

Course Information for Math 208W

Meeting Time:	Monday 2:30–4:20 and Wednesday 2:30–3:20 in SUR 3260
Instructor:	Tamon Stephen
Office:	2886 Podium 2
Office Phone:	778–782–7429
E-mail:	tamon at sfu ca
Web page:	http://www.math.sfu.ca/~tstephen/Teaching/1161_Math208W/
Office Hours:	TBD and by appointment.
Teaching Assistant:	Olga Zasenکو, ozasenکو at sfu ca
Text:	<i>Optimization Modeling with Spreadsheets</i> , 2nd ed., by K. R.. Baker.
Grading:	50% Assignments, 15% Test 1, 15% Test 2, 20% Final Project.

1. **Syllabus.** Introduction to methods of operations research: linear and nonlinear programming, simulation, and heuristic methods. Applications to transportation, assignment, scheduling, and game theory. Exposure to mathematical models of industry and technology. Emphasis on computation for analysis and simulation.

2. **Details.** We focus on modelling common optimization problems that arise in industry such as: blending allocation, scheduling, financial planning, transportation, shortest path, inventory control, job sequencing and network flows. Our focus is on formulating problems so that they can be manipulated and solved using software, notably spreadsheets. We may also briefly introduce some specialized optimization software.

This is a writing-intensive, and as such, you will be writing extensively. As part of this, you will learn to use the L^AT_EX document preparation system, which is widely used wherever advanced mathematical typesetting is required.

3. **Course Requirements.** There are three components to the evaluation of this course. The largest one, worth 50%, will be five assignments. These assignments will involve a range of skills, including mathematical modelling and demonstrating proficiency in software.

Additionally, there will be two in-class tests. The tentative dates for these are **Monday, February 22nd** and **Monday, March 21st**.

Finally, students will produce projects, in which they will produce an extended mathematical analysis of a topic of current local interest using real data. These will be presented on the final day of class: **Monday, April 11th**.

4. **Participation.** Since this class is based on group work, attendance and punctuality in class are critical, as well as active participation in group activities. These will be considered when assigning grades.

5. **Assignments.** The assignments in this class will require detailed, well written mathematical models, and their solutions. You may at times be asked to provide computer code, or give a brief presentation on your model and solution. While assignments will generally be individual, you may at times be asked to certain more elaborate questions in small teams.

6. **Tests.** 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:

Monday, February 22nd, 2:30–4:20 PM (in class)

Monday, March 21st, 2:30–4:30 PM (in class)

7. **Projects.** Full details for the main projects will be handed out soon. The tentative plan is to do them in groups of 3. We should form the groups in the January, and have a topics tentatively selected before Spring break (which begins on February 8th).

Selected past Math 208W projects have been published in the journal *Analytically Now*, published by the SFU Operations Research Student Union. Copies of these (there are currently two versions, one from 2012 and one from 2014) are on reserve at the Surrey library; This can help you get an idea of what these projects should look like.

8. **Religious Accommodations.** Students requesting religious accommodation must tell the instructor by the end of the first week of term.

9. **Resources.** There is a copy of the course text available on reserve at the Surrey library. Also on reserve, as mentioned as mentioned above, are the two editions of *Analytically Now*.

Additional resources on modelling for Operations Research are Hillier and Lieberman's *Introduction to Operations Research*, Sarkar and Newton's *Optimization Modeling: A Practical Approach*, Winston's *Operations Research: Applications and Algorithms* and Rader's *Deterministic Operations Research: Models and Methods in Linear Optimization*. All these books are on reserve at the Surrey library.

Non-technical presentations of very large scale Operations Research projects are available at the Edelman Awards Presentations of INFORMS (Institute for Operations Research and Management Science).

For papers that present Operations Research cases along with substantial technical details, see *Operations Research*, an INFORMS journal. Note that if you are off-campus, you will need to access the journal through the SFU library using student Internet credentials. Another good source of general less technical presentations of successful operations research projects is another INFORMS journal, *Interfaces*.

10. **Software.** We plan to use software throughout this course. You will be required to gain some proficiency in \LaTeX , spreadsheets and perhaps some additional software packages. Additional information about software will be posted to the course Website on Canvas.

11. **Office hours and support.** Both myself and the Teaching Assistant will hold office hours and be available by e-mail. I will hold office hours in my office, while the TA will hold office hours in room 2923.

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

Have a great term!