

Course Information for Math 402W

Meeting Time: TuTh 10:30–12:20 in SUR 2980
Instructor: Tamon Stephen
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Web page: http://www.math.sfu.ca/~tstephen/Teaching/1171_Math402W/
Office Hours: Following class and by appointment.
Text: None.
Grading: 10% Warm-up Project, 10% Article Review, 80% Final Project.

1. **Syllabus.** This course is centred around a group project. The objective is to model and analyze real-world problems that require substantial mathematical (Operations Research) techniques. Students will select the problems and present their analyses in written reports and oral presentations.

2. **Course Requirements.** The main requirement for the course will be the successful completion of the main group project, worth 80% of the final grade. There will also be a warm-up group project, worth 10%, and an article review, which will be done individually.

Note that class does not follow a lecture format. Students are required to attend, and will meet in their groups and with the instructor during the class meeting times.

3. **Timeline.** We will begin the warm-up projects immediately, with papers and presentations due in class on Tuesday, January 17th. We should choose the articles for the article review by Thursday, January 12th, with the reviews due on Thursday, January 26th.

The main group projects will begin in earnest on Thursday, January 19th. Topics should be established by Tuesday, January 31st. Note that reading week is February 13th to 17th. Detailed proposals are due Thursday, February 9th. There will be a progress report on Thursday, March 9th, and the final reports will be due, along with in-class presentations on the final day of class, that is, Thursday, April 6th.

4. **CORS Student Paper Competition.** Since the first full offering of the course, students have been submitting high-quality projects to the CORS (Canadian Operational Research Society) undergraduate student paper competition. Remarkably, from 2012 to 2014, SFU teams won both the first prize and the honourable mention; in 2016 an SFU team won an honourable mention. The 2013 winning entry featured in an SFU media release.

If the projects look promising, we may be able to submit the projects from this course to the 2017 competition. Note that to do this, as described in the application procedure, you must indicate your intent to participate by **Wednesday, February 15th** and send the competition version of the paper to CORS by **Saturday, April 15th** (tentative dates).

This year's CORS conference is in Quebec City **July 17th to 21st**. It will be held in conjunction with the 21st Conference of the International Federation of Operational Research Societies.

5. **Exams.** There are no tests or exams in this class.
6. **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.
7. **Religious Accommodations.** Students requesting religious accommodation must tell the instructor by the end of the first week of term.
8. **Resources.** There is a copy of Hillier and Lieberman's *Introduction to Operations Research* on reserve at the Surrey library. This provides a useful introduction to Operations Research modelling, and many of you are likely familiar with it from Math 348.

The Operations Research Student Union published a booklet containing journal versions of the three 2012 Operations Research Clinic projects. A copy of this booklet is on reserve at the Surrey library. This can help you get an idea of what these projects should look like. The first two papers in this booklet were entered in the 2012 CORS (Canadian Operational Research Society) undergraduate student paper competition. They won honourable mention and first prize, respectively. The 2013 and 2014 projects have now also been published. I have a copies available which you can borrow.

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 Learning Center, under the corresponding year's Analytics Conference, where the awards are presented.

For papers that present Operations Research cases along with substantial technical details, see the Journal of the Operational Research Society (of the U.K.). One of these papers will the be the subject of your article review. 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.
9. **Software.** Your optimization models will not be easy to solve, so you will need to access to current mathematical software. This will be arranged with the instructor, using educational software licences.
10. **Questions.** Questions are encouraged in class and out.

Have a great term!