Data Science and Analytics

This section presents the requirements for programs in:

- M.A.Sc. Data Science and Analytics
- M.C.S. Data Science and Analytics
- M.Eng. Data Science and Analytics
- M.I.T. Data Science and Analytics
- M.Sc. Data Science and Analytics
- Ph.D. Data Science and Analytics

M.A.Sc. Data Science and Analytics (5.0 credits)

M.A.Sc. Data Science - Thesis pathway (5.0 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 0.5 credit in approved SYSC electives (see list below)	0.5
3. 0.5 credit in approved electives not in SYSC (see lists below)	0.5
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 2.5 credits in:	2.5
DATA 5929 [2.5] Thesis - MASc	
Total Credits	**5.0**

M.C.S. Data Science and Analytics (5.0 credits)

M.C.S. Data Science - Thesis pathway (5.0 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 0.5 credit in approved COMP electives (see list below)	0.5
3. 0.5 credit in approved electives not in COMP (see lists below)	0.5
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 2.5 credits in:	2.5
DATA 5939 [2.5] Thesis - MCS	
Total Credits	**5.0**

M.Eng. Data Science and Analytics (4.5 credits)

M.Eng. Data Science and Analytics - Coursework pathway (4.5 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 1.0 credit in approved SYSC electives (see list below)	1.0
3. 0.5 credit in any graduate-level SYSC course	0.5
4. 1.0 credit in approved electives from two units not in SYSC (see lists below)	1.0
5. 1.0 credit in electives from any participating DSA unit	1.0
Total Credits	**4.5**

M.Eng. Data Science and Analytics - Project pathway (4.5 credits)

1. 1.0 credit in:	1.0

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DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 1.0 credit in approved SYSC electives (see list below)	1.0
3. 1.0 credit in approved electives from two units not in SYSC (see lists below)	1.0
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 1.0 credit in:	1.0
DATA 5928 [1.0] Project - MEng	
Total Credits	**4.5**

M.I.T. Data Science and Analytics (4.5 credits)(5.0 credits)

M.I.T. Data Science - Thesis pathway (5.0 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 0.5 credit in approved ITEC electives (see list below)	0.5
3. 0.5 credit in approved electives not in ITEC (see lists below)	0.5
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 2.5 credits in:	2.5
DATA 5919 [2.5] Thesis - MIT	
Total Credits	**5.0**

M.I.T. Data Science - Project pathway (4.5 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 1.0 credit in approved ITEC electives (see list below)	1.0
3. 1.0 credit in approved electives from two units not in ITEC (see lists below)	1.0
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 1.0 credit in:	1.0
DATA 5918 [1.0] Project - MIT	
Total Credits	**4.5**

M.Sc. Data Science and Analytics (4.5 credits)(5.0 credits)

M.Sc. Data Science - Thesis pathway (5.0 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	
2. 0.5 credit in approved STAT elective (see list below)	0.5
3. 0.5 credit in approved electives not in STAT (see lists below)	0.5
4. 0.5 credit in elective from any participating DSA unit	0.5
5. 2.5 credits in:	2.5
DATA 5909 [2.5] Thesis - MSc	
Total Credits	**5.0**

M.Sc. Data Science - Project pathway (4.5 credits)

1. 1.0 credit in:	1.0
DATA 5000 [0.5] Data Science Seminar	
DATA 5001 [0.5] Fundamentals in Data Science and Analytics	

2. 1.0 credit in approved STAT electives (see list below)		1.0
3. 1.0 credit in approved electives from two units not in STAT (see lists below)		1.0
4. 0.5 credit in elective from any participating DSA unit		0.5
5. 1.0 credit in:		1.0
DATA 5908 [1.0]	Project - MSc	
Total Credits		**4.5**

Ph.D. Data Science and Analytics (1.5 credits)

Requirements (1.5 credits)

1. 0.5 credit in:		0.5
DATA 5001 [0.5]	Fundamentals in Data Science and Analytics	
2. 1.0 credit in elective, approved by supervisor (see lists below)		1.0
3. 0.0 credit in Comprehensive Exam		
4. 0.0 credit in Thesis Proposal		
5. 0.0 credit in:		0.0
DATA 6909 [0.0]	Thesis - PhD	
Total Credits		**1.5**

Approved Electives

Note: DSA students may not register for COMP courses offered at the University of Ottawa. These courses are reserved for students in the Joint Institute Program (OCICS) as noted in the section information of the public schedule.

COMP

COMP 5101 [0.5]	Distributed Databases and Transaction Processing Systems
COMP 5107 [0.5]	Statistical and Syntactic Pattern Recognition
COMP 5111 [0.5]	Data Management for Business Intelligence
COMP 5112 [0.5]	Algorithms for Data Science
COMP 5113 [0.5]	Machine Learning for Healthcare
COMP 5116 [0.5]	Machine Learning
COMP 5117 [0.5]	Mining Software Repositories
COMP 5118 [0.5]	Trends in Big Data Management
COMP 5209 [0.5]	Visual Analytics
COMP 5306 [0.5]	Data Integration
COMP 5704 [0.5]	Parallel Algorithms and Applications in Data Science
COMP 5900 [0.5]	Selected Topics in Computer Science

ITEC

ITEC 5102/ SYSC 5500 [0.5]	Designing Secure Networking and Computer Systems
ITEC 5103 [0.5]	Cloud and Datacentre Networking
ITEC 5205 [0.5]	Design and Development of Data-Intensive Applications
ITEC 5206 [0.5]	Data Protection and Rights Management
ITEC 5207 [0.5]	Data Interaction Techniques

STAT

STAT 5504 [0.5]	Stochastic Processes and Time Series Analysis
STAT 5509 [0.5]	Multivariate Analysis
STAT 5702 [0.5]	Modern Applied and Computational Statistics
STAT 5713 [0.5]	Advanced Data Mining

SYSC

SYSC 5103 [0.5]	Software Agents
SYSC 5206 [0.5]	Resource Management on Distributed Systems
SYSC 5405 [0.5]	Pattern Classification and Experiment Design
SYSC 5703 [0.5]	Integrated Database and Cloud Systems

Admission

M.A.Sc.

The normal requirement for admission to the M.A.Sc. Data Science and Analytics is a bachelor's degree in electrical engineering, software engineering, computer systems engineering, or a related discipline with an average of at least B+.

M.C.S.

The normal requirement for admission to the M.C.S. Data Science and Analytics is an honours bachelor's degree in computer science or equivalent with an average of at least B+. An equivalent degree would include at least twelve computer science half-credits, two of which must be at the 4000-level, and eight half-credits in mathematics, one of which must be at the 3000- or 4000-level.

M.Eng.

The normal requirement for admission to the M.Eng. Data Science and Analytics is a bachelor's degree in electrical engineering, software engineering, computer systems engineering, or a related discipline with an average of at least B+.

M.I.T.

The normal requirement for admission to the M.I.T. Data Science and Analytics is an undergraduate degree in information technology, computer science, computer systems engineering, electrical engineering, arts, humanities, psychology, communication and business, or a related discipline with an average of at least B+, and intermediate programming skills.

M.Sc.

The normal requirement for admission to the M.Sc. Data Science and Analytics is an honours bachelor's degree in mathematics, statistics or the equivalent, with an average of B+ or higher in the honours subject and B- or higher overall.

Regulations

See the General Regulations section of this Calendar.

Regularly Scheduled Break

For immigration purposes, the summer term (May to August) for master's programs in Data Science and Analytics is considered a regularly scheduled break approved by the University. Students should resume full-time studies in September.

Data Science (DATA) Courses

DATA 5000 [0.5 credit]
Data Science Seminar
Cloud based distributed systems, statistics, machine learning, use of complex ecosystems of tools and platforms, data ethics, and communication skills to explain advanced analytics. Students choose a project in Big Data management and/or analysis, deliver a paper and give a class presentation on their findings.

DATA 5001 [0.5 credit] (MAT 5818)
Fundamentals in Data Science and Analytics
Ethics in Data Science and Analytics, visualization and knowledge discovery in massive datasets; unsupervised learning: clustering algorithms; dimension reduction; supervised learning: pattern recognition, smoothing techniques, classification.
Precludes additional credit for STAT 5703.

DATA 5908 [1.0 credit]
Project - MSc

DATA 5909 [2.5 credits]
Thesis - MSc

DATA 5918 [1.0 credit]
Project - MIT

DATA 5919 [2.5 credits]
Thesis - MIT

DATA 5928 [1.0 credit]
Project - MEng

DATA 5929 [2.5 credits]
Thesis - MASc

DATA 5939 [2.5 credits]
Thesis - MCS

DATA 6909 [9.0 credits]
Thesis - PhD