faculty of science
department of mathematics
SFU

MATH 308 COURSE INFORMATION

Instructor:	Tamon Stephen
Meeting Time:	Wednesday 1:30–2:20 and Friday 12:30–2:20 in SUR 2740
Tutorial Times:	Thursday 9:30–10:20 (D202) or 3:30-4:20 (D201)
Office:	2886 Podium 2
Office Phone:	778–782–7429
E-mail:	tamon@sfu.ca
Web page:	`http://www.math.sfu.ca/~tstephen/Teaching/1157_Math308/`
Office Hours:	Thursday 11:30–12:20 (tentative)
Text:	Linear Programming: Foundations and Extensions (4th ed.), by Vanderbei
Grading:	15% Homework, 35% Midterm, 50% Final.

1. **Syllabus.** We will cover the first 7 chapters of the text, and chapters 11 and 14. If time permits, we may also try chapters 10, 15 and 25. Topics that we plan to cover include:

   Introduction: Examples - formulation of optimization problems as linear programming problems.

   The Simplex Method: Initialization. Unboundedness. Degeneracy and cycling.

   Duality Theory: The dual simplex algorithm. Complementary slackness. The duality theorem.

   Sensitivity and parametric analysis.

   Software and large scale problems.

   Game theory (linear programming formulation of matrix games).

   Network simplex.

   Additional topics as time permits: Convex sets and polyhedra. Transportation and assignment problems. Lagrange multipliers. Convex minimization.

2. **Homework.** There will be five homework assignments during the term. Late homework will not be accepted.

   You are encouraged to talk with each other, the teaching assistants and the instructor about the homework, but you must write up the solutions yourself, using your own words.

3. **Exams.** Books, notes and calculators cannot be used on these tests. Students **must** plan to take the tests at their scheduled times.

   The tentative dates and times for the tests are:

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   Midterm: Friday, October 30th, 12:30-2:20 PM  (in class)
   Final: Friday, December 18th, 3:30-6:30 PM
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4. **Religious Accommodations.** Students requesting religious accommodation must tell the instructor by the end of the first week of term.

5. **Reading.** There will be assigned reading. Please do it.

6. **Tutorials.** On Thursdays, there will be a one hour tutorial conducted by the Teaching Assistant, Olga Zasenko. Tutorials will feature worked examples and discussion of the homework problems. The tutorial will not meet the first week of classes.

7. **Materials on the Web.** Basic course information will be available on a public Web page:
   `http://www.math.sfu.ca/~tstephen/Teaching/1157_Math308/.`

   Additional information may be posted on a Math 308 Canvas page, to which you should have access during the term. See: `http://www.sfu.ca/canvas.html.`

8. **Drop Dates.** The drop date for students to avoid getting a WD on their transcript is **Monday, September 21st**. The final drop date for students is **Monday, October 12th**. SFU maintains a list of important deadlines for students at:
   `http://students.sfu.ca/deadlines/.`

9. **Reserve Books.** There is a copy of the course text on reserve at the SFU Surrey library. There are several other textbooks that cover similar material with different perspectives and levels, and some are on reserve.

   Two classic textbooks are *Linear Programming* by Chvátal and *Theory of Linear and Integer Programming* by Schrijver.

   More recent textbooks covering similar material to the course text are *Linear Programming and Network Flows* by Bazaraa, Jarvis and Sherali, *Linear and Non-linear Optimization* by Griva, Nash and Sofer, *Linear Programming* by Vaserstein and *Elementary Linear Programming* by Kolman and Beck. A more computational view of the material is presented in *Linear Programming with* MATLAB by Ferris, Mangasarian and Wright.

   A book that introduces linear programming from the perspective of modelling problems is *Deterministic Operations Research: Models and Methods in Linear Optimization* by Rader. An earlier book in this category is *Applied Mathematical Programming* by Bradley, Hax and Magnanti – despite being almost 40 years old and out of print, this book remains in use at MIT.

10. **Software.** This course focuses on the theory of linear programming. However, there will be a few exercises on the assignments where you are asked to formulate and solve a problem in a common software package, such as Excel or MATLAB.

11. **Laptops.** As a courtesy to other students, please sit in the back row if you plan to use a laptop during the lecture.

12. **Operations Research.** Linear Programming is a powerful tool that is used in many applications in business and industry. As such, it is a key course in the Operations Research program offered by the Mathematics Department at SFU. Please see the instructor if you are interested in finding out more about this program.

13. **Questions.** Questions are encouraged in class and out.

Have a great term!