

# INSY 7420 Linear Programming and Network Flows Spring 2009

T/TH 9:30-10:45

Ramsay 201

Dr. R. L. Bulfin  
bulfin@eng.auburn.edu  
Office Hours: TBD

3301N Shelby Center  
Voice (334) 844-1422  
FAX (334) 844-1381

**Prerequisites:** INSY 3410 or COI.

**Grading:** Grades are assigned on a 10 point scale. 90-100 = A, 80-89 = B, etc. The final average MAY be curved.

Quizzes(2)	60%
Final	40%

**Text:** Linear Programming and Network Flows, by Bazaraa, Jarvis and Sherali, John Wiley & Sons, third edition, 2005.

**Assignments:** Please read the assignment before class. Suggested problems to work are also listed and posted on BLACKBOARD, but will not be graded. Solutions will be posted on BLACKBOARD.

**Web Use:** We will use BLACKBOARD for the course.

**Teaching Assistant:** Pavee Siriruk, Shelby 3331, [sirirpa@auburn.edu](mailto:sirirpa@auburn.edu)

**Policy for Off Campus Students:** All work should be returned within two weeks of the deadline for on-campus students. If this causes you a problem, let me know as soon as possible.

**Special Needs:** If you have special needs, please let me know.

**Honesty:** Read the Student Academic Honesty Code, particularly *the possession, receipt or use of any material or assistance not authorized* in section 1201.1.1 on page 123 of the Tiger Cub. If I do not provide it or say it is authorized, it is NOT AUTHORIZED! For more details, see page 3 of the syllabus.

## Course Objectives:

1. to present the basic theory of linear programming and networks, concentrating on results that are useful in computation
2. to develop a thorough understanding of linear programming and network algorithms, and a basic understanding of the techniques used in large-scale linear programming and networks

### Tentative Course Outline

Date	Topic	Reading	Homework*
1/8/2009	Introduction	1.1-1.5	
1/13/2009	Linear Algebra	2.1-2.3	
1/15/2009	Convex Analysis	2.4-2.7	
1/20/2009	Simplex Method	3.1-3.6	2, 6, 7, 12
1/22/2009	Simplex Method	3.7-3.9	15, 17
1/27/2009	Simplex Method		42, 43
1/29/2009	Initial Solutions	4.1-4.7	2, 10
2/3/2009	Revised Simplex	5.1(to 209)	2, 4
2/5/2009	Revised Simplex		
2/10/2009	Review		
2/12/2009	QUIZ 1		
2/17/2009	Bounded Variables	5.2	10, 12, 21, 28
2/19/2009	KKT Conditions	5.4	39, 42
2/24/2009	Duality	6.1-6.2	1, 7, 8
2/26/2009	Duality	6.3	11, 15
3/3/2009	Dual Simplex	6.4	32, 33
3/5/2009	Sensitivity Analy	6.7	53, 55
3/10/2009	Comp. Complexity	8.1-8.3	1, 6
3/12/2009	Interior Point Alg	8.4-8.5	36
3/17/2009	Spring Break		
3/19/2009	Spring Break		
3/24/2009	Review		
3/26/2009	QUIZ 2		
3/31/2009	Network Flows	9.1-9.6	3, 43
4/2/2009	Network Flows	9.7-9.9, 9.12	4, 14
4/7/2009	Network Flows	48, 49	
4/9/2009	Network Flows		
4/14/2009	Transportation Prob	10.1-10.6	2, 3
4/16/2009	Assignment/Tranship	10.7, 10.10	26a, b, c
4/21/2009	Out of Kilter	11.1-11.5	1, 34, 41
4/23/2009	Other networks	12.1, 12.2, 12.4	4, 7, 24, 41
4/28/2009	Other networks		

\* Homework problems are posted on BLACKBOARD.

The final exam is scheduled Friday, May 1, 8:00 a.m. - 10:30 a.m.

# Academic Honesty

All portions of the Auburn University student academic honesty code (Title X11) found in the Tiger Cub will apply to this class. All academic honesty violations or alleged violations of the SGA Code of Laws will be reported to the Office of the Provost, which will then refer the case to the Academic Honesty Committee.

Violations include, but are not limited to:

Cheating on an examination. This includes such things as copying from another's paper, using unauthorized notes, calculators, etc., or giving or receiving unauthorized aid, such as trading examinations, whispering answers, passing notes, or using electronic devices to transmit or receive information.

Plagiarism. This is using someone else's work without giving credit. It is, for example, using ideas, phrases, papers, laboratory reports, computer programs, data - copied directly or paraphrased - that you did not arrive at on your own. Sources include published works such as book, movies, web sites, and unpublished works such as other students' papers or material from a research service. In brief, representing someone else's work as your own is academically dishonest. *The risk of plagiarism can be avoided in written work by clearly indicating, either in footnotes or in the paper itself, the source of any major or unique idea or wording that you did not arrive at on your own. Sources must be given regardless of whether the material is quoted directly or paraphrased.*

*Copying another student's assignment and putting your name on it is plagiarism.*

Unauthorized collaboration. This is working with or receiving help from others on graded assignments without the specific approval of the instructor. *If in doubt, seek permission from the instructor before working with others.* Students are encouraged to learn from one another: Form study groups and discuss assignments, but each assignment must be individual work unless specifically stated and turned in as a group assignment.

*You are encouraged to talk to one another about your assignments, however, all assignments must be done by the student(s) whose name is (are) on it!*

Multiple submission. This means using the same work to fulfill the academic requirements in more than one course. *Prior permission of the instructors is essential.*