

**Department of Accounting, Operations, and Information Systems
School of Business, University of Alberta, Winter Term, 2013**

Operations Management 422/622: Simulation & Computer Modeling Techniques in Management

Instructor: Armann Ingolfsson **Office hours:** Immediately after lecture or by appointment
email: Armann.Ingolfsson@ualberta.ca **Phone:** 780-492-7982, **Office:** 4-30K

TA: Amir Rastpour **Office hours:** See “Staff Information” on uLearn
email: rastpour@ualberta.ca

Lectures: Mondays and Wednesdays, 2:00-3:20 PM, in BUS B-28

Text: Recommended reference material: Chapters about simulation in *Practical Management Science* by Winston and Albright (textbook for OM 352).

Required: Course pack with readings and exercises about discrete event simulation. Available from the University Bookstore.

Note on buying used course packs: The OM 422/622 course pack from past years is a custom-published textbook. The good thing about this custom text is that it includes relevant chapters from *Practical Management Science*. The bad thing is that it does not include the required material in this term’s course pack.

Software: We will use MS Excel and the @Risk add-in during the first half of the course and ExtendSim during the second half of the course. Both software packages are available in BUS B-28. Students will be able to purchase student versions of @Risk and ExtendSim—see instructions on uLearn. All assignments and projects will be designed so that they can be completed using the student versions.

Computer Lab: Students in OM 422/622 will have priority in BUS B-28 from 12 noon am to 2 pm on Mondays. Any known exceptions will be posted on the course web.

Course number: Undergraduate: OM 422. MBA: OM 622.

OM 422 Official course description: Computer modelling of management systems in such functional areas as accounting, finance, marketing and operations. Basic concepts of deterministic and probabilistic (Monte Carlo) simulation and their applications. Microcomputer implementation of case studies using spreadsheets particularly emphasized. Required term project. Prerequisites: MGTSC 312 (or equivalent STAT course), MGTSC 352 or OM 352; and FIN 301 or ACCTG 311. Not to be taken by students with credit in MGTSC 422.

OM 622 Official course description: This course will discuss computer modelling of management systems in such functional areas as accounting, finance, marketing, and production. Basic concepts of deterministic and probabilistic (Monte Carlo) simulation and their applications will also be covered. Micro computer implementations of case studies using spreadsheets will be particularly emphasized. A term project will be required. Prerequisite: MGTSC 502 or OM 502. Not to be taken by students with credit in MGTSC 632.

Skills you should have at the end of the term:

- Be able to analyze situations that involve uncertainty, such as:
 - Ordering when demand is uncertain, capacity when demand is uncertain, value of financial options, how much to save for retirement, etc.
- Specify distributions for inputs
 - Cost, revenue, demand, supply, rate of return, etc.
- Generate distribution for outputs
 - Profit, average waiting time, rate of return, etc.
- Use software that is appropriate to the task

Overview of material:

Department of Accounting, Operations, and Information Systems
School of Business, University of Alberta, Winter Term, 2013

Operations Management 422/622: Simulation & Computer Modeling Techniques in Management

- **Introduction:** Simulation with MS-Excel, review of relevant material from statistics, random number generation.
- **Monte Carlo Simulation:** Use of the @Risk Excel add-in, applications in finance, marketing, operations, and project management.
- **Discrete Event Simulation:** Use of the ExtendSim software package, applications in manufacturing and service operations.

Evaluation:

- Assignments: 30% (6-8 assignments)
- Group projects: 30% (2 projects, 15% each)
- Quizzes: 40% (Quiz 1 on 25 February, 20%, Quiz 2 on 3 April, 20%)

Both quizzes will be online. To pass the course, a student must obtain an average of at least 40% on the two quizzes combined.

Final grades will be based on the overall class performance. The class average for OM 422 will probably be between 3.0 and 3.2 and students' marks will be curved accordingly. I use the word "probably" to leave myself room to move the average up or down if the class as a whole appears to perform much better or much worse than I expect.

Further instructions for the two group projects will be available from uLearn before the end of January. Both projects will require a written report or memo as well as a computer model.

Students in OM 622 will be graded separately from students in OM 422.

Academic Misconduct: Students who commit any act of plagiarism, cheating, or misrepresentation in this course will be penalized. All assignments (except for the group projects) are to be completed individually. However, I recognize the value of studying together and comparing notes when working on assignments. To help you judge what I consider acceptable and non-acceptable collaboration, consider the following:

Do:

- Discuss the course material with other students.
- Ask classmates for help when you are stumped.
- Offer help to other students.
- Do your own work.

Don't:

- Discuss numerical answers with other students.
- Use someone else's words without proper attribution.
 - The best way to avoid using another student's words is to never look at another student's written answers to an assignment.
 - If you cite an article, book, web page, or any other source in your project report, then you must include complete information about that source.
- Copy another student's spreadsheet file, Arena file, or other computer file.
 - There are no exceptions to this rule. Copying another student's file for an assignment (or another group's work, for the group project) is not acceptable, under any circumstances. It is immaterial whether the copying is done electronically or manually.

Marking and Grade Disputes: The instructor will be available to discuss with students their concerns about grading and marking. Policies regarding appeals and late penalties for assignments, projects, and quizzes will be posted on uLearn.

**Department of Accounting, Operations, and Information Systems
School of Business, University of Alberta, Winter Term, 2013**

Operations Management 422/622: Simulation & Computer Modeling Techniques in Management

In the case of a dispute over a final grade, the student is required to discuss the matter first with the instructor. If the student remains unsatisfied, he/she may discuss the dispute further with the Department Chair. Should the student still be unsatisfied, the matter may be taken to the Assistant Dean, Undergraduate or the Associate Dean, MBA, as appropriate.

Group Work: The two course projects are to be completed in groups of 3 to 4. One purpose of the group work is preparation for working on teams after graduation. In the working world, people typically don't get to pick who they work with, and managers who form groups don't do so randomly. Therefore, the instructor will form the groups. To facilitate the group work, we will allocate class time for four 30-minute group meetings during the term (two for each project). We will also set up group pages on uLearn. In order to discourage "free riders," we will have repeated and mandatory peer evaluations, which will take place early enough to diagnose and address problems. The peer evaluations will impact marks for the projects. The primary goal in forming the groups will be to have approximately equal prior useful background (for example, prior courses on related subjects). Requests from students to be in a group with another student will be accommodated as long as doing so does not conflict with the primary goal. MBA student groups will be separate from BComm student groups.

There will be no classes during the week of February 18th to 22nd (Reading Week).

Students who require accommodations in this course due to a disability affecting mobility, vision, hearing, learning, or mental or physical health are advised to discuss their needs with Specialized Support and Disability Services, 2-800 Students' Union Building, sdsrec@ualberta.ca, 780-492-3381 (phone) or 780-492-7269 (TTY).

Policy about course outlines can be found in §23.4(2) of the University Calendar.

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Audio or video recording of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Recorded material is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the instructor.