

Computer Science

School of Computer Science
Faculty of Science

This section presents the requirements for:

- **Bachelor of Computer Science with streams**
 - Software and Computing
 - Management and Business systems
 - Software Engineering
 - Network Computing
 - Information Systems Security
- **Computer Science and Chemistry - B.Sc. Combined Honours**
- **Computer Science and Mathematics - B.Math. Combined Honours**
- **Minor in Computer Science**

The Co-operative Education Option is available in Computer Science. See the Co-operative Education section of this Calendar for details.

Graduation Requirements

In addition to the requirements listed below, students must satisfy the University regulations common to all undergraduate students (see the *Academic Regulations of the University* section of this Calendar).

Students should consult with the School when planning their program and selecting courses.

Academic Performance Evaluation

Students in the Bachelor of Computer Science or in Combined Computer Science programs are subject to the following regulations.

At each Academic Performance Evaluation, the minimum required Major CGPA is 6.50 and Overall CGPA is 5.00. These are also the required minima for graduation. These standards replace the Standard Required Minimum CGPA (see *Academic Performance Evaluation* in the Academic Regulations section of this Calendar.).

Students who do not achieve the status Good Standing at any Academic Performance Evaluation will be required to leave the program with the status Ineligible to Return (ITR).

Program Requirements

All B.C.S. students must be registered in one of the following streams:

Bachelor of Computer Science Software and Computing Stream (20.0 credits)

A. Credits Included in the Major CGPA (10.5 credits):

1. 7.0 credits in COMP 1405, COMP 1805, COMP 1406, COMP 1402, COMP 2402, COMP 2003, COMP 2404, COMP 2805, COMP 3000, COMP 3004, COMP 3005, COMP 3007, COMP 3804, COMP 4905;
2. 0.5 credit in COMP 4804;
3. 0.5 credit in Computer Science at the 2000-level or above;

4. 1.0 credit in Computer Science at the 3000-level or above;
 5. 1.5 credits in Computer Science at the 4000-level;
- B. Credits Not Included in the Major CGPA (9.5 credits):**
6. 3.0 credits in MATH 1007, MATH 1104, MATH 2007, MATH 2107, STAT 2605, MATH 3101;
 7. 1.0 credit in Experimental Science;
 8. 2.5 credits in Approved Arts or Social Sciences;
 9. 1.0 credit in Science or Business;
 10. 2.0 credits in free electives.

Bachelor of Computer Science Management and Business Systems Stream (20.0 credits)

A. Credits Included in the Major CGPA (9.5 credits):

1. 7.0 credits in COMP 1405, COMP 1805, COMP 1406, COMP 1402, COMP 2402, COMP 2003, COMP 2404, COMP 2805, COMP 3000, COMP 3004, COMP 3005, COMP 3007, COMP 3804, COMP 4905;
2. 0.5 credit in Computer Science at the 2000-level or above;
3. 1.5 credits in Computer Science at the 4000-level;
4. 0.5 credit in BUSI 2300;

B. Credits Not Included in the Major CGPA (10.5 credits):

5. 2.5 credits in MATH 1007, MATH 1104, MATH 2107, MATH 3101, STAT 2507;
6. 0.5 credit in STAT 2509 or in Mathematics (MATH) or Statistics (STAT) at the 2000-level or above;
7. 2.5 credits in BUSI 1001, BUSI 1002, BUSI 2101, BUSI 2504, BUSI 3403;
8. 1.0 credit in ECON 1000 [1.0];
9. 1.0 credit in Business at the 3000-level or above;
10. 0.5 credit in Business at the 4000-level;
11. 2.5 credits in free electives.

Bachelor of Computer Science Software Engineering Stream (20.0 credits)

A. Credits Included in the Major CGPA (11.0 credits):

1. 7.0 credits in COMP 1405, COMP 1805, COMP 1406, COMP 1402, COMP 2402, COMP 2003, COMP 2404, COMP 2805, COMP 3000, COMP 3004, COMP 3005, COMP 3007, COMP 3804, COMP 4905;
2. 0.5 credit in COMP 2405;
3. 0.5 credit in Computer Science at 2000-level or above;
4. 3.0 credits in COMP 3104, COMP 4004, COMP 4101, COMP 4104, COMP 4804, SYSC 3303;

B. Credits Not Included in the Major CGPA (9.0 credits):

5. 3.0 credits in MATH 1007, MATH 1104, MATH 2007, MATH 2107, STAT 2605, MATH 3101;
6. 1.0 credit in an Experimental Science;
7. 1.0 credit in Science or Business;
8. 2.5 credits in Approved Arts or Social Sciences;
9. 1.5 credits in free electives.

Note: the course BUSI 4407 is also strongly recommended in this stream.

Bachelor of Computer Science Network Computing Stream (20.0 credits)

A. Credits Included in the Major CGPA (11.0 credits):

1. 7.0 credits in COMP 1405, COMP 1805, COMP 1406, COMP 1402, COMP 2402, COMP 2003, COMP 2404, COMP 2805, COMP 3000, COMP 3004, COMP 3005, COMP 3007, COMP 3804, COMP 4905;
2. 0.5 credit in COMP 2405;
3. 0.5 credit in Computer Science at 2000-level or above;
4. 3.0 credits in COMP 3203, COMP 4001, COMP 4009, COMP 4101, COMP 4108, COMP 4804;

B. Credits Not Included in the Major CGPA (9.0 credits):

5. 3.0 credits in MATH 1007, MATH 1104, MATH 2007, MATH 2107, STAT 2605; MATH 3101;
6. 1.0 credit in Experimental Science Electives;
7. 1.0 credit in Science or Business Electives;
8. 2.5 credits in Approved Arts or Social Sciences;
9. 1.5 credits in free electives.

Bachelor of Computer Science Information Systems Security Stream (20.0 credits)

A. Credits Included in the Major CGPA (11.0 credits)

1. 7.0 credits in COMP 1405, COMP 1805, COMP 1406, COMP 1402, COMP 2402, COMP 2003, COMP 2404, COMP 2805, COMP 3000, COMP 3004, COMP 3005, COMP 3007, COMP 3804, COMP 4905;
2. 0.5 credit in COMP 2405 or MATH 4109 (note: If COMP 2405 is taken, it will be included in the Major CGPA, increasing it from 10.5 to 11.0 credits);
3. 0.5 credits in Computer Science at 2000-level or above;
4. 3.0 credits in MATH 3809, COMP 3203, COMP 4004, COMP 4108, COMP 4804, COMP 4109;

B. Credits Not Included in the Major CGPA (9.0 credits)

5. 3.0 credits in MATH 1007, MATH 1104, MATH 2007, MATH 2107, STAT 2605, MATH 3101.
6. 1.0 credit in Experimental Sciences electives;
7. 1.0 credit Science or Business electives;
8. 2.5 credits in Approved Arts or Social Sciences;
9. 1.5 credits in free electives.

Chemistry and Computer Science B.Sc. Combined Honours (20.0 credits)

A. Credits Included in the Major CGPA (14.0 credits):

1. 6.0 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2203, CHEM 2206, CHEM 3101, CHEM 3102, CHEM 3106, CHEM 3503, CHEM 3504, CHEM 3201, CHEM 4406;
2. 1.0 credit in BIOC 3100 [1.0];
3. 5.5 credits in COMP 1002, COMP 1005, COMP 1006; COMP 2002, COMP 2003, COMP 2004, COMP 3000, COMP 3004, COMP 3005, COMP 3804, COMP 3806;
4. 0.5 credit in Computer Science at the 4000-level;

5. 1.0 credit in either:

a) CMPS 4909 [1.0]

or

b) COMP 4905 and 0.5 credit in Computer Science at the 4000-level;

B. Credits Not Included in the Major CGPA (6.0 credits):

6. 2.5 credits in MATH 1007, MATH 1107, MATH 2007, MATH 2107, BIOL 1003;
7. 0.5 credit in PHYS 1003 or PHYS 1007;
8. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
9. 1.5 credits in Approved Arts or Social Sciences;
10. 1.0 credit in free electives.

Computer Science and Mathematics B.Math. Combined Honours (20.0 credits)

Students must register in one of the two streams below, each of which adds 5.0 credits to the Major CGPA.

A. Credits Included in the Major CGPA (15.0 credits):

1. 4.0 credits in MATH 1002 [1.0], MATH 1107, MATH 2107, MATH 2000 [1.0], MATH 2100 [1.0];
2. 5.5 credits in COMP 1002, COMP 1005, COMP 1006; COMP 2002, COMP 2003, COMP 2004, COMP 3004, COMP 3000, COMP 3005, COMP 3804, COMP 3805;
3. 0.5 credit in MATH 4905 or COMP 4905;

and for the stream in Computing Theory and Numerical Methods:

4. 2.5 credits in MATH 2454, STAT 2655; MATH 3801, MATH 3806, COMP 4804;
5. 0.5 credit from: MATH 3001, MATH 3002, MATH 3057, MATH 3008;
6. 1.0 credit from MATH 4801, MATH 4802, MATH 4803, MATH 4805, MATH 4806, MATH 4808;
7. 1.0 credit in Computer Science at the 3000-level or above.

and for the stream in Statistics and Computing:

4. 2.5 credits in MATH 2454, STAT 2559, STAT 2655, STAT 3558, STAT 3559;
5. 0.5 credit in STAT 3505 or STAT 3506;
6. 1.0 credit in Statistics at the 4000-level;
7. 1.0 credit in Computer Science at the 4000-level.

B. Credits Not Included in the Major CGPA (5.0 credits):

8. 4.0 credits with at least 1.0 credit at the 2000-level or above consisting of:
 - a) 1.0 credit in Natural Science;
 - b) 2.0 credits in Approved Arts or Social Sciences;
 - c) 1.0 credit not in Mathematics, Statistics or Computer Science;
9. 1.0 credit in free electives.

Minor in Computer Science

The Minor in Computer Science is open only to students registered in B.Sc. Honours or B.Math. Honours programs.

Requirements (4.0 credits):

1. 3.5 credits in COMP 1005, COMP 1006, COMP 1002, COMP 1805, COMP 2002, COMP 2004, COMP 3806 (MATH 3806);
2. 0.5 credit from: COMP 3004 or COMP 3005;
3. The remaining requirements of the major discipline(s) and degree must be satisfied.

Course Categories

The following categories of courses are used in defining the program requirements in Computer Science.

• Computer Science (COMP)

In addition to the courses with subject code COMP, the following courses offered by the Eric Sprott School of Business and the Faculty of Engineering and Design are relevant to the B.C.S. program and the Combined Honours programs. These courses are counted as Computer Science credits in B.C.S. and Combined Honours program requirements:

- **Business**
BUSI 2300, BUSI 2400, BUSI 4400, BUSI 4402, BUSI 4406, BUSI 4407
- **Engineering**
SYSC 3303, SYSC 4005, SYSC 4507
- **Experimental Science Electives**
All courses in Biochemistry, Biology, Chemistry, Geology and Physics are eligible as Experimental Science electives with the exception of: BIOL 1902, BIOL 1903, BIOL 2106, CHEM 1003, GEOL 1004, GEOL 2401, GEOL 2402, GEOL 2403, PHYS 1900 [1.0], PHYS 1901, PHYS 1902, ISCI 1001, ISCI 1002, ISCI 2001 and ISCI 2002

• Approved Arts or Social Science

All courses offered by the Faculty of Arts and Social Sciences and the Faculty of Public Affairs and Management, excluding Prohibited Courses listed below.

• Science or Business Electives

All courses in Biology, Biochemistry, Chemistry, Geology, Physics and Business and also: GEOG 1005, ISCI 1001, ISCI 1002, ISCI 2001, ISCI 2002

• Natural Science Electives

This category is defined with the B.Math. programs. See the Mathematics Program section of this Calendar for details.

• Prohibited Courses

The following courses cannot be used for credit in the B.C.S. or any Combined Computer Science program: BUSI 1402, BUSI 2402, ISCI 3000, COMP 1001, COMP 1004, COMP 1007