

Syllabus: Math 339
Operations Research
Fall 2013

Instructor: Dr. Hundley

Office/Hours: Olin 234. Tues and Thur at 10AM, Wed at 3PM, and Friday by appt.

Feel free to schedule an alternative time to meet if you can't make these hours.

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Class Website: <http://people.whitman.edu/~hundledr>

Text

Introduction to Mathematical Programming (Operations Research, Vol 1). By Wayne Winston and Munirpallam Venkataramanan, 4th edition.

We'll be using software called: LINDO, LINGO, Matlab. The first two applications are available as student editions, "Matlab" will be available on the math department computers.

Grading Criteria.

- **HOMEWORK:** Will be assigned daily, and will make up 20% of your overall grade. The starred problems should be written up completely (and neatly) and will be collected weekly (we'll discuss this in class).
- **EXAMS:** We will have two exams and a final exam. The exam dates will be: **Wednesday, Oct 02, Wednesday, Nov 06**. These dates will not change, so you may plan around them. Overall, the exams will make up 50% of the overall grade (equally weighted).

The final will be administered at the time published on the Registrar's website and may rely on topics from the first two exams. The final will be worth 30% of your overall grade. The exams may also have a take home component (solving problems using the software).

GRADING: Grading is done on a standard scale:

$A = 92 - 100$	$A- = 90 - 91$	$B+ = 88 - 89$	$B = 82 - 87$	$B- = 80 - 81$
$C+ = 78 - 79$	$C = 72 - 78$	$C- = 70 - 71$	$D = 60 - 69$	$F = 59$ and below

Health problems or Disabilities

If you have to miss class due to health problems, you need to get in touch with me as soon as possible, either by phone or email. If you are ill on the day of an exam, we can work out other arrangements for you **only** if you receive verification from a health professional (i.e., go to the clinic and get checked out). You can then have the Dean of Student's office send

a message to that effect to me- I don't need to know any details, just that you have gone through the procedures. This includes mental health problems, as well as chronic conditions.

If you have a learning disability, we can make the proper arrangements for you. All arrangements need to go through the office of Academic Resources (Mem 205) *prior* to taking an exam. (This also applies generally: If you're having academic difficulties, see the people at Academic Resources!)

Academic Honesty.

Academic standards will be *strictly* adhered to as outlined in your student handbook. This means that cheating will not be tolerated.

Looking at another student's exam or quiz (whether or not you mean to copy answers) while taking it will be considered cheating.

Students caught cheating will fail the exam or quiz, and the incident will be referred to the Dean of Students, as outlined in your student handbook.

Other Notes:

- **Take Home Exams:** You are only allowed to use the resources specified on the exam- Usually only materials given in this course. That means that you are NOT allowed to work together (unless specifically allowed) and you may not use any other materials from the internet. If you get stuck, you can ask me for a hint.
- **Electronic Devices** As a courtesy to your colleagues, please refrain from using electronic devices- especially laptops and cell phones. These are very distracting to me and the others around you. If you must use an electronic device as an aid to your learning, please discuss it with me in advance.
- **Absences** As a courtesy, please let me know if you're going to miss class. Student athletes should let me know in advance of missing class so we can make arrangements to make up missed work.
- **Email:** Occasionally I will need to contact you via email with important announcements. You should check your Whitman email at least once a day!

What is Operations Research?

While there is no “official” definition of operations research, it is generally defined to be an analysis of some system or operation (usually using scarce resources). Typically, this type of analysis results in an optimization problem. Here is a more detailed list of topics:

- Modeling with linear programs: What is a linear program? How is a linear program built up? How do we translate business problems into linear programs?
- Solving the linear program: What is the theory behind the linear program? What are the difficulties of solving the LP, and most importantly, how are they solved in practice? How do we use LINDO to solve the LP?
- Analyze the solution to the linear program: How robust is our solution?
- Nonlinear programs.
- Problem solving with neural networks and Matlab (time permitting).

In the text, we’ll cover topics from Chapter 3, 4, 6, 12 and 16. Chapter 2 is review material from linear algebra- Be sure to read it! Chapter 1 is a short introduction.