DATA SCIENCE, B.SC. MAJOR

Degree Requirements

Four Year Major (Including Co-operative Option if Selected)

Course	Title	Hours
Year 1		
COMP 1012	Computer Programming for Scientists and Engineers [1]	3
COMP 1020	Introductory Computer Science 2 (C+)	3
MATH 1220	Linear Algebra 1 [1]	3
MATH 1230	Differential Calculus [1]	3
MATH 1232	Integral Calculus (C+) [1]	3
MATH 1240	Elementary Discrete Mathematics	3
STAT 1150	Introduction to Statistics and Computing (C+) [1]	3
6 credit hours from the Faculty of Arts, which should include the required "W" course		6
3 credit hours of electives		3
	Hours	**30**
Year 2		
COMP 2140	Data Structures: Analysis and Implementation	3
COMP 2400	Programming Paradigms	3
COMP 2450	Software Development 1	3
COMP 2452	Software Development 2	3
DATA 2010	Tools and Techniques for Data Science	3
MATH 2720	Multivariable Calculus [1]	3
MATH 2740	Mathematics of Data Science	3
STAT 2150	Statistics and Computing	3
STAT 2400	Introduction to Probability 1	3
3 credit hours of electives		3
	Hours	**30**
Years 3-4		
COMP 3380	Databases Concepts and Usage	3
COMP 4360	Machine Learning	3
DATA 3010	Data Science with Real World Data Sets	3
DATA 4010	Data Science Capstone Project [2]	6
MATH 4490	Optimization	3
STAT 3100	Introduction to Statistical Inference	3
STAT 3150	Statistical Computing	3
STAT 3450	Linear Models	3
3 credit hours from List A:		3
COMP 2080	Algorithms: Design and Implementation	
COMP 4510	Introduction to Parallel Computation	
COMP 4710	Introduction to Data Mining	
3 credit hours from List B:		3
MATH 2070	Graph Theory 1	
MATH 2080	Introduction to Analysis	
MATH 2090	Linear Algebra 2	
MATH 2180	Real Analysis 1	
MATH 4370	Linear Algebra and Matrix Analysis	
3 credit hours from List C:		3
STAT 2800	Introduction to Probability 2	
STAT 3030	Introduction to Stochastic Processes	
STAT 3550	Nonlinear Regression Models	
STAT 3690	Multivariate Analysis	
STAT 4100	Statistical Inference	
STAT 4150	Bayesian Analysis and Computing	
STAT 4250	Statistical Learning	
3 additional credit hours from the Faculty of Science [3]		3
21 credit hours of electives [3]		21
Students must include at least 12 credit hours of Faculty of Science courses taken at the 3000 or 4000 level as part of their List A, List B, List C, 3 additional credit hours from the Faculty of Science, and 21 credit hours of electives.		
Co-op Requirements (if selected):		
SCI 3980	Co-operative Education Work Term 1	0
SCI 3990	Co-operative Education Work Term 2	0
SCI 4980	Co-operative Education Work Term 3	0
SCI 4990	Co-operative Education Work Term 4 (if a 4th work term is selected)	0
	Hours	**60**
	Total Hours	**120**

[1] The following substitutions are allowed:
- COMP 1010 in place of COMP 1012;
- [STAT 1000 and STAT 2000 (B)] or STAT 2220 in place of STAT 1150;
- MATH 1210 (B) or MATH 1300 (C+) in place of MATH 1220;
- MATH 1500 or MATH 1510 in place of MATH 1230;
- MATH 1700 (B) or MATH 1710 (B) in place of MATH 1232;
- MATH 2150 in place of MATH 2720.

[2] Should be taken in graduating year.

[3] Courses may be chosen from COMP, MATH, or STAT courses included in the course lists in the program grid provided the courses have not been used toward another program requirement.

(Letters in brackets indicate minimum prerequisite standing for further study.)