

# OR/MATH 441: Deterministic Operations Research

Fall 2013

Planetary Hall 122

Friday 10:30 am-1:10pm

**Instructor:** Chien-Chung(Edward) Huang

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**Office hours:** Thursday 2pm - 4pm, and by appointment; via e-mail at other times

**Prerequisites:** MATH 203.

**Textbook:** *Operations Research Applications and Algorithms*, Wayne L. Winston (4th edition)

**Software:** MPL, available from [www.maximal-usa.com](http://www.maximal-usa.com)

**Course objectives:** The course focuses on modeling, developing, and solving a variety of deterministic optimization problems. Students will gain experience in converting a variety of applied problems to optimization models, representing these models in a sophisticated modeling language, solving these models with a variety of algorithms and software, and interpreting the results using sensitivity analysis and other approaches. All course materials will be posted at Blackboard.

## Tentative Course Schedule

Date	Topic	Chapters
Aug 30	Introduction; Linear Programming	1, 3.1-3.2
Sep 6	Linear Programming	3.3-3.9
Sep 13	The Simplex Method	4.1-4.2, 4.5
Sep 20	The Simplex Method	4.6-4.8, 4.12
Sep 27	Sensitivity Analysis & Duality	6.1-6.3
Oct 4	Sensitivity Analysis & Duality	6.5-6.9
Oct 11	<i>Midterm</i> ; MPL Formulations	
Oct 18	Transportation Problem	7.1
Oct 25	Transportation Problem; Networks	7.2, 8.1-8.2
Nov 1	Networks; Integer Programming	8.3, 8.6, 9.1-9.2
Nov 8	Integer Programming	9.3, 9.5
Nov 15	Integer Programming	9.7, 11.1-11.3
Nov 22	<u>Thanksgiving</u> ; No Class	
Nov 29	Nonlinear Programming	11.1-11.4, 11.6
Dec 6	Nonlinear Programming	11.8-10
Dec 13	<i>Final Exam (10:30 am – 1:15 pm)</i>	

**Grading:**

20% Homework  
25% Midterm exam  
15% Computational project  
10% In-Class Assignments and Participation  
30% Final exam

**Coursework & Grading Policies**

Unless otherwise indicated, you are expected to work individually on homework assignments, projects, and exams. Late submissions are not accepted. You can submit homework directly to me via email at [chuang10@gmu.edu](mailto:chuang10@gmu.edu).

**Academic Integrity**

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. What does academic integrity mean in this course? Essentially this: when you are responsible for a task, you will perform that task. When you rely on someone else's work in an aspect of the performance of that task, you will give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.

**GMU Email Accounts**

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

**Disability Services**

If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services (ODS) at 993-2474. All academic accommodations must be arranged through the ODS. <http://ods.gmu.edu>

**Technology Policies**

Cell phones, pagers, and other communicative devices are not allowed in this class. Please keep them stowed away and out of sight. Laptops or tablets (e.g., iPads) may be permitted for the purpose of taking notes only, but you must submit a request in writing to do so. Engaging in activities not related to the course (e.g., gaming, email, chat, etc.) will result in a significant deduction in your participation grade.

**University Policies**

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>. All members of the university community are responsible for knowing and following established policies.