

## OPRE 6201: Introduction to Operations Research

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- Teaching Assistant: Sirong Luo , [luosrong@student.utdallas.edu](mailto:luosrong@student.utdallas.edu) , SOM3.407.  
Office hours: M and W 4-5:30pm at SOM3.407.
- Course Content and Objective: Operations Research studies analysis and planning of complex systems. This course will focus on mathematical modelling. A strong emphasis will be given to model formulation. On the methodology side, Linear and Integer Programming techniques will be introduced. At the end of the course, students will have the skills to build their own formulations, to expand existing formulations, to critically evaluate the impact of model assumptions and to choose an appropriate solution technique for a given formulation.
- Prerequisites: Math 5304 or consent of the instructor.
- Text: (UTD customized copy of) Introduction to Operations Research, by F.S. Hillier and G.J. Lieberman, seventh edition, McGraw Hill, 2000.
- You are expected to arrive on time for the class. You can use laptops during the lecture to look at course notes and do course related work. E-mailing friends or surfing the Internet are not a part of the course work.
- Homeworks: There will be 4 homeworks. You may discuss homework problems with others, but you must write up by yourself with the full understanding of what you write. Students handing in identical assignments will be violating scholastic honesty regulations (Handbook of Operating Procedures Title V Chapter 49) and will not receive credit! Late homeworks are not allowed unless you negotiate with **the TA** at least one day in advance. Homeworks are going to be submitted to the TA directly on Tuesday's by 5pm unless otherwise said.
- Quiz: In class on November 13.
- Final: December 2.
- Exam Materials: All exams are open textbook and open lecture notes. You may use a calculator although leaving quantities as fractions, additions or products is perfectly acceptable and preferable. **No cellular communication devices** (laptops, phones, etc) can be used during the exam.
- Grading: Your lowest homework grade will be dropped. Homeworks 30% , Quiz 30% and Final 40%.
- Objections to grades: You can object to your (homework) grades only **within 2 weeks** after the grades are announced. Late objections will not be considered.
- Internet: Course web page can be reached from [www.utdallas.edu/~metin/teaching.html](http://www.utdallas.edu/~metin/teaching.html) with the password .....

## Tentative Course Outline

1. Week 1 - 2: Chapters 1-3 of the textbook.

- (a) Origins and Impacts of Operations Research
- (b) Formulations
  - i. Mathematical Models
  - ii. Model Components
  - iii. Formulation Examples

HW1 due for Week 2.

2. Week 3: Chapter 4 and Section 5.1 of the textbook .

- (a) Simplex Solution Technique
  - i. Graphical Method
  - ii. Algebraic Approach
  - iii. Summary: Tableau Method

HW2 due for Week 4.

3. Week 4

- (a) Quiz up to (including) Graphical method
- (b) Special Cases of Simplex Method
  - i. Nonrestricted, nonpositive variables and minimization problems
  - ii. Infeasible and Unbounded Linear Programs
  - iii. Software for Larger Linear Programs

4. Week 5: Chapter 8 of the textbook.

- (a) Network Problems and Applications
  - i. Transportation and Assignment Problem Formulations
  - ii. Shortest Path Problem
  - iii. Minimum Spanning Tree Problem

HW3 due for Week 5.

5. Week 6: Chapter 12 of the textbook.

- (a) Integer Programming
  - i. Standard Formulation Techniques
  - ii. Formulation Examples

HW 4 due for Week 6.

6. Week 7

- (a) Comprehensive Final