Bachelor of Science: Data Science 2024/25

MOUNT ROYAL UNIVERSITY
Faculty of Science and Technology

✓	YEAR ONE – Fall	✓	YEAR ONE – Winter
	COMP 1701: Introduction to Problem Solving and Programming		DATA 2721: Introduction to Databases
	MATH 1200: Calculus for Scientists I		MATH 1203: Linear Algebra for Scientists and Engineers
	One of ENTR 2301: Innovation & Entr. Experience **OR** MGMT 2130: Mgmt. Principles & Practices **OR** SINV 2201: Intro to Social Innovation		MATH 2234: Mathematical Statistics
	GNED Foundation Cluster 4: one of GNED 1401, 1403 or 1404		GNED Foundation Cluster 2: one of GNED 1201, 1202, or 1203
	GNED Foundation Cluster 1: one of GNED 1101 or 1103		GNED Foundation Cluster 3: one of GNED 1301, 1303, or 1304

Choosing a Concentration:
When choosing a concentration, please consult with an Academic Advisor prior to registering for Year Two. Please see page 2 for the list of concentrations offered for the major.

✓	YEAR TWO – Fall	✓	YEAR TWO – Winter
	DATA 2402: Programming for Data Scientists		DATA 3463: Foundations of Data Acquisition
	MATH 2071: Mathematics for Data Scientists		COMP 3309: Information Technology and Society
	MATH 2303: Linear Algebra for Data Science **OR** MATH 2444: Statistical Data Analysis (*Fall or Winter)*		MATH 2303: Linear Algebra for Data Science **OR** MATH 2444: Statistical Data Analysis (*Fall or Winter)*
	MGMT 3210: Business Communication		GNED Tier 2 Cluster 2
	GNED Tier 2 Cluster 3		Concentration course 1
	COOP 0001: Orientation to Cooperative Education (*must be taken before DATA 3491*)*		

✓	YEAR THREE – Fall	✓	YEAR THREE – Winter
	DATA 3464: Foundations of Data Processing		DATA 3453: Data Visualization
	MATH 3454: Regression and Time Series Analysis		SCIE 3030: Decolonizing Science
	MGMT 3420: Management Decision Analysis		Concentration Course 3
	GNED Tier 2 Cluster 4		Concentration Course 4
	Concentration Course 2		Elective course
✓	**YEAR THREE – Spring / Summer**		
	Data 3491: Work Integrated Learning (Mandatory Work Experience)		

✓	YEAR FOUR – Fall	✓	YEAR FOUR – Winter
	DATA 4465: Machine Learning		GNED Tier 3:
	GNED Tier 3:		Concentration Course 6
	GNED Tier 3:		Elective course
	Concentration Course 5		Elective course
	Elective course		

PLEASE READ: Many courses are prerequisites for upper-year courses. Prerequisites and course descriptions can be found in the Academic Calendar under the 'courses' link at https://catalog.mtroyal.ca/

General Education: General Education approved courses, otherwise known as "GNED requirements" are designed to give you a well-rounded knowledge base and are organized into four thematic clusters.

Cluster 1: Numeracy & Scientific Literacy
Cluster 2: Values, beliefs & Identity
Cluster 3: Community & Society
Cluster 4: Communication

Each Cluster has three levels: Foundation, Tier 2 and Tier 3. Students must take a foundation-level course from each of the four clusters, three Tier 2 GNEDs (one from each of cluster 2, 3, and 4), and three Tier 3 GNEDs from at least two clusters, for a total of ten GNED courses.

Junior courses are courses at the 1000 level. Students are allowed a maximum of 16 junior courses.

Electives are any three-credit course. It is advised that students select senior-level electives wherever possible to avoid exceeding the limit of 16 junior courses.

Advising Plan: This a suggested sequence for taking the required courses for your major. This plan factors in prerequisite requirements and will allow you to complete your degree in four years, provided you complete 5 courses per semester. This is just one example of how you can complete your degree requirements; you may find that a different sequence or smaller course load works better for you. To be considered full time, a student must be enrolled in a minimum of three, 3-credit courses.

It is your responsibility to plan your schedule and make sure that you are meeting necessary requirements, including prerequisites. Consider consulting your advisor if you are uncertain or require clarification.

This document is only intended to be a guide for students and should be used together with the MRU Academic Calendar that states academic policies and degree requirements. Be sure to consult with your Academic Advisor to confirm graduation requirements, or if you have any questions.

Approved Concentrations:

Please choose one of the following six-course concentrations as part of your program.

Computing and Big Data *Take the following two courses:* COMP 2403: Functional Programming COMP 4422: Big Data Database Management *Choose four of the following:* COMP 1633: Introduction to Computer Science II COMP 2631: Information Structures I COMP 2511: Web Design I COMP 3533: Network Infrastructure and Security COMP 3625: Artificial Intelligence COMP 4635: Distributed Systems DATA 5496: Data Science Capstone	**Finance** *Take the following four courses:* ACCT 2121: Financial Accounting Concepts FNCE 3227: Introduction to Finance FNCE 3228: Advanced Corporate Finance FNCE 3302: International Finance *Choose two of the following:* FNCE 3304: Business and Financial Modeling FNCE 4408: Financial Risk Management DATA 5496: Data Science Capstone
Logistics and Supply Chain Management *Take the following three courses:* LSCM 2201: Introduction to Supply Chain LSCM 2301: Introduction to Physical Distribution LSCM 3403: Operations Management *Choose three of the following:* LSCM 3203: Principles of Quality Management LSCM 3303: Foundations of Purchasing LSCM 3305: Physical Distribution and Logistics LSCM 3402: Inventory & Warehouse Management LSCM 3407: Business Negotiations/ Project Management DATA 5496: Data Science Capstone	**Mathematics and Statistics** *Take the following course:* MATH 2200: Calculus for Scientists II *Choose five of the following:* MATH 3101: Numerical Analysis MATH 3465: Multivariate Statistical Analysis MATH 3372: Graph Theory and Optimization MATH 3552: Probability MATH 4553: Stochastic Processes MATH 4303: Fourier Analysis for Data Science DATA 5496: Data Science Capstone

NOTE: This is a draft curriculum pending formal approval at MRU General Faculties Council. Curriculum may be subject to change.