MASTER OF SCIENCE IN MANAGEMENT SCIENCE AND QUANTITATIVE METHODS

Program Overview

Concordia's advanced degree in Management Science & Quantitative Methods (MSQM) provides professionals across industries and career levels with the skillsets needed to make strategic, data-driven decisions within their organizations. Throughout the program, students will explore analytical methods and tools to understand, interpret and apply data to complex, real-world problems, while honing leadership skills critical in today's global business environment.

MSQM is ideal for busy, working professionals with a course schedule accommodating a work, life, and academic balance. An accelerated online format offering students a short break between courses. During fall semester, students select course options that align with their experience level and career goals. The program culminates with a professional capstone project focused on relevant business issues and challenges.

Program Goal and Outcomes

GOAL

The goal of the Management Science & Quantitative Methods program is to ensure managers have the tools and knowledge needed to effectively use data in their decision-making. Students will also have an advanced knowledge and skillset in leadership within their organization. The mix of strong analytical skills combined with exceptional leadership skills will position graduates for a business career.

OUTCOMES

- Evaluate management practices from a global perspective.
- Apply leadership principles, strategies and skills within business, management, and financial contexts.
- Demonstrate effective communication skills related to business concepts and audiences.
- Understand cost accounting methodologies, financial concepts, and financial reporting within organizations.
- Organize data to inform sound business recommendations, impacting growth, sustainability, and ROI within an organization.
- Evaluate and apply analytical decisions to global supply chain and risk management challenges.
- Demonstrate the use of quantitative methods using analytical tools to make informed data-driven decisions.

Degree Requirements

- A baccalaureate degree from a regionally accredited institution
- A minimum cumulative GPA of 3.0

Admission Requirements

Information about admission requirements and application materials is available on the Graduate and Continuing Studies website (https://concordiacontinuingstudies.com/graduate-accelerated-post-bacc/master-education/admission-application/).

Transfer Credit

Transfer credits are allowed to no more than one-third of the total number of graduate hours required.

Thirty five credits are required, so no more than 11.66 credits can be transferred in to count towards the program.

Tuition and Fees

For information on tuition and fees, please visit the Graduate and Continuing Studies website (https://concordiacontinuingstudies.com/).

Requirements

The requirements for a **Master of Science in Management Science and Quantitative Methods** are listed below.

Code	Title	Hours
Required Courses		
DATA 600	Data Analysis & Visualization	3
BUSN 668	Advanced Leadership	3
DATA 665	Advanced Operations Management/Research	3
DATA 685	Integrative Capstone Experience I	3
DATA 686	Integrative Capstone Experience II	3
Elective Courses		
Select a minimum of 20 credits from the following:		20
ACCT 626	Cost Accounting	
BUSN 610	Supply Chain & Risk Management	
BUSN 662	Leadership: Theory and Application	
DATA 608	Statistics & Research Analysis	
DATA 617	Forecasting	
DATA 618	Data Mining	
FIN 603	Corporate Finance	
MATH 635	Operations Management/Research	
ACCT 680	Special Topics	
BUSN 680	Special Topics	
DATA 680	Special Topics	
FIN 680	Special Topics	
MATH 680	Special Topics	
Total Hours		**35**

Courses

ACCT 626 - Cost Accounting, 3 credits.
This course focuses on the development and analysis of cost information used by management decision makers to evaluate and improve company performance. It includes product cost analysis, profitability planning, performance analysis and emerging cost strategies.

ACCT 680 - Special Topics, 0-4 credits.
Repeatable: Yes

BUSN 610 - Supply Chain & Risk Management, 3 credits.
The main purpose of the course will be to learn about supply chain decisions. The students will be exposed to current topics in effectively managing supply chains, including supply chain design, strategies, integration, visualization, analytics, risk, and mitigation. The supply chain is constantly making changes and exposed to endogenous and exogenous risks, which cause interruptions to the flow of products and a significant impact on the performance of the business. Risks spread rapidly through the chain due to the interdependence of its various nodes. Thus understanding the supply chain risks can enable organizations to take effective action to identify, assess, and mitigate risks within their end-to-end supply chain.

BUSN 662 - Leadership: Theory and Application, 3 credits.
This course is designed to provide a comprehensive view of the nature and practice of leadership. Among the topics explored are historical, philosophical and theoretical foundations; ethics and values; power and influence; conflict management; and effective leadership in formal organizations.

BUSN 668 - Advanced Leadership, 3 credits.
This course explores advanced concepts and theories related to leadership with an emphasis on contemporary topics of leadership and factors that guide leader behavior. Students will examine classic and current scholarship to bridge theory and practice. The course focuses on critical thinking about leadership.

BUSN 680 - Special Topics, 0-4 credits.
Repeatable: Yes

DATA 600 - Data Analysis & Visualization, 3 credits.
This course focuses on technical and visual aspects of inspecting and presenting data. Technical topics include importing data from various sources, establishing relationships between data tables, transforming data, filtering, sorting, and aggregation. Visuals will be designed to focus attention on what the data is saying, with a special focus on visuals that respond dynamically to user manipulations. Emphasis will be placed on the design/refinement cycle for visualizations.

DATA 608 - Statistics & Research Analysis, 3-4 credits.
This course allows the student to understand and demonstrate knowledge of descriptive and inferential statistics used in research, and apply their knowledge to real-world situations and research questions. Emphasis is placed on distinguishing similarities and differences among statistical tests, and recognizing the essentiality of statistics for producing and comprehending scientific research

DATA 617 - Forecasting, 3 credits.
Forecasting is the science of predicting future events and outcomes. In this course students will learn how to effectively use both data and theory to create forecasts and how to quantify and communicate uncertainty in forecasts. Topics include random walks, Markov models, time series analysis, Bayesian methods and qualitative forecasting.
Frequency: *Alternate Years - 1st Semester*

DATA 618 - Data Mining, 3 credits.
Data mining is the study of discovering and assessing patterns, relationships and information within large data sets. This course provides an introduction to data mining with an emphasis on predictive modeling techniques and machine learning algorithms. Examples and applications will be drawn from various disciplines.
Prerequisites: DATA 608

DATA 665 - Advanced Operations Management/Research, 3 credits.
Students will learn specialized applications of operations research to problems arising from business. These will include data envelope analysis, transportation/transshipment problems, goal programming, network models (including PERT-CPM), and capital budgeting. Other topics such as inventory models, facility location problems, etc. will be covered as time and student interest permit. Special attention will be paid to the development and analysis of models for realistic medium- to large-scale problems.

DATA 680 - Special Topics, 0-4 credits.
Repeatable: Yes

DATA 685 - Integrative Capstone Experience I, 3 credits.
The main purpose of the capstone course is to provide the culminating, integrative curricular experience for students. The course consolidates students' learning to develop a project with knowledge gained from many areas in the MSQM. The focuses of the course are case analyses and professional development.

DATA 686 - Integrative Capstone Experience II, 3 credits.
Integrative Capstone Experience II's main purpose is to provide a structured means for students to get hands-on experience in real-life business analytics practices. Students will apply skills and knowledge gained throughout the MSQM program, such as statistical techniques, models, and analytical decision-making that support the business-defined problems scoped collaboratively between companies and Concordia.
Prerequisites: DATA 685 (may be taken concurrently)

FIN 680 - Special Topics, 0-4 credits.
Repeatable: Yes

MATH 635 - Operations Management/Research, 3 credits.
An introduction to the theory and practice of quantitative modeling and optimization, with applications to computer simulation and business resource management. Possible topics include linear and nonlinear programming, network analysis, game theory, deterministic and probabilistic models.

MATH 680 - Special Topics, 0-4 credits.
Repeatable: Yes