

**YORK UNIVERSITY**  
**School of Administrative Studies**  
**Fall 2021, AP/ADMS 3330 Section B**  
**Introduction to Management Science**

Course Director: Dr. Toyasaki Fuminori      Email: toyasaki@yorku.ca

Time: Thursdays, 19:00pm – 22:00pm

Location: Remote delivery, Virtual Classroom

Office Hours: Please send your questions via email; they will be answered within 24-72 hours.

Course Description:

This course is an introduction to the basic theory underlying Management Science and Operations Research. This course not only helps the students learn how to model real life problems as mathematical models, but also provides them the mathematical foundation and the spreadsheet skills to solve them. Specifically, using spreadsheets, the course focuses on modeling a variety of applications of finance, marketing and production/operations management with spreadsheets. Some of these applications include inventory control, workforce management, location and distribution problems, revenue management, portfolio selection, capital budgeting, and optimal sales allocation. The course also focuses on theories on basic optimization techniques such as the simplex method for solving linear programming, duality theory, Branch-&-Bound algorithm for solving integer linear programming and multi-criteria decision making.

Prerequisite: AP/ADMS 2320 3.0

Course credit exclusion: AP/ADMB 3330 3.00

Course Website: <https://eClass.yorku.ca/>

Required Textbook:

Anderson, Sweeney, Williams, Camm, Cochran, Fry, and Ohlmann, An Introduction to Management Science: Quantitative Approaches to Decision Making, 15<sup>th</sup> Edition, 2019 South-Western Cengage Learning.

Reference/Optional: Spreadsheet Modeling and Decision Analysis, A Practical Introduction to Business Analytics, 8th edition, C.T. Ragsdale, 2016.

Supporting/Additional material (if any) will be posted on the course website.

**Marking Scheme:**

|                     |             |
|---------------------|-------------|
| Quizzes (2 each 5%) | 10%         |
| Midterm Exam        | 40%         |
| Final Exam          | <u>50 %</u> |
| Total               | 100 %       |

Tutorials: Tutorial video sessions will be posted in the course eClass site. Further information will be posted on the course eClass site.

### Technical requirements for taking the course:

- Students who are enrolled in this course must have access to a laptop or desktop computer with a camera and microphone and/or a smart device with these features. Students who are enrolled in this course will be expected to use ZOOM software to attend lectures.
- ***Students must also have a stable Internet connection, or they will be facing significant challenges throughout the course.***  
To determine Internet connection and speed, there are many tools available online or from your ISP.
- During test/exam students may be asked to turn on camera for confirmation of identity.
- Here are some useful links for student computing information, resources, and help:
  - [Student Guide to eClass](#)
  - [Zoom@YorkU Best Practices](#)
  - [Zoom@YorkU User Reference Guide](#)
  - [Computing for Students Website](#)
  - [Student Guide to eLearning at York University](#)

### Academic honesty and integrity

In this course, we strive to maintain academic integrity to the highest extent possible. Please familiarize yourself with the meaning of academic integrity by completing SPARK's [Academic Integrity module](#) at the beginning of the course. Breaches of academic integrity range from cheating to plagiarism (i.e., the improper crediting of another's work, the representation of another's ideas as your own, etc.). All instances of academic dishonesty in this course will be reported to the appropriate university authorities, and can be punishable according to the [Senate Policy on Academic Honesty](#).

### General Policy

1. **WARNING: Distribution or uploading of course content is STRICTLY PROHIBITED. All material is copyright protected.**
2. Concerns regarding marks **will not be entertained after a week** from the release of the marks/result.
3. Students will not be allowed to write the quizzes, term tests, or the final exam, unless they are on the class list.
4. Due to unavoidable circumstances if any lecture is missed due to technical reason, date for make-up lecture will be announced on course web site.
5. Please ensure you read all documentation on the course eClass site.
6. It is your responsibility to visit course eClass site on a regular basis.
7. If you have a query about the questions solved in any tutorial session, communicate directly with the tutor, if you are not satisfied with the reply of your tutor, then contact your professor.
8. Due to high volume of emails during remote learning, it might be possible that replies to your email queries might take longer than usual. Please expect no (or limited) response to your e-mails during the weekends.
9. Please note that this is now a remote teaching online course. The entire course, including the lectures, participation/discussion, and test/exam-taking, will take place on the course website on eClass.
  - the recordings should be used for educational purposes only and as a means for enhancing accessibility.
  - students **do not** have permission to duplicate, copy and/or distribute the recordings outside of the class (these acts can violate not only copyright laws but also [FIPPA](#));
  - all recordings will be destroyed after the end of classes.
10. For some common language about academic integrity, and the online tools used to promote it, please see the text in blue font above.
11. This course might require the use of online proctoring for examinations. The instructor may use an online proctoring service to deliver the exam(s), which would be administered through the Learning Management System (e.g., eClass, Canvas, etc.). Students are required to have access to minimum technology requirements to complete examinations. If an online proctoring service is used, students will need to become familiar with it at least five days before exam(s). For

technology requirements, Frequently Asked Questions (FAQs) and details about the online proctoring service will be made available if used. Students are required to share any IT accommodation needs with the instructor as soon as they are able.

12. Several platforms will be used in this course (e.g., eClass, Canvas, Zoom, etc.) through which students will interact with the course materials, the course director / TA, as well as with one another. Please review the syllabus to determine how the class meets (in whole or in part), and how office hours and presentations will be conducted.

Students shall note the following:

- Zoom is hosted on servers in the U.S. This includes recordings done through Zoom.
- If you have privacy concerns about your data, provide only your first name or a nickname when you join a session.
- The system is configured in a way that all participants are automatically notified when a session is being recorded. In other words, a session cannot be recorded without you knowing about it.

Technology requirements/Information for eClass can be found here:

<https://www.yorku.ca/eclass/>

*While all individuals are expected to satisfy the requirements of their program of study and to aspire to achieve excellence, the university recognizes that persons with disabilities may require reasonable accommodation to enable them to perform at their best. The university encourages students with disabilities to register with **Student Accessibility Services** to discuss their accommodation needs as early as possible in the term to establish the recommended academic accommodations that will be communicated to Course Directors as necessary. **Please let me know as early as possible in the term if you anticipate requiring academic accommodation so that we can discuss how to consider your accommodation needs within the context of this course.***

***Students registered with Student Accessibility Services are instructed to deliver the letter of accommodation to each of their course directors via email within the first two weeks of class.***

### **Quizzes, Mid-Term, and Final Exam Policies**

1. All Quizzes, the Mid-Term Test, and the Final Exam will be done online. **All Quizzes will be held online during the beginning of the scheduled course time.**
2. Information concerning the Quizzes, Mid-Term Test and **Final Exam** will be posted on course eClass site.
3. There are **2 Quizzes**, dates of which are given in the schedule below. **Quizzes will be done online, and will be at the beginning of the class it is scheduled in.** Quizzes will be about 20-30 minutes long. **No makeups will be available for each Quiz for any reasons.**
4. There is one common Mid-Term Test of which is worth 40% of your overall grade.
5. The Mid-Term Test and the Final Examination may consist of multiple-choice questions and worded questions.
6. If you miss the Mid-Term Test, you have to write the Cumulative Final Exam of which is worth 90% of your overall grade. Students who write the Mid-Term Test are not allowed to write the Cumulative Final Exam.
7. The Final examination will be comprehensive if you miss the Mid-Term Test. That is, if you miss the Mid-Term Test, you will be writing a final exam that includes material from the entire semester (i.e., the Cumulative Final Exam). The duration of the Comprehensive Final Exam might be different than the Regular Final Exam.
8. A Cumulative Formula Sheet will be posted on your course's eClass website. You can use this formula sheet in all your Quizzes/Test/Exams.
9. **There are no alternative exam dates and times for the Mid-Term Test.**
10. If students miss the Final Examination and have to defer the exam, the deferred exam will be a comprehensive examination.
11. Due to concerns regarding copyright issues, online tests (Quizzes/Mid-Term Test/Final Exam) are treated as purely assessment tools. If you do not miss a regularly scheduled test, you will not be tested on the material covered

in that test again. Hence, the feedback regarding tests will be given to students as explained in the next two points.

12. Online tests will be marked online, and the results will be posted on your course's eClass site. If you need to get markers' feedback, you will need to put a request by emailing your professor **within five days from the date the marks are posted**. Any query after five days will not be entertained. It is your responsibility to visit the eClass (common and your section) on regular basis.

13. After getting markers' feedback, if you are still not satisfied then you can request your professor to re-appraise the test. However, note that the whole test, not the part you like will be re-assessed, three outcomes are possible, your marks might stay the same; increase; or decrease.

14. Your solutions need to be hand-written!

15. You are not allowed to use ANY software to solve and/or type your answers in any of your Tests/exam, if used then that will not be considered part of your Test/Exams, hence will not be marked.

16. Once you start any Testing Component (Quizzes, Test or Exam) you are digitally signed for that testing component. If you quit after starting a test, then whatever you attempted will be marked and will be in your records.

17. If you need religious accommodations, please follow the York University policy/procedure, and once approved, update your professor at least 96 hours before the testing component.

18. Mid-Term Test and Final Exams will all be online. For the Mid-Term Test and Final Exam, you will need to upload on the eClass site a scan or photo of your work as required for each question. (Note: When the allotted time is over, eClass will automatically submit whatever work/files you have uploaded. Note that the files must have been already uploaded though, and this needs to be done before the last minute of the given time. You do not have to send an email to your professor asking to check whether your work/files have been uploaded. It is your responsibility to ensure they are uploaded properly within the time provided. Such email inquiries will not be answered.)

19. Due to strict copyright rules, Quizzes cannot be reviewed online. If you want to, you can apply for re-appraisal, and your professor will re-appraise it and update you on the outcome.

20. While taking your Quizzes, Mid-Term Test/Final Exam, the questions will sequentially be provided to you. You will be asked to answer a question and submit your answer, and then move on to the next question. After you submit your answer to a question, there will be no further access to that question in the test.

**Course Schedule:**

Note that the course schedule below is subject to change as deemed appropriate/necessary by the Professor during the semester.

Each online remote class scheduled below, related material such as audio/video lecture files and/or lecture notes will be posted on eClass. Students are expected to go over the audio/video files, read the chapter(s) and go over the lecture notes. There will be NO synchronous Zoom classes.

| Lecture | Date   | Topic   | Quiz/Chapters                                |
|---------|--|---|--|
| 1       | Sep 9  | Introduction to Optimization,<br>LP - Graphical Method                                      | Ch. 2  |
| 2       | Sep 16   | LP Sensitivity Analysis   | Ch. 3  |
| 3       | Sep 23   | LP Applications   | Ch. 4  |
| 4       | Sep 30   | Integer LP& 0-1 variables   | Ch. 7  |
| 5       | Oct 7  | Distribution and Network Models   | Quiz # 1 (Lec 1-3)<br>from 19:00pm<br>Ch. 6  |
|         | <b>Oct 14</b>  | <b>No-Class: Reading Week</b>   |  |
|         | <b>Oct 17<br/>SUNDAY</b>   | <b>Common Mid-Term Exam (Lectures 1 – 4): 9:00am-11:30am<br/>Location: ONLINE on eClass</b> |  |
| 6       | Oct 21   | Multicriteria Decisions   | Ch. 14                                       |
| 7       | Oct 28   | Simplex Method  | Ch. 17 (Web)                                 |
| 8       | Nov 4  | Simplex Method (cont.)  | Ch. 17 (Web)                                 |
| 9       | Nov 11   | Nonlinear Optimization Models   | Ch. 8  |
| 10      | Nov 18   | Time Series Analysis and Forecasting  | Quiz # 2 (Lec 5-8)<br>from 19:00pm<br>Ch. 15 |
| 11      | Nov 25   | Simulation  | Ch. 12                                       |
| 12      | <b>Common Final Exam (Lectures 5 – 11)<br/>(Date, time &amp; location to be announced on registrar/university website)</b> |   |  |

## **RELEVANT UNIVERSITY/LA&PS/SCHOOL REGULATIONS**

### **Applicable to all ADMS and DEMS courses**

**Deferred Final Exams:** Deferred standing may be granted to students who are unable to write their final examination at the scheduled time or to submit their outstanding course work on the last day of classes. **Students are not required to submit a doctor's note or an Attending Physician's Statement in support of requests for deferred standing for courses impacted by the COVID-19 situation.** Details can be found at <http://myacademicrecord.students.yorku.ca/deferred-standing>

DSA Form: [http://www.registrar.yorku.ca/pdf/deferred\\_standing\\_agreement.pdf](http://www.registrar.yorku.ca/pdf/deferred_standing_agreement.pdf)

In order to apply for deferred standing, students must register at:

<http://sas-app.laps.yorku.ca>

Followed by handing in a completed original Deferred Standing Agreement (DSA) form and supporting documentation directly to the main office of the School of Administrative Studies (282 Atkinson) and add your ticket number to the DSA form. **During this time of remote learning, you will be required to submit the forms via email to [apsas@yorku.ca](mailto:apsas@yorku.ca).** The DSA and supporting documentation must be submitted no later than five (5) business days from the date of the exam. These requests will be considered on their merit and decisions will be made available by logging into the above-mentioned link. No individualized communication will be sent by the School to the students (no letter or e-mails).

Students with approved DSA will be able to write their deferred examination during the School's deferred examination period. **Deferred exams might take place during the regular exams period or in subsequent weeks depending on the course**; precise dates are known when the Office of the Registrar publishes the final exam schedule of the term. No further extensions of deferred exams shall be granted. The format and covered content of the deferred examination may be different from that of the originally scheduled examination. The deferred exam may be closed book, cumulative and comprehensive and may include all subjects/topics of the textbook whether they have been covered in class or not.

**Academic Honesty:** The Faculty of Liberal Arts and Professional Studies considers breaches of the Senate Policy on Academic Honesty to be serious matters. The Senate Policy on Academic Honesty is an affirmation and clarification for members of the University of the general obligation to maintain the highest standards of academic honesty. As a clear sense of academic honesty and responsibility is fundamental to good scholarship, the policy recognizes the general responsibility of all faculty members to foster acceptable standards of academic conduct and of the student to be mindful of and abide by such standards. Suspected breaches of academic honesty will be investigated and charges shall be laid if reasonable and probable grounds exist.

Students should review the York Academic Honesty policy for themselves at:

<http://www.yorku.ca/secretariat/policies/document.php?document=69>

Students might also wish to review the interactive on-line Tutorial for students on academic integrity, at: <https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/>

**Grading Scheme and Feedback Policy:** The grading scheme (i.e. kinds and weights of assignments, essays, exams, etc.) shall be announced, and be available in writing, within the first two weeks of class, and, under normal circumstances, graded feedback worth at least 15% of the final grade for Fall, Winter or Summer Term, and 30% for ‘full year’ courses offered in the Fall/Winter Term be received by students in all courses prior to the final withdrawal date from a course without receiving a grade, with the following exceptions:

*Note: Under unusual and/or unforeseeable circumstances which disrupt the academic norm, instructors are expected to provide grading schemes and academic feedback in the spirit of these regulations, as soon as possible.* For more information on the Grading Scheme and Feedback Policy, please visit: <http://www.yorku.ca/univsec/policies/document.php?document=86>

**In-Class Tests and Exams - the 20% Rule:** For all Undergraduate courses, except those which regularly meet on Friday evening or on a weekend, tests or exams worth more than 20% will not be held in the two weeks prior to the beginning of the official examination period. For further information on the 20% Rule, please visit: <http://secretariat-policies.info.yorku.ca/policies/limits-on-the-worth-of-examinations-in-the-final-classes-of-a-term-policy/>

**Reappraisals:** Students may, with sufficient academic grounds, request that a final grade in a course be reappraised (which may mean the review of specific pieces of tangible work). Non-academic grounds are not relevant for grade reappraisals; in such cases, students are advised to petition to their home Faculty. Students are normally expected to first contact the course director to discuss the grade received and to request that their tangible work be reviewed. Tangible work may include written, graphic, digitized, modeled, video recording or audio recording formats, but not oral work. Students need to be aware that a request for a grade reappraisal may result in the original grade being raised, lowered or confirmed. For reappraisal procedures and information, please visit the Office of the Registrar site at: <http://myacademicrecord.students.yorku.ca/grade-reappraisal-policy>

**Accommodation Procedures:** LA&PS students who have experienced a misfortune or who are too ill to attend the final examination in an ADMS course should not attempt to do so; they must pursue deferred standing. Other students should contact their home Faculty for information. For further information, please visit: <http://ds.info.yorku.ca/academic-support-accommodations/>

**Religious Accommodation:** York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. For more information on religious accommodation, please visit:

<https://w2prod.sis.yorku.ca/Apps/WebObjects/cdm.woa/wa/regobs>

**Academic Accommodation for Students with Disabilities (Senate Policy)**



The nature and extent of accommodations shall be consistent with and supportive of the integrity of the curriculum and of the academic standards of programs or courses. Provided that students have given sufficient notice about their accommodation needs, instructors shall take reasonable steps to accommodate these needs in a manner consistent with the guidelines established hereunder. For more information, please visit the Student Accessibility Services (formerly known as Counselling and Disability Services) website at <https://accessibility.students.yorku.ca>

York's disabilities offices and the Registrar's Office work in partnership to support alternate exam and test accommodation services for students with disabilities at the Keele campus. For more information on alternate exams and tests please visit <http://www.yorku.ca/altexams/>

Please alert the Course Director as soon as possible should you require special accommodations.