

ISOM 3710 Business Modeling and Optimization, Fall 2025

Instructor

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Tutors

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This course will focus on modeling and problem-solving (in the platform of Excel). The emphasis will be on building useful models for analyzing and solving practical problems. **This is a hands-on course and we will adopt a workshop approach to learning.** The teaching methods include: mini lectures, demonstrations and practical exercises. Students will be exposed to a variety of managerial problems and their modeling skills will be enhanced around the following aspects: working with Excel; using formulas; manipulating information; analyzing business problems; identifying optimal decisions; and deriving managerial insights from the solutions.

The course has a two-fold purpose. First, it introduces students to simple models that provide powerful and often surprising qualitative insights about a large spectrum of managerial problems. Second, it gives students a general idea for the kinds of problems that can be tackled quantitatively, the methods available for doing so, and the relevant data that needs to be gathered.

Course Materials

(1) Textbook: *Practical Management Science*, 6th edition, by Winston and Albright, Cengage, 2019.

- Earlier versions: “*Practical Management Science*, 5th edition”, “*Management Science Modeling*”, “*Essentials of Practical Management Science*” by the same authors.

(2) Slides, Excel files and other course material downloadable from <http://canvas.ust.hk> using your ITSC account name/password.

Contents to be covered

- Ch 2: Introduction to spreadsheet modeling
- Ch 3: Introduction to optimization modeling
- Ch 4: Linear Programming models
- Ch 5: Network models
- Ch 6: Optimization models with integer variables
- Ch 7: Nonlinear optimization models

Office Hours

- Professor: 10:30-11:30am on Tuesday, or by appointment.
- Tutors: 9:00-10:00am on Monday, LSK Room 4083.

Grading

- Quiz (**14 October, in-class**): 20%;
- Homework: 15%;
- Final examination: 55%;
- Class Attendance: 10%;
- *Up to 5% bonus points for class participation/discussion.*

Important Policies

1. Quiz and examination will be semi-open book: accessible to all in-class materials, including ppt, in-class example files, and personal notes (hardcopies), but other e-files are not allowed. Internet and individual laptop or other personal devices are not allowed.
2. **There is no makeup quiz:** if you miss the quiz for **any reason**, its weight (20%) will be automatically shifted to the final examination.
3. Class attendances will be recorded (randomly) after the add-drop period. You will get full mark of this part if you don't miss more than once. The only valid reason for not attending class without penalty is sickness with doctor's note.
4. There are two kinds of assignments: Homework and Exercises. You need to submit Homework on the due date, but Exercises are for your own practice only. **Homework could be finished in team of up to three students.** Solutions for homework/exercises will be discussed in the tutorial session and / or posted in Canvas. (**Sign up your team in Canvas by 23 Sept.**)
5. You are strongly encouraged to re-do all in-class exercises/examples by yourself after the class, as soon as possible, and discuss with the professor or the tutors for any problem you have.
6. **Peer review for group homework:** It is expected that every teammate will contribute actively to homework assignments. If you believe that any of your teammates have not made enough contribution to the assignments, you may email me a peer evaluation before the final examination. *You do not need to do the peer evaluation if you believe that all your teammates should receive the same score*, which I hope is the norm, not the exception.
7. **AI policy:** you may use generative AI to help solving the homework problems.
8. Communication and feedback: all marks, including that of homework, quiz, examination, and attendance, will be posted in Canvas. Students who have any question about the marks should consult the instructor or tutors within five working days after the marks are posted.
9. **Academic Integrity:** Students are expected to adhere to the university's academic integrity policy.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

- Demonstrate the skill to use Excel spreadsheet, particularly around the following aspects: working with Excel; creating formulas; manipulating information; and analyzing business problems.
- Conduct what-if analysis and to use Solver to identify optimal decision for a large spectrum of managerial problems.
- Derive managerial insights from the solutions obtained.
- Have a general idea for the kinds of problems that can be tackled quantitatively, the methods available for doing so, and the relevant data that needs to be gathered. Identify business problems suitable for quantitative analysis, describe appropriate analytical methods, and determine the types of data required for effective problem-solving.