

RYERSON UNIVERSITY

Ted Rogers School of Information Technology Management and G. Raymond Chang School of Continuing Education

COURSE OF STUDY 2017-2018

(C)ITM 107 – Managerial Decision Making

1.0 PREREQUISITE

There are no prerequisites for this course.

2.0 INSTRUCTOR INFORMATION

- Name:
- Office Phone Number:
- E-mail address:
- Faculty/course web site(s): <https://my.ryerson.ca>
- Office Location & Consultation hours:
 - Your instructor is available for personal consultation during scheduled consultation hours which are posted on their office door or on the course shell in D2L Brightspace. However, you are advised to make an appointment by e-mail or by telephone before coming to ensure that the professor is not unavoidably absent.
- E-mail Usage & Limits:

Students are expected to monitor and retrieve messages and information issued to them by the University via Ryerson online systems on a frequent and consistent basis. ***Ryerson requires that any official or formal electronic communications from students be sent from their official Ryerson E-mail account.*** As such emails from other addresses may not be responded to.

3.0 CALENDAR COURSE DESCRIPTION

The course emphasizes how to apply various mathematical techniques in the support of managerial decisions in the various functional areas of business. It is subdivided into three major parts: part one covers the study of linear phenomena, including linear functions, matrices, systems of linear equations, linear inequalities, and linear programming; part two covers non-linear phenomena and focuses mainly on quadratic, exponential, and logarithmic functions; and part three examines probability concepts including uncertainties, conditional probability, and Bayes' formula.

4.0 COURSE OVERVIEW

The course emphasizes how to apply various mathematical techniques in the support of managerial decisions in the various functional areas of business. Topics covered include: Review of basic algebra (including linear, quadratic and other special functions), matrices, systems of linear equations, inequalities and linear programming, exponential and logarithmic functions, , and probability concepts.

5.0 COURSE OBJECTIVES

- Understand the "set" concept and set operations
- Analyze the relationship between two or more variables
- Solve systems of linear equations
- Model inequalities, build two-dimensional linear optimization models and carry out sensitivity analyses
- Graph common non-linear functions and analyze trends
- Understand random events and calculate their probabilities

6.0 EVALUATION

The grade for this course is composed of the mark received for each of the following components:

Evaluation Component	Percentage of the Final Grade
Assignments (10 assignments worth 1% per assignment)	10%
Test 1	20%
Test 2	20%
Final Exam	50%
Total	100%

NOTE: Students must achieve a course grade of at least 50% to pass this course.

Citation Format for Essays and Term Papers

All essay assignments, term paper and other written works must adhere with APA citation format. Technical errors (spelling, punctuation, proofing, grammar, format, and citations) and/or inappropriate levels of language or composition will result in marks being deducted. You are encouraged to obtain assistance from the Writing Centre (www.ryerson.ca/writingcentre) for help with your written communications as needed.

You can find APA guidelines and academic referencing from the following online resources:

a) Ryerson Writing Support Web site:

<http://www.ryerson.ca/content/dam/studentlearningsupport/resources/citation-conventions/APA%20Basic%20Style%20Guide.pdf>

b) Ryerson Library for APA style guide: <https://library.ryerson.ca/guides/style/>

7.0 POSTING OF GRADES

- ❖ All grades, on assignments or tests must be posted or made available to students through the return of their work. Grades on final exams must be posted. However, as there may be other consideration in the determination of final grades, students will receive their official final grade in the course only from the Registrar. Final official course grades may not be posted or disclosed anywhere by an instructor.
- ❖ Posting of grades on the Course Management System (D2L Brightspace) is preferred. If grades are posted in hard copy they must be posted numerically sorted by student identification number after at least the **first four digits** have been removed. Instructors must inform students in all course management documentation of the method to be used in the posting of grades. Students who wish not to have their grades posted must inform the instructor in writing.
- ❖ Some graded work will be returned to students prior to the last date to drop a course without academic penalty.

8.0 TOPICS – SEQUENCE & SCHEDULE

Session	Topic	Learning Outcomes	Readings	Activities & Due Dates
1	Sets and Set Operations	By the end of this lecture, you should be able to use sets and set operations in modelling various logical statements.	Section 0.1	Assignment 1 due at the beginning of next class
2	Functions	By the end of this lecture, you should be able to: <ol style="list-style-type: none"> 1. Represent relationships between two or more variables, using the concepts of sets and functions 2. Model, describe and graph linear relationships using the concepts of slopes and intercepts. 	Sections 1.2 and 1.3	Assignment 2 due at the beginning of next class
3	Matrices	By the end of this lecture, you should be able to use matrices and carry out algebraic operations on them.	Sections 3.1 and 3.2	Assignment 3 due at the beginning of next class
4	Matrices (Cont'd)	By the end of this lecture, you should be able to: <ul style="list-style-type: none"> - Identify the augmented matrix of a system of linear equations - Carry out row operations on an augmented matrix to 	Sections 3.3 and parts of 3.4	Assignment 4 due at the beginning of the 6 th session

		<p>solve a system of linear equations</p> <ul style="list-style-type: none"> ○ in the case where the system is square with a unique solution ○ in the case where the system is square with non-unique solutions (i.e., either with no solution at all, or with an infinite number of solutions) ○ in the case where the system is non-square <p>- Solve a system of linear equations using matrix inverses</p>		
5	Test 1			
6	Linear Programming (LP)	<p>By the end of this lecture, you should be able to:</p> <ul style="list-style-type: none"> ● Explain the concept of optimization of a linear expression subject to a set of constraints ● Model linear optimization problems ● Solve 2-dimensional linear programming models using graphical/algebraic methods 	Sections 4.1 and 4.2	Assignment 5 due at the beginning of next class
7	LP Sensitivity Analysis	<p>By the end of this lecture, you should be able to assess the impact of changing specific LP model parameters on the optimal solution, using graphical/algebraic methods</p>	To be provided by instructor	Assignment 6 due at the beginning of next class
8	Quadratic Functions	<p>By the end of this lecture, you should be able to:</p> <ol style="list-style-type: none"> 1. Analyze phenomena governed by quadratic expressions, find the vertex, the maximum/minimum, and the intercepts 2. Solve quadratic equations 	Sections 2.1, 2.2, and 2.3	Assignment 7 due at the beginning of next class

		3. Apply quadratic expressions for various business problems, such as finding break-even points and market equilibria.		
9	Exponential and Logarithmic Functions	By the end of this lecture, you should be able to: <ul style="list-style-type: none"> • Define, graph and compare exponential and logarithmic functions to each other and to power functions. • Analyze properties of exponential and logarithmic functions. • Solve various equations involving exponential and/or logarithmic expressions 	Sections 5.1, 5.2, and 5.3	Assignment 8 due at the beginning of the 11 th session
10	Test 2			
11	Introduction to Probability	By the end of this lecture, you should be able to model random phenomena and compute the probability of single and multiple events.	Sections 7.1 and 7.2	Assignment 9 due at the beginning of next class
12	Conditional Probability and Bayes Formula	By the end of this lecture, you should be able to calculate conditional probabilities, and update an estimate of a probability using newly available information.	Sections 7.3 and 7.4	Assignment 10 - due date will be specified to students through D2L.

9.0 TEACHING METHODS

The course will delivered in the form of lectures on the basic methods and techniques for managerial decision-making, followed by a Lab where students will work on in-class exercises.

10.0 TEXTS & OTHER READING MATERIALS

Title: Mathematical Applications for the Management, Life, and Social Sciences, 11th Edition

Author: Ronald J. Harshbarger & James J. Reynolds

Publisher: Brooks Cole

ISBN: 978-1305108042

11.0 VARIATIONS WITHIN A COURSE

All sections of a course (Day and CE sections) will follow the same course outline and will use the same course delivery methods, methods of evaluation, and grading schemes. Any deviations will be posted on D2L Brightspace once approved by the course coordinator.

12.0 OTHER COURSE, DEPARTMENTAL, AND UNIVERSITY POLICIES

- For more information regarding course management and departmental policies, please consult the ‘**Appendix of the Course of Study**’ which is posted on the Ted Rogers School of Information Technology Management website, <http://www.ryerson.ca/content/dam/itm/documents/cos/Appendix.pdf>. This appendix covers the following topics:
 - 12..1** Attendance & Class Participation
 - 12..2** Email Usage
 - 12..3** Request for Academic Consideration
 - 12..3.1** Ryerson Health Certificate
 - 12..3.2** Academic Accommodation for Students with Disabilities
 - 12..3.3** Religious, Aboriginal or Spiritual Observance
 - 12..3.4** Re-grading and Recalculation
 - 12..4** Examinations & Tests
 - 12..4.1** Period of Prohibition from Testing
 - 12..4.2** Make-Up of Mid-Term Tests, Assignments and Other Assessments
During the Semester
 - 12..4.3** Make –Up of Final Exams
 - 12..4.4** Missing a Make-Up
 - 12..5** Late Assignments
 - 12..6** Standard of Written Work
 - 12..7** Academic Grading Policy
 - 12..8** Academic Integrity
 - 12..8.1** Turnitin.com
 - 12..9** Student Rights