

# COMPUTER SCIENCE - MATHEMATICS JOINT, B.SC. HONOURS

## Degree Requirements

### Joint Honours (Including Co-operative Option if Selected)

Course	Title	Hours
<b>Year 1</b>		
COMP 1010	Introductory Computer Science 1	3
COMP 1020	Introductory Computer Science 2 (B)	3
MATH 1220	Linear Algebra 1 <sup>1</sup>	3
MATH 1230	Differential Calculus <sup>1</sup>	3
MATH 1232	Integral Calculus (B) <sup>1</sup>	3
MATH 1240	Elementary Discrete Mathematics	3
STAT 1150	Introduction to Statistics and Computing <sup>1</sup>	3
6 credit hours from the Faculty of Arts, which should include the required 3 credit hour "W" course		6
3 credit hours of electives <sup>2</sup>		3
<b>Hours</b>		<b>30</b>
<b>Year 2</b>		
COMP 2080	Analysis of Algorithms	3
COMP 2140	Data Structures and Algorithms	3
COMP 2160	Programming Practices	3
COMP 2280	Introduction to Computer Systems	3
MATH 2020	Algebra 1	3
MATH 2080	Introduction to Analysis	3
MATH 2090	Linear Algebra 2	3
MATH 2150	Multivariable Calculus	3
MATH 2180	Real Analysis 1	3
3 credit hours of electives <sup>2</sup>		3
<b>Hours</b>		<b>30</b>
<b>Summer</b>		
<b>Co-op Requirements (if selected):</b>		
SCI 3980	Co-operative Education Work Term 1 <sup>3</sup>	0
<b>Hours</b>		<b>0</b>
<b>Year 3</b>		
<b>Summer</b>		
<b>Co-op Requirements (if selected):</b>		
SCI 3990	Co-operative Education Work Term 2 <sup>3</sup>	0
<b>Hours</b>		<b>0</b>
<b>Years 3-4</b>		
COMP 3030	Automata Theory and Formal Languages	3
COMP 3170	Analysis of Algorithms and Data Structures	3
COMP 3370	Computer Organization	3
COMP 3430	Operating Systems	3
15 credit hours of 3000 or 4000 level Computer Science courses, of which at least 6 credit hours must be 4000 level		15
MATH 2030	Combinatorics 1	3
MATH 2160	Numerical Analysis 1	3

MATH 3320	Algebra 2	3
MATH 3440	Ordinary Differential Equations	3
MATH 3470	Real Analysis 2	3
MATH 3472	Real Analysis 3	3
9 credit hours from:		9
MATH 2070	Graph Theory 1	
MATH 2170	Number Theory 1	
Any 3000 or 4000 level Mathematics courses, of which at least 3 credit hours must be 4000 level		
6 credit hours of electives <sup>2</sup>		6
<b>Hours</b>		<b>60</b>
<b>Year 4</b>		
<b>Summer</b>		
<b>Co-op Requirements (if selected):</b>		
SCI 4980	Co-operative Education Work Term 3 <sup>3</sup>	0
SCI 4990	Co-operative Education Work Term 4 (if a 4th work term is selected) <sup>3</sup>	0
<b>Hours</b>		<b>0</b>
<b>Total Hours</b>		<b>120</b>

<sup>1</sup> 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 (A) or MATH 1300 (A) in place of MATH 1220,
- MATH 1500 (A) or MATH 1510 (A) in place of MATH 1230,
- MATH 1700 (A) or MATH 1710 (A) in place of MATH 1232.

With permission from the department, students may be able to substitute STAT 1000 and STAT 2000 in place of STAT 1150.

<sup>2</sup> These courses may not be used for credit in this program: MATH 1010, MATH 1018, MATH 1020, FA 1020, MATH 1080, MATH 1090.

<sup>3</sup> When chosen, the Co-operative Option work terms (SCI 3980, SCI 3990, SCI 4980, and SCI 4990 [if selected]) will normally be completed during the Summer Terms following years 2, 3, and 4 respectively.

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