Data Science, Analytics, and Artificial Intelligence

This section presents the requirements for programs in:

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

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

M.A.Sc. Data Science, Analytics, and Artificial Intelligence - 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 DSAAI program website for list of applicable electives)		0.5
3. 0.5 credit in approved electives not in SYSC (see DSAAI program website for list of applicable electives)		0.5
4. 0.5 credit in elective from any participating DSAAI unit		0.5
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
5. 2.5 credits in:		2.5
DATA 5929 [2.5]	Thesis - MASc	
Total Credits		**5.0**

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

M.C.S. Data Science, Analytics, and Artificial Intelligence - 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 DSAAI program website for list of applicable electives)		0.5
3. 0.5 credit in approved electives not in COMP (see DSAAI program website for list of applicable electives)		0.5
4. 0.5 credit in elective from any participating DSAAI unit		0.5
5. 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (See DSAAI program website for list)		
6. 2.5 credits in:		2.5
DATA 5939 [2.5]	Thesis - MCS	
Total Credits		**5.0**

M.Eng. Data Science, Analytics, and Artificial Intelligence (4.5 credits)

M.Eng. Data Science, Analytics, and Artificial Intelligence - 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 DSAAI program website for list of applicable electives)		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 DSAAI program website for list of applicable electives)		1.0
5. 1.0 credit in electives from any participating DSAAI unit		1.0
Note: 0.5 credit from above electives must be in application of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
Total Credits		**4.5**

M.Eng. Data Science, Analytics, and Artificial Intelligence - 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 SYSC electives (see DSAAI program website for list of applicable electives)		1.0
3. 1.0 credit in approved electives from two units not in SYSC (see DSAAI program website for list of applicable electives)		1.0
4. 0.5 credit in elective from any participating DSAAI unit		0.5
Note: 0.5 credit from above electives must be in applications of artificial intelligence and machine learning (see DSAAI program website for list of applicable electives)		
5. 1.0 credit in:		1.0
DATA 5928 [1.0]	Project - MEng	
Total Credits		**4.5**

M.I.T. Data Science, Analytics, and Artificial Intelligence (5.0 credits)

M.I.T. Data Science, Analytics, and Artificial Intelligence - 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 DSAAI program website for list of applicable electives)		0.5
3. 0.5 credit in approved electives not in ITEC (see DSAAI program website for list of applicable electives)		0.5
4. 0.5 credit in elective from any participating DSAAI unit		0.5

Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
5. 2.5 credits in:		2.5
DATA 5919 [2.5]	Thesis - MIT	
Total Credits		**5.0**

M.I.T. Data Science, Analytics, and Artificial Intelligence - Project 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. 1.0 credit in approved ITEC electives (see DSAAI program website for list of applicable electives)		1.0
3. 1.0 credit in approved electives from two units not in ITEC (see DSAAI program website for list of applicable electives)		1.0
4. 0.5 credit in elective from any participating DSAAI unit		0.5
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
5. 1.5 credits in:		1.5
DATA 5918 [1.5]	Project - MIT	
Total Credits		**5.0**

M.I.T. Data Science, Analytics, and Artificial Intelligence - Coursework 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. 2.0 credits in approved ITEC electives (see DSAAI program website for list of applicable electives)		2.0
3. 1.0 credit in approved electives from two units not in ITEC (see DSAAI program website for list of applicable electives)		1.0
4. 1.0 credit in electives from any participating DSAAI unit		1.0
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
Total Credits		**5.0**

M.Sc. Data Science, Analytics, and Artificial Intelligence (5.0 credits)

M.Sc. Data Science, Analytics and Artificial Intelligence - 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 DSAAI program website for list of applicable electives)		0.5
3. 0.5 credit in approved electives not in STAT (see DSAAI program website for list of applicable electives)		0.5
4. 0.5 credit in elective from any participating DSAAI unit		0.5
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
5. 2.5 credits in:		2.5
DATA 5909 [2.5]	Thesis - MSc	
Total Credits		**5.0**

M.Sc. Data Science, Analytics, and Artificial Intelligence - Project 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. 1.0 credit in approved STAT electives (see DSAAI program website for list of applicable electives)		1.0
3. 1.0 credit in approved electives from two units not in STAT (see DSAAI program website for list of applicable electives)		1.0
4. 0.5 credit in elective from any participating DSAAI unit		0.5
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
5. 1.5 credits in:		1.5
DATA 5908 [1.5]	Project - MSc	
Total Credits		**5.0**

M.Sc. Data Science, Analytics and Artificial Intelligence - Coursework 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. 2.0 credits in approved STAT electives (see DSAAI program website for list of applicable electives)		2.0
3. 1.0 credit in approved electives from two units not in STAT (see DSAAI program website for list of applicable electives)		1.0
4. 1.0 credit in elective from any participating DSAAI unit		1.0
Note: 0.5 credit from above electives must be in applications of artificial intelligence or machine learning (see DSAAI program website for list of applicable electives)		
Total Credits		**5.0**

Ph.D. Data Science, Analytics, and Artificial Intelligence (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 DSAAI program website for list of applicable electives)		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**

Admission

M.A.Sc.

The normal requirement for admission to the M.A.Sc. Data Science, Analytics, and Artificial Intelligence 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, Analytics and Artificial Intelligence 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, Analytics, and Artificial Intelligence 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, Analytics, and Artificial Intelligence 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, Analytics, and Artificial Intelligence is considered a regularly scheduled break approved by the University. Students should resume full-time studies in September.

Note: a Regularly Scheduled Break as described for immigration purposes does not supersede the requirement for continuous registration in Thesis, Research Essay, or Independent Research Project as described in Section 8.2 of the Graduate General Regulations.

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]
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 5002 [0.5 credit]
Data Science, Ethics & Society
The ethical, social, political, and environmental implications of data science including the roles and responsibilities of data scientists in contemporary and emerging technological systems and the impact these systems may have at multiple scales, individual, group, institution, across sectors and nation-states.
Includes: Experiential Learning Activity
Also listed as COMS 5225.
Precludes additional credit for COMS 5225, ITEC 5206.

DATA 5900 [0.5 credit]
Special Topics in Data Science
Special topics, not covered by other graduate courses. Details will be available at the time of registration.

DATA 5908 [1.5 credit]
Project - MSc

DATA 5909 [2.5 credits]
Thesis - MSc

DATA 5918 [1.5 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 [0.0 credit]
Thesis - PhD