

APPLIED MATHEMATICS WITH COMPUTER SCIENCE OPTION, B.SC. MAJOR

Degree Requirements

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

Course	Title	Hours
Year 1		
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
COMP 1010	Introductory Computer Science 1 ¹	3
COMP 1020	Introductory Computer Science 2	3
6 credit hours from the Faculty of Arts, which should include the required "W" course		6
6 credit hours of approved electives		6
Hours		30
Year 2		
MATH 2080	Introduction to Analysis	3
MATH 2090	Linear Algebra 2	3
MATH 2150	Multivariable Calculus	3
MATH 2160	Numerical Analysis 1	3
MATH 2180	Real Analysis 1	3
COMP 2140	Data Structures and Algorithms	3
Hours		18
Years 2-4		
STAT 1150	Introduction to Statistics and Computing ¹	3
STAT 2150	Statistics and Computing	3
9 credit hours from:		9
MATH 2030	Combinatorics 1	
MATH 2040	Curves and Surfaces	
MATH 2170	Number Theory 1	
Any 3000/4000 level MATH course		
One of the following patterns:		9
Graphics		
COMP 2190	Introduction to Scientific Computing	
COMP 3490	Computer Graphics 1	
COMP 4490	Computer Graphics 2	
Software		
COMP 2150	Object Orientation	
COMP 2160	Programming Practices	
and one of:		
COMP 3380	Databases Concepts and Usage	
COMP 3440	Programming Language Concepts	
COMP 3020	Human-Computer Interaction 1	
Theoretical Computer Science		
COMP 2080	Analysis of Algorithms	
and two of:		

COMP 3030	Automata Theory and Formal Languages	
COMP 3170	Analysis of Algorithms and Data Structures	
COMP 3820	Introduction to Bioinformatics Algorithms	
COMP 4420	Advanced Design and Analysis of Algorithms	
Hardware		
COMP 2160	Programming Practices	
COMP 2280	Introduction to Computer Systems	
and one of:		
COMP 3370	Computer Organization	
COMP 3430	Operating Systems	
Artificial Intelligence		
COMP 3190	Introduction to Artificial Intelligence	
and two of:		
COMP 4180	Intelligent Mobile Robotics	
COMP 4190	Artificial Intelligence	
COMP 4200	Expert Systems	
COMP 4360	Machine Learning	
27 credit hours of electives		27
Hours		51
Years 3-4		
MATH 2070	Graph Theory 1	3
MATH 3340	Complex Analysis 1	3
MATH 3420	Numerical Analysis 2	3
MATH 3440	Ordinary Differential Equations	3
MATH 3460	Partial Differential Equations	3
MATH 3470	Real Analysis 2	3
MATH 3610	Introduction to Mathematical Modelling	3
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		21
Total Hours		120

¹ Students are strongly advised to take MATH 1220, MATH 1230 and MATH 1232.

The following substitutions are allowed (but not advised), provided the grades indicated in brackets are achieved:

- MATH 1210 (B) or MATH 1300 (C+) in place of MATH 1220;
- MATH 1500 (B) or MATH 1510 (B) in place of MATH 1230;
- MATH 1700 (B) or MATH 1710 (B) in place of MATH 1232;
- MATH 1690 (C+) in place of MATH 1230 and MATH 1232;
- STAT 1000 (C) and STAT 2000 (B) in place of STAT 1150.

COMP 1012 may be used in lieu of COMP 1010.

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