







Management Science (MGSC) 405


Quantitative Approaches to Decision Making (Revision 9)

Status:	Replaced with new revision, see the course listing  for the current revision 
Delivery mode:	Individualized study online 
Credits:	3
Area of study:	Applied Studies (Business and Administrative Studies)
Prerequisites:	MGSC 301 or MATH 215 or MATH 216 , or permission of the course professor.
Precluded:	None
Challenge:	MGSC 405 has a challenge for credit option.
Faculty:	Faculty of Business 
Notes:	Students registering in grouped study mode are advised that there may be some differences in the evaluation and course materials information indicated below. To obtain the most up-to-date information, contact the Faculty of

Business Student Support Centre at 1-800-468-6531.

Overview

MGSC 405 provides students with an introduction to an area of management science that is sometimes called “operations research.” The objective of this course is to have you develop an appreciation of the management science approach to problem formulation and solution that is now so important in today’s business and industrial sectors. The course focuses on quantitative approaches to decision making and introduces you to a variety of management science models, methods, and procedures. In this course, a greater emphasis is placed on problem modelling and the interpretation of results, and less emphasis is given to mathematical techniques and solution algorithms.

Credits earned in MGSC 405 may be applied toward the **Canadian Operational Research Society (CORS)**  diploma.

Outline

- Lesson 1: Introduction
- Lesson 2: Linear Programming—The Graphical Method
- Lesson 3: Linear Programming—Sensitivity Analysis and Computer Solution
- Lesson 4: Linear Programming Applications
- Lesson 5: Transportation, Assignment, and Transshipment Problems
- Lesson 6: Integer Linear Programming
- Lesson 7: Network Models
- Lesson 8: Waiting Line Models
- Lesson 9: Decision Making Under Conditions of Risk and Uncertainty

Learning outcomes

After completing MGSC 405, students should be able to

1. describe the management science approach to problem formulation and solution and explain its application to today's business and industrial sectors.
2. explain how various scientific and quantitative methodologies can be applied to a managerial decision-making process.
3. describe a variety of management science models and procedures pertaining to the quantitative approaches to decision making.
4. list several widely used, computer-aided management science techniques, and explain how managerial decision makers can apply and interpret these techniques.
5. apply decision-problem modelling, interpret the results, and use the related mathematical approaches and solution algorithms.

Evaluation

To **receive credit** [↗](#) for MGSC 405, you must receive a grade of at least 50 percent on each examination and an overall course grade of at least **D (50 percent)** [↗](#). You are advised not to attempt the final examination until you have received feedback on both assignments. The weightings for each assignment and the examinations are as follows:

Activity	Weight
Assignment 1	20%
Assignment 2	20%
Midterm Exam	30%
Final Exam	30%
Total	100%

The **midterm and final examinations** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator.

Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the [Exams and grades](#) section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#).

Materials

Digital course materials

Links to the following course materials will be made available in the course:

Camm, J. D., Cochran, J. J., Fry, M. J., Ohlmann, J. W., Anderson, D. R., Sweeney, D. J., & Williams, T. A. (2023). *An introduction to management science: Quantitative approaches to decision making* (16th ed.). Cengage Learning. ISBN: 9780357715581

Other Resources

All other learning resources will be available online.

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.

Full information about [challenge for credit](#) can be found in the Undergraduate Calendar.





Evaluation

To [receive credit](#) for the MGSC 405 challenge registration, you must achieve a grade of at least **D (50 percent)** on the examination.

Online Exam

 [Challenge for credit course registration form](#)

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 9, June 4, 2024

Updated February 26, 2025

View [previous revision](#) 
