

**SCM 7048 (G01/A01) (3.0 CH)**  
**ADVANCED SUPPLY CHAIN MANAGEMENT**  
**WINTER 2024**

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**TERRITORY ACKNOWLEDGEMENT**

The University of Manitoba campuses are located on original lands of Anishinaabeg, Cree, Oji-Cree, Dakota and Dene peoples, and on the homeland of the Métis Nation. We respect the Treaties that were made on these territories, we acknowledge the harms and mistakes of the past, and we dedicate ourselves to move forward in partnership with Indigenous communities in a spirit of reconciliation and collaboration.

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**INSTRUCTOR**

Name:	S. S Appadoo	Office	630 Drake Bldg
Phone:	204-474-6870	Location:	
Fax:	204-474-7545	Office Hours:	TBA
Email:	ss.appadoo@umanitoba.ca	Class Room:	537 Drake
		Class Time:	6:15pm – 9:30pm

**COURSE DESCRIPTION**

Advanced Supply Chain Management (ASCM) provides a theoretical basis for multi-disciplinary analysis and improvement of supply chains and networks, focusing especially on supply chain modelling methods to support managerial decision making. Supply chains are often globally interconnected systems with a large variety of complex relationships. This is also affecting the ways in which goods and services are developed, produced, processed and delivered to the market. The course builds upon the quantitative modelling skills provided in the course MSCI 7140 - Quantitative Analysis, which is a prerequisite for this course. *Prerequisite: MSCI 7140.*

**COURSE OBJECTIVES**

The course is obligatory for MSCM students at the University. ASCM provides a theoretical basis for supply chain modelling methods to support decision making. Students will be able to select, understand and apply appropriate analytical tools in a variety of decision making process and use Excel software package for various decision models.

On course completion, you should be able to:

- Discuss Goal Programming Models and Multi Objectives Optimization Model.
- Discuss issues related to modeling through multiple criteria. Manage relationships with key suppliers across the entire business.
- Technique for Order Preference by Similarity to Ideal Solution is a prominent distance-based MCDM technique.

- Follow the developments in the algorithm, along with a demonstration example. The intent is to show the basics of the method.
- Study Various Distance Based multi criteria decision making models and its extensions.
- Weight Determination in MCDM models, concepts of objective and subjective weights determination and the concept of entropy in weight calculation.
- Some nonlinear models and their solution approach.
- Efficiency Measure in supply chain management.
- Warehouse management, inventory models and its application in supply chain management.
- Waiting Lines models and cost analysis.
- Decision Making with Vague information.

All material may not be covered.

**COURSE MATERIALS**

*Reading Notes and research papers will be made Available on UM Learn.*

**COURSE ASSESSMENT**

Student progress will be assessed through:

- Test 1 (worth 15%)
- Individual Assignments (worth 15%)
- Project (worth 20%)
- Project Presentation (worth 5%)
- Final Examination(worth 45%)

Cumulative Marks	Grade	GPA	Performance
90-100	A+	4.5	Excellent
80-89.99	A	4.0	Very Good
75-79.99	B+	3.5	Good
70-74.99	B	3.0	Satisfactory
65-69.99	C+	2.5	Marginal
60-64.99	C	2.0	Unsatisfactory
50-59.99	D	1.0	Unsatisfactory
49.99 and below	F	0.0	Unsatisfactory

**NOTE: Class attendance is required. Missing more than 20% of this course due to absence from lectures may result in a failing grade.** It is your responsibility to inform your professor, in advance if possible, of your absence and the reason for it:

- 1) if **medical**, self-declaration form must be submitted for an illness lasting 5 consecutive days or less <https://umanitoba.ca/governance/governing-documents-students#self-declaration-for-brief-or-temporary-student-absences>, no later than 48 hours after the end of the brief absence; a medical note from your physician must be submitted for an illness lasting more than 5 days;

- 2) if a **work commitment**, a signed letter on letterhead from your supervisor is required in advance, noting clearly the date(s) you must be away for your work commitment(s);
- 3) if for **student competitions**, an email from your Asper team coach must be received in advance indicating the dates you are away at competition.

The professor will then decide how to deal with the impact of the missed classes on your final grade.

## **COURSE SCHEDULE**

### **Tentative Course Schedule – Winter 2024 T/R**

<b>Date</b>	<b>Topic</b>
Jan 24	Linear Programming Model and Excel Formulation
Jan 31	Goal Programming Model and Formulation.
Feb 7	Goal Programming Model and Solution Method
Feb 14	Introduction to Multi-Criteria Decision Making Models and Supplier Selection Process.
Feb 28	Various Multi Criteria Decision Making Models and application. Weight Determination in MCDM models, concepts of objective and subjective weights determination and the concept of entropy in weight calculation.
March 6	Test 1
March 13	Decision Theory and Risk. Warehouse management, inventory models and its application in supply chain management. Term Project Discussion.
March 20	Guest Lectures.
March 27	Waiting Lines models and cost analysis of waiting lines.
April 3	Decision Making with Vague information. Project Presentations.
Apr 12 6:00pm – 9:00pm	Final Exam

All material may not be covered.

## **ACADEMIC REGULATIONS AND STUDENT SERVICES**

### **HUMAN ETHICS APPROVAL FOR DATA COLLECTION**

As part of coursework, if you will be collecting data from people who are not students in this class, you must obtain Human Ethics approval from the UofM's Research Ethics Board (REB) prior to data collection. This applies to data collection such as surveys, interviews, focus groups, experiments, video recording, etc., where a respondent is solicited for participation.

If the entire class will be working on the same project, your instructor will apply for human ethics approval from the REB. If individuals or small groups of students will be working on different projects, it is the responsibility of the students to obtain approval (only one group member needs to apply). Your instructor will tell you whether s/he will be or you need to. **When in doubt, please talk to your instructor.**

Instructions and forms to apply for human ethics approval can be found at:  
<http://umanitoba.ca/research/orec/ethics/guidelines.html>

In most cases, you will be using the "Protocol Submission Form" which is under the "REB Forms - Fort Garry Campus" heading.

It can take up to six weeks to process human ethics applications and obtain approval. Therefore, plan early. Note that approval must be obtained prior to data collection and cannot be obtained during the data collection phase or retroactively. Violation can get you, your instructor, and the Asper School in serious trouble with the REB.

The following do not require REB approval:

- a) Projects where students are conducting the research on themselves during class time;
- b) Projects involving the use of records or information that is in the public domain, including the use of anonymous secondary data and surveys or questionnaires that have already been published;
- c) Projects involving the use of naturalistic observation where there is no reasonable expectation of privacy (i.e. public park).
- d) Practicum or job training projects where students are fully integrated into the organization's operational practices and are not conducting research;
- e) Projects where the intent is to use the information to provide advice, diagnosis, identification of appropriate interventions or general advice for a client;
- f) Projects where the intent is to develop skills which are standard practice within a profession (e.g. observation, assessment, intervention, evaluation, auditing); or
- g) Projects where the information gathering processes are part of the normal professional relationship between the student and the participants.

**If you have any questions, please contact [humanethics@umanitoba.ca](mailto:humanethics@umanitoba.ca) or your instructor.**

UNCLAIMED ASSIGNMENT POLICY

Pursuant to the FIPPA Review Committee's approved recommendations of August 15, 2007, all unclaimed student assignments will become the property of the faculty and will be subject to destruction six months after the completion of any given academic term.

## **STUDENT SERVICES AND SUPPORTS**

The University of Manitoba provides many different services that can enhance learning and provide support for a variety of academic and personal concerns. You are encouraged to visit the below websites to learn more about these services and supports. If you have any questions or concerns, please do not hesitate to contact your instructor or the Graduate Program Office.

<b>For Information on...</b>	<b>...follow this link</b>
Course Outlines, Year-at-a-Glance, Concentrations, Textbooks, VW Dates and Final Exams	<a href="#">Asper Graduate Student Resources</a>
Exam Rescheduling Policy - <i>Please refer to Missing a Test/Exam on page 18 of the MBA Student Handbook</i>	<a href="#">MBA Student Handbook</a>
Help with research needs such as books, journals, sources of data, how to cite, and writing	<a href="#">Library Resources</a>
Tutors, workshops, and resources to help you improve your learning, writing, time management, and test-taking skills	<a href="#">Writing and Learning Support</a>
Support and advocacy for students with disabilities to help them in their academic work and progress	<a href="#">Student Accessibility Services</a>
Copyright-related questions and resources to help you avoid plagiarism or intellectual property violations	<a href="#">Copyright Office</a>
Student discipline bylaws, policies and procedures on academic integrity and misconduct, appeal procedures	<a href="#">Academic Integrity</a>
Policies & procedures with respect to student discipline or misconduct, including academic integrity violations	<a href="#">Student Discipline</a>
Students' rights & responsibilities, policies & procedures, and support services for academic or discipline concerns	<a href="#">Student Advocacy</a>
Your rights and responsibilities as a student, in both academic and non-academic contexts	<a href="#">Your rights and responsibilities</a>
Full range of medical services for any physical or mental health issues	<a href="#">University Health Service</a>
Information on health topics, including physical/mental health, alcohol/substance use harms, and sexual assault	<a href="#">Health and Wellness</a>
Any aspect of mental health, including anxiety, stress, depression, help with relationships or other life concerns, crisis services, and counselling.	<a href="#">Student Counselling Centre</a>

Support services available for help regarding any aspect of student and campus life, especially safety issues	<a href="#">Student Support Case Management</a>
Resources available on campus, for environmental, mental, physical, socio-cultural, and spiritual well-being	<a href="#">Live Well @ UofM</a>
Help with any concerns of harassment, discrimination, or sexual assault	<a href="#">Respectful Work and Learning Environment</a>
Concerns involving violence or threats, protocols for reporting, and how the university addresses them	<a href="#">Violent or Threatening Behavior</a>

# ACADEMIC INTEGRITY

I.H. Asper School of Business, The University of Manitoba

It is critical to the reputation of the I. H. Asper School of Business and of our degrees that everyone associated with our faculty behaves with the highest academic integrity. As the faculty that helps create business and government leaders, we have a special obligation to ensure that our ethical standards are beyond reproach. Any misconduct in our academic transactions violates this trust. The University of Manitoba Graduate Calendar addresses the issue of academic misconduct under the heading "Plagiarism and Cheating." Specifically, acts of academic misconduct include, but are not limited to:

- using the exact words of a published or unpublished author without quotation marks and without referencing the source of these words
- duplicating a table, graph or diagram, in whole or in part, without referencing the source
- paraphrasing the conceptual framework, research design, interpretation, or any other ideas of another person, whether written or verbal (e.g., personal communications, ideas from a verbal presentation) without referencing the source
- copying the answers of another student in any test, examination, or take-home assignment
- providing answers to another student in any test, examination, or take-home assignment
- taking any unauthorized materials into an examination or term test (crib notes)
- impersonating another student or allowing another person to impersonate oneself for the purpose of submitting academic work or writing any test or examination
- stealing or mutilating library materials
- accessing tests prior to the time and date of the sitting
- changing name or answer(s) on a test after that test has been graded and returned
- submitting the same paper or portions thereof for more than one assignment, without discussions with the instructors involved.

Many courses in the I. H. Asper School of Business require group projects. Students should be aware that group projects are subject to the same rules regarding academic misconduct. Because of the unique nature of group projects, all group members must exercise extraordinary care to insure that the group project does not violate the policy on Academic Integrity. Should a violation occur on a group project, all group members will be held jointly accountable, no matter what their individual level of involvement in the specific violation.

Some courses, while not requiring group projects, encourage students to work together in groups (or at least do not prohibit it) before submitting individual assignments. Students are encouraged to discuss this issue as it relates to academic integrity with their instructor to avoid violating this policy.

In the I. H. Asper School of Business, all suspected cases of academic misconduct involving a graduate student (i.e. MBA, MFin, MSCM, MSc or PhD student) will be reported directly by the instructor to the Dean of the Faculty of Graduate Studies.

## AI TOOLS

AI tools can be used to enhance learning and problem-solving skills, but they should not replace independent thinking and learning. Students must exercise critical thinking when using AI tools and acknowledge their use in academic work. Prohibited uses include generating or completing academic work with AI tools without appropriate acknowledgement. Academic honesty is paramount, and students should accurately represent their individual effort and knowledge. Faculty will provide guidance on AI tool usage and incorporate discussions on AI ethics and academic integrity. Violations may lead to disciplinary actions, including academic penalties or suspension.



## FACULTY BIOGRAPHY

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I.H. Asper School of Business, The University of Manitoba

### ABOUT THE INSTRUCTOR

Professor Appadoo is both a professor, and the institutional head in the Department of Supply Chain Management at the University of Manitoba, Canada. In addition to teaching undergraduate and graduate courses, he is a prolific researcher with his work continually being published in esteemed journals (both national and international) and referred proceedings. His tenacious and innovative research has garnered global acclaim – being frequently cited by various academics both domestically and internationally. Professor Appadoo has published in journals such as *European Journal of Operational Research (EJOR)*, *Annals of Operational Research (AOR)* and *Fuzzy Optimization and Decision Making (FODM)*, *International Journal of Production Economics (IJPE)*, and *Information Science*, among others. Professor Appadoo's work spans interdisciplinary horizons, exemplified by his partaking in collaborative projects - including working with over fifty researchers from around the world in a wide variety of academic disciplines. Having published over one hundred and fifty articles in international journals and proceedings, his publications have appeared in internationally revered journals - specializing in management science and supply chain management. His articles were included in the 'Top 25 Hottest Articles' list for Science Direct, published by Elsevier and were among the most cited articles on Elsevier.

Dr. Appadoo is primarily interested in the development of analytics techniques and Decision-Making Systems. He is currently working on quantitative and fuzzy decision-making models, as well as multi-criteria and group decision-making. He has presented his work at several prestigious conferences and research workshops such as: INFORMS Annual Meeting, ASAC, CORS Annual Meeting, IEEE, IEOM and DSI Annual Conference. Currently, he is co-authoring a book titled, *Efficient methods for finding more-for-less solutions of symmetric intuitionistic fuzzy linear transportation problems and intuitionistic fuzzy linear fractional transportation problems with mixed constraints*.

His research is funded by the National Sciences and Engineering Research Council of Canada (NSERC), and he has received a Discovery Grant as a Principal Investigator. The Discovery Grants Program promotes and maintains a diversified base of high-quality research capability in Natural Science and Engineering in Canadian universities, thereby fostering research excellence and providing a stimulating environment for dynamic research training. Professor Appadoo is a recipient of the Associates' Achievement Award, Joint UM/UMFA Committees on Merit Award, and several best paper awards at some national and international conferences. Professor Appadoo also serves on the editorial review boards for many international Journals. In addition to his academic prowess, professor Appadoo is revered for his capabilities as an educator. Students commend Professor Appadoo's teaching methodology, and consistently rank his classes and instruction as exceptional. He serves on departmental, faculty, and university committees and contributes extensively to the professional community through review processes – operating as a conference chair and academic reviewer. He has contributed enormously in the development of the Ph.D. program for the Department of Supply Chain Management and has served as an external examiner for various MSc and Ph.D. thesis committees.