

# Course Information for Math 208W

<b>Meeting Time:</b>	Mon. 2:30–4:20 BLU 10921 and Wed. 2:30–3:20 BLU 10011
<b>Instructor:</b>	Tamon Stephen
<b>Office:</b>	K10527 (Burnaby)
<b>E-mail:</b>	tamon at sfu ca
<b>Office Hours:</b>	Wednesday 3:30–4:20 (tentative)
<b>Teaching Assistant:</b>	Mina Moeini, mina_moeini at sfu ca
<b>Tutorial:</b>	Tuesday 3:30–4:20 or 4:30–5:20 (check your schedule)
<b>Web page:</b>	<a href="http://www.math.sfu.ca/~tstephen/Teaching/1251_Math208W/">http://www.math.sfu.ca/~tstephen/Teaching/1251_Math208W/</a>
<b>Text:</b>	<i>Optimization Modeling with Spreadsheets</i> , 3rd ed., by K. R. Baker.
<b>Grading:</b>	30% Individual Homework, 15% Team Homework, 15% Midterm, 25% Final Exam, 15% Team 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.** Modelling problems with many variables as linear programs. Using spreadsheet applications to solve these models. Network flow models. Sensitivity analysis. Integer and non-linear models. Applications may include resource allocation, shipping and financial planning. Modelling problems using discrete-event simulations.

Students will learn mathematical typesetting using  $\text{\LaTeX}$ , and spreadsheets using **Excel**. A feature of this course will be team work, including a project in which students analyze a substantial mathematical problem and present their results in writing.
3. **Course Requirements.** The course includes 5 individual homework assignments and 3 team homework assignments. These assignments will involve a range of skills, including writing, mathematical modelling and demonstrating proficiency in software. There will be an in-class midterm and a final exam.

Finally, there will be team projects, where teams produce an extended mathematical analysis of a topic of current local interest using real data.
4. **Participation.** Since this class has a group work component, attendance and punctuality in class are critical, as well as active participation in group activities. These will be considered when assigning project grades. Note that lectures are not recorded.
5. **Tests.** Books, notes and calculators cannot be used on these tests. Students **must** plan to take the tests at their scheduled times. The midterm is tentatively scheduled for Monday, March 5th, 2:30–4:20 (in class). The final exam will take place during the exam period as scheduled by SFU.
6. **Assignments.** The assignments in this class will require detailed, well written mathematical models, which for the most part are then solved using software. In some cases, the code used to solve the models will be part of the assignment submission. Individual homework will also have an essay component.

Assignments will be typeset in  $\text{\LaTeX}$ . Submission will be via **Crowdmark**.

7. **Academic Integrity** Please review the SFU Academic Integrity Website. All work submitted should be your own (or your group's in the case of group work).

This is an SFU-designated writing (W) course. One of the objectives is to teach you mathematical and professional writing. You should not be using generative AI or similar systems to produce your solutions, though they may be useful for writing support. If you are using any generative technology to produce content that will be part of your graded work in the course, you must be transparent about the tools that you use. For example, if you use ChatGPT to assist you in your submission, you must acknowledge the use of the software and document the prompts used to generate the results. Be aware that any tool used will require you to evaluate the output for accuracy and be responsible for making the appropriate corrections.

8. **Projects.** Details for the main projects will be handed out soon. The plan is to do them in groups of 3 or 4. We will form the groups in the January, and start to decide on topics by the end of the month. Initial proposal will be presented in class in February before spring Break.

Some past Math 208W projects have been published in the journal *Analytics Now*, published by the SFU Operations Research Student Union. These are available on-line at <http://journals.lib.sfu.ca/index.php/analytics-now/index>. This can help you get an idea of what these projects should look like.

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

10. **Resources.** The course text is available on-line, you can access it on the Web through SFU. This requires your userid and password if you are off campus.

A textbook that covers similar ground is Sarker and Newton's *Optimization Modelling: A Practical Approach*, also available on-line through the library.

Some non-technical presentations of very large scale Operations Research projects are available through the Edelman Awards of INFORMS (Institute for Operations Research and Management Science). These are found in the INFORMS Video Library.

The *INFORMS Journal on Applied Analytics* publishes papers on the practice of operations research. These are generally quite readable and may give you some ideas for potential project topics. You can access the journal through the SFU library using your student Internet credentials.

11. **Software.** We plan to use software, in particular **Excel**, throughout this course. You will be required to gain proficiency in **L<sup>A</sup>T<sub>E</sub>X**, spreadsheets and perhaps some additional software packages.

12. **Tutorials and office hours.** Tutorials meet each Tuesday during the term. They are an opportunity for you to discuss the material with the Teaching Assistant. They will include brief introductions to the software used in this course (**L<sup>A</sup>T<sub>E</sub>X**, **Overleaf**, and **Excel**), and may cover material that doesn't fit into the regular lecture times. You are encouraged to bring questions.

I plan to hold an office hour, tentatively on Wednesdays at 3:30 p.m.

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

**Have a great term!**