Math 310, Section 1 - Fall 2019 Syllabus

Professor:	Dr. Andy Felt		Office:	SCI D355
Office Hours:	M	2:00 − 2:50 p.m.	Phone:	346-4207
	T, R	12:00 − 12:50 p.m.		
	F	11:00 − 11:50 a.m.		
	or by arrangement		email:	afelt@uwsp.edu

Class Meetings: T, R, F, 10:00 - 10:50 a.m., Sci. A225.

Text: *Introduction to Mathematical Programming*, 4th ed., Winston and Venkataramanan, *Intro. to Operations Research*, 9th ed., Hillier and Lieberman, and *AMPL*, 2nd ed., Fourer, Gay and Kernighan.

Course Web Page: http://www4.uwsp.edu/math/afelt/teaching/M310.html.

Calculators and Computers: A calculator will not be necessary in this course, but you may find one useful once or twice. You will need to use a computer to complete much of the homework. Campus computers will work fine.

Prerequisites: Math 213 or 209

Fundamental Skills to be Learned:
- Recognizing real life situations where mathematical models apply.
- Translating the real life situations into mathematical models.
- Solving the mathematical model.
- Interpreting the solution in the context of the real life situation.

Grading:

Category	Points		This many points gets you	⇒	at least this grade
Homework Assignments	100	points	414 (92%)	⇒	A,
2 Exams	200	points	405 (90%)	⇒	A−,
Final Exam (Comprehensive)	150	points	396 (88%)	⇒	B+,
Total	450	points	369 (82%)	⇒	B, etc.

Homework: Assignments should have the following format:
- Looseleaf paper only (no spiral schnibbles)
- Name, section, assignment, date on first page
- Stapled, each assignment separately

The grade for each assignment will include 20% based on accuracy and quality of written communication. Examples on this topic are given in Assignment 0. *No late homework is accepted for any reason.* Usually, there will be a class day between the day homework is assigned and the day it is due. Assignments are due at the beginning of class on the day they are due.

Help: Everybody needs help at some point. The key is to *get help right away* when you need it. Here are some ways to get help:
- ask a question in class;
- ask me during office hours;
- ask me in an email;

Disability Accommodations: Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. All accommodations must be approved through Disability Services, located at 609 Learning Resources Center or https://www.uwsp.edu/datc/Pages/default.aspx.

General Course Policies:

- Exams must be ONLY your own work. You may work together on homeworks (unless otherwise specified), but the material you turn in must be *your own*. Please see https://www.uwsp.edu/dos/Pages/Student-Conduct.aspx to read about your rights and responsibilities as a student, and Chapter 14 (at that page) to read about Wisconsin's academic misconduct code.
- Use of calculators will not be allowed on exams.
- Pagers and cell phones should be turned off during class and exam times.
- Everyone becomes ill sometimes. When you become ill, I expect you to make a reasonable effort to come to class. When illness or other emergencies require absence from class, I expect you to contact me immediately, preferably by email. I expect you to keep up with what is being taught by following in your book and doing the homework. Either have a friend bring your homework, or slide it under my office door. To account for illness and other emergencies, at least one homework score will be dropped.

Tentative Calendar

Week of	Approximate Coverage (Section numbers from Winston)
3 Sep.	3.1 Sample LP
	3.2 Graphical solution of LPs
9 Sep.	3.3 Special cases
	3.4–3.12 formulation of LPs
	(AMPL 1.2-1.6 and Ch. 2) Solution in AMPL
16 Sep.	AMPL set notation
23 Sep.	4.1 Converting an LP to standard form
	4.2 Preview of the simplex method
	4.3 Direction of unboundedness
30 Sep.	4.5 The simplex algorithm
7 Oct.	4.5 The simplex algorithm (cont.)
14 Oct.	Exam I
	4.6 Minimization problems
	4.7 Multiple optimal solutions
	4.8 Unbounded LPs
23 Oct.	4.12 Big-M method
	4.14 Free variables

Week of	Approximate Coverage (Section numbers from Winston)
28 Oct.	6.1, 6.3 Sensitivity analysis
	6.5 Duality
4 Nov.	6.6 Economic interpretation of the dual problem
	6.7 The dual theorem and its consequences
	6.8 Shadow prices
	6.10 Complementary Slackness
11 Nov.	9.1 Intro. to Integer Programming
	9.2 Formulation of IPs
18 Nov.	IP modeling
	Exam II
25 Nov.	9.3 Branch and Bound
2 Dec.	9.4 Branch and Bound for MILPs
9 Dec.	9.8 Cutting Plane Problems
Finals	Wednesday, 18 Dec. Final Exam 12:30–2:30