# Course Information for Math 402W

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| **Meeting Time:** | TuTh 10:30–12:20 in SUR 2980 |
| **Instructor:** | Tamon Stephen |
| **Office:** | 2886 Podium 2 |
| **Office Phone:** | 778–782–7429 |
| **E-mail:** | tamon@sfu.ca |
| **Web page:** | `http://www.math.sfu.ca/~tstephen/Teaching/1181_Math402W/` |
| **Office Hours:** | Following class and by appointment. |
| **Text:** | None. |
| **Grading:** | 10% Article Review, 90% 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 analyzes 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 90% of the final grade. There will also be 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.**

    The main group projects will begin immediately. Topics should be established by Tuesday, January 16th. Detailed proposals are due Thursday, January 30th. Note that reading week is February 12th to 16th. There will be a progress report on Thursday, February 22nd, and the final reports will be due, along with in-class presentations on the final day of class, that is, Tuesday, April 10th.

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 2018 competition. Note that to do this, as described in the application procedure, you must indicate your intent to participate by **Thursday, March 1st** and send the competition version of the paper to CORS by **Saturday, March 31st** (tentative dates). Unfortunately the CORS deadline is a little bit *before* the end of our term. To have a competitive entry, you will need to have the paper portion of the project substantially complete by this time. You should consider this to be the effective deadline for the paper, and use the final week to prepare your oral presentation.

    This year's CORS conference is in Halifax **June 4th** to **6th**.

5. **Exams.** There are no tests or exams in this class.

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

7. **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.

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 through 2016 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. **Research Ethics.** One of the goals of this course is to get you to work with fairly real and local data. In many cases, this data will be public data that will not present ethics issues. However, if you are considering obtaining or generating non-public data, you will want to consider carefully how your data will be handled and published. In that case, we may have to go through SFU's ethics approval process.

   This would likely begin with completing the TCPS 2 (Tri-Council Policy Statement) on-line Course on Research Ethics (CORE), which may in any case be a worthwhile exercise. If your group is interested in working with this type of data, please talk to me about it as soon as possible so we can begin the approval process.

10. **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.

11. **Typesetting.** LaTeX is recommended for simple conversion to journal submission.

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