

MWF 9-9:50

Room 704 - Thackeray Hall

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### Instructor Information

Instructor: Jeffrey Paul Wheeler, Ph.D.  
Office: Room 607 Thackeray Hall.  
Office Hours: MWF 10-10:45 or by appointment.  
Email: [jwheeler@pitt.edu](mailto:jwheeler@pitt.edu)  
Website: <http://www.pitt.edu/~jwheeler/>.  
Courseweb: I will heavily use Courseweb.  
Office (Dept.) Phone: 412-624-8315 (412-624-8375)

### Suggested Textbooks

- *Mathematical Programming - an Introduction to Optimization* by Melvyn W. Jeter, Marcel/Dekker Publishing (CRC Press), ISBN: 978-0-82-477478-3
- *A First Course in Optimization* by Charles L. Byrne, CRC Press, ISBN: 978-1-482-22656-0.
- *Spreadsheet Modeling and Decision Analysis*, 6th edition, by Cliff T. Ragsdale, Cenage, ISBN: 978-0-538-74631-1. We will borrow much from this book and it is a standard text in MBA programs.
- *Combinatorial Optimization for Undergraduates*, by L.R. Foulds, Springer, ISBN: 0-387-90977-X. This is an excellent text.
- *The Mathematics of Nonlinear Programming*, by A.L. Peressini, F.E. Sullivan, and J.J. Uhl, Jr., Springer, ISBN: 0-387-96614-5.
- *Graphs, Algorithms, and Optimization*, 2<sup>nd</sup> edition, Willam L. Kocay and Donald L. Kreher, CRC Press 2017, 978-1-4822-5116-6.

### Course Content

Course topics will include Linear Programming - in which we will explore the Simplex Method and the notion of Dual Linear Programming (and Duality in general), Nonlinear Programming (including the Arithmetic-Geometric Mean), Convex and Concave Functions, Unconstrained Optimization Problems, and Network Programming including some Combinatorial Optimization (the Traveling Salesperson Problem, Minimal Spanning Trees, Shortest Path, Transportation Models, Transshipment Problems, Assignment Problems, Vehicle Scheduling, etc.).

We will primarily focus on applications, but this is a mathematics course and some proofs will be done. As well, your writing, especially your presentation, will weigh into your grade (as much as 10% of your homework). There will be at least one case that you will have to

present to the class as part of a team. Additionally, I will have a nice line-up of speakers this semester and I expect you to be present and be professional.

### Evaluation

We will have one midterm - date is TBA (20%), a comprehensive final exam (30%), numerous homeworks (45%), and a team case presentation (5%).

As well, I follow the standard scale:

|         |          |         |         |         |         |         |         |         |         |         |         |      |
|---------|----------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|------|
| Grade   | A        | A-      | B+      | B       | B-      | C+      | C       | C-      | D+      | D       | D-      | F    |
| Percent | 93 - 100 | 90 - 92 | 87 - 89 | 83 - 86 | 80 - 82 | 77 - 79 | 73 - 76 | 70 - 72 | 67 - 69 | 63 - 66 | 60 - 62 | < 60 |

NOTE: I will not assign a grade I cannot justify.

### Laptops

If you have a laptop, you will be encouraged to use it and have a copy of Excel. We will use Microsoft Excel's built-in solver on numerous occasions, though you are welcome to use Mathematica, Maple, Matlab, etc.

### Calendar

|                                     |  |
|-------------------------------------|--|
| First Day of Class:                 | Monday, August 28  |
| Labor Day (University closed):      | Monday, September 4  |
| Last Day to Drop/Add:               | Friday, September 8  |
| Fall Break (no classes)             | Monday, October 16   |
| MONDAY CLASSES                      | Tuesday, October 17  |
| Thanksgiving Recess:                | Wednesday-Sunday, November 22-26<br>(Offices Closed Thursday and Friday) |
| Last Day of Class:                  | Friday, December 8   |
| Cumulative Departmental Final Exam: | Monday, December 12, 8:00am-9:50am                                       |

### Homework

On the upper right corner of your homework please write:

- *Math 1101 - J Wheeler*
- *Grader: \_\_\_\_\_*
- *(Your name)*
- *Homework Number XX*

The only exception to this is if a cover sheet is provided for the HW assignment.

**\*\*FAILURE TO FOLLOW THIS INSTRUCTION WILL RESULT IN YOUR HOMEWORK GRADE BEING PENALIZED.\*\***

Note that late homework will not be accepted and do not expect me to be sympathetic if your homework grade is low.

**Email 101**

Please be aware that you are writing me, the instructor of your mathematics course at a major university, and not text-messaging a friend. There should be something in the Subject box (e.g. "Homework Question"). The opening of the email should be something of the order of "*Dear (or Hello) Dr. Wheeler,*". As well, please note that *you* is spelled "y-o-u", not "u", and *are* is spelled "a-r-e", not "r". Proper grammar and punctuation are expected. Lastly, please be sure to close your correspondence by stating your name.

**Grades 101**

Your grade in this class is determined by your performance on the exams and homework. It is not my assessment of your worth as a human being nor does your grade depend upon my opinion of you. Also note that:

- There will be no Extra credit assignments.
- Also, the time to improve your grade is now. You have 15+ weeks to earn your grade. DO NOT CONTACT ME when the semester is over and ask me if you can do extra work to improve your grade.

**Writing:**

You are a student at a major university. I expect you to write your work on tests, quizzes, and homework well. Do note that as much as 10% of your score on the homework assignment will be assessing your presentation of your solution.

**Academic Misconduct:**

This will not be tolerated. Please do not put me in a situation where I have to deal with this.

**Be smart - do not even give the appearance of cheating.**

**Student Evaluations**

You are encouraged to read former students evaluations at

<http://www.ratemyprofessors.com>

Please be aware that I have evaluations at the University of Pittsburgh, the University of Memphis, and Rhodes College (in Memphis). There is a link to this site on my webpage.

### **Disability Resources and Services**

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and Disability Resources and Services, 140 William Pitt Union, 412-648-7890 or 412-383-7355 (TTY) as early as possible in the term. DRS will verify your disability and determine reasonable accommodations for this course.

### **Advice for Success in the Class**

I will close with the following advice. If you wish to do well in my class, then you will

- Come to class;
- Read the notes;
- Ask questions when you have them;
- There is a good chance I will grade more severely on exams than the grader does on the homeworks;
- Notes on Courseweb are not a substitute for class (neither are office hours);
- An open-book exam does not mean that you do not have to study;
- Realize mathematics is difficult. No matter how smart you are or what success you have had in the past, there will come a mathematics class that you will find to be very difficult. Math 1101 may be that class.

### **Advice for Future Consultants**

Josh Figaretti, a long-time consultant for Ernst & Young and now an executive at Chick-fil-A, offers the following advice about consulting:

A good consultant will:

1. have the ability to quantify abstract terms and articulate return on investment (ROI);
2. know about boundary and exception conditions (consultants cannot live in a happy place - where do things break?);
3. know how to validate solutions;
4. be a creative problem solver (an important part of consulting is to get people to think differently - i.e. consultants give fresh views); and
5. know basic finance.