesty will be fully prosecuted. All work turned in with your name is assumed to be only your own work (including homework assignments). If what you turn in duplicates others, then it is cheating (regardless of who copied who). When in doubt (of any kind) please ask for guidance and clarification.

Disability Accommodations

If you have a documented learning disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with Office of Disability Services (SUB I, Rm. 4205; 993-2474; <http://ods.gmu.edu>) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Email Communication

Students must use their MasonLive email account to receive important University information, including messages related to this class. See <http://masonlive.gmu.edu> for more information.

Technology in the Classroom

Regarding electronic devices (such as laptops, tablets, cell phones, etc.), please be respectful of your peers and your instructor and do not engage in activities that are unrelated to class. Such disruptions show a lack of professionalism as well as respect, and will affect your participation grade.

Homework Assignment Information:

Include the following in your homework assignments:

- Your name and the assignment number
- Legibly written answers
- Problem Definition
- Assumptions made
- Results and Conclusions in words

Note: The numerical “answers” you get are important but the focus of the grading is on the approach to the solution and your understanding of the fundamental theory that underlies the solution. Therefore you must show all of your work leading up to the final solution. Points are allocated for each step of the solution process.