

Chemistry

Department of Chemistry
Faculty of Science

This section presents the requirements for:

- **Chemistry – B.Sc. Honours**
- **Chemistry – B.Sc. General**
- **Computational Chemistry – B.Sc. Honours**
- **Computational Chemistry – B.Sc. General**
- **Chemistry and Computer Science – B.Sc. Combined Honours**
- **Chemistry and Geology – B.Sc. Combined Honours**
- **Chemistry and Physics – B.Sc. Combined Honours**
- **Minor in Chemistry**

Co-operative Education Option is available (see the Co-operative Education section of this Calendar for details).

Graduation Requirements

In addition to the requirements listed below, students must satisfy:

- i) the University regulations (see *The Academic Regulations of the University* section of this Calendar),
- ii) the common regulations applying to all B.Sc. programs including those relating to Science Continuation and Breadth requirements (see the *Academic Regulations and Requirements for the Bachelor of Science Degree*),

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

Program Requirements

Chemistry

B.Sc. Honours (20.0 credits)

A. Credits Included in the Major CGPA (10.0 credits):

1. 7.0 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2102, CHEM 2203, CHEM 2302, CHEM 2303, CHEM 3101, CHEM 3201, CHEM 3503, CHEM 3504, CHEM 3505, CHEM 4908 [1.0];
2. 0.5 credit from CHEM 2204 or CHEM 2206;
3. 1.0 credit from CHEM 3105, CHEM 3106, CHEM 3205 or CHEM 3305;
4. 1.0 credit at the 4000-level in Chemistry or BIOC 3100 [1.0];
5. 0.5 credit at the 3000- or 4000-level in Chemistry;

B. Credits Not Included in the Major CGPA (10.0 credits):

6. 2.0 credits in MATH 1007, MATH 1107, MATH 2007, MATH 2008;
7. 1.0 credit in PHYS 1003 and PHYS 1004, or PHYS 1007 and PHYS 1008;
8. 0.5 credit in Science Continuation (not CHEM);
9. 0.5 credit in COMP 1004;
10. 1.0 credit in Science Faculty Electives at the 1000-level;
11. 2.0 credits in Science Faculty Electives or Science Continuation Courses;

12. 0.5 credits in NSCI 1000 or an Approved Arts or Social Sciences elective;

13. 1.5 credits in Approved Arts or Social Sciences electives;

14. 1.0 credit in free elective.

Note: normally the credits in Req. 11 above will be chosen either from non-compulsory Chemistry courses or other Science Continuation courses. Students who wish to broaden and strengthen a non-Science interest by substituting non-Science courses must obtain written permission from the Undergraduate Adviser prior to registration.

Chemistry

B.Sc. General (15.0 credits)

A. Credits Included in the Major CGPA (6.0 credits):

1. 4.5 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2102, CHEM 2203, CHEM 2302, CHEM 2303, CHEM 3101, CHEM 3503;
2. 0.5 credit from: CHEM 2204, CHEM 2206;
3. 0.5 credit from: CHEM 3105, CHEM 3106, CHEM 3205, CHEM 3305, or CHEM 3505;
4. 0.5 credits in Chemistry at the 3000-level;

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

5. 2.0 credits in MATH 1007, MATH 1107, MATH 2007, MATH 2008;
6. 1.0 credit in PHYS 1003 and PHYS 1004, or PHYS 1007 and PHYS 1008;
7. 0.5 credit in Science Continuation (not CHEM);
8. 0.5 credit in COMP 1004;
9. 1.0 credit in Science Faculty Electives at the 1000-level;
10. 1.0 credit in Science Faculty Electives or Science Continuation Courses;
11. 0.5 credit in NSCI 1000 or an Approved Arts or Social Sciences elective;
12. 1.5 credits in Approved Arts or Social Sciences electives;
13. 1.0 credit in free electives.

Computational Chemistry

B.Sc. Honours (20.0 credits)

A. Credits Included in the Major CGPA (12.5 credits):

1. 6.5 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2203, CHEM 2206, CHEM 3101, CHEM 3102, CHEM 3106, CHEM 3201, CHEM 3503, CHEM 3504, CHEM 4406, CHEM 4407;
2. 1.5 credit in BIOC 3100 [1.0], BIOC 4006;
3. 2.0 credits in COMP 1002, COMP 1005, COMP 1006, COMP 2004;
4. 0.5 credit in Computer Science at the 2000-level;
5. 0.5 credit in Computer Science at the 2000- or 3000-level;
6. 1.5 credit in CMPS 4909 [1.0], CMPS 3800;

B. Credits Not Included in the Major CGPA (7.5 credits):

7. 2.0 credits in MATH 1007, MATH 1107, MATH 2007, MATH 2008;
8. 1.0 credit in BIOL 1003, BIOL 2200;

9. 0.5 credit in PHYS 1003 or PHYS 1007;
10. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
11. 1.5 credit in Approved Arts or Social Sciences;
12. 1.0 credit in Science Faculty Electives;
13. 1.0 credit in free electives.

Computational Chemistry B.Sc. General (15.0 credits)

A. Credits Included in the Major CGPA (8.5 credits):

1. 5.0 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2203, CHEM 2206, CHEM 3101, CHEM 3102, CHEM 3106, CHEM 3201, CHEM 3503;
2. 1.0 credit in BIOC 3100 [1.0];
3. 2.0 credits in COMP 1002, COMP 1005, COMP 1006, COMP 2004;
4. 0.5 credit in Computer Science at the 2000- or 3000-level;

B. Credits Not Included in the Major CGPA (6.5 credits):

5. 2.0 credits in MATH 1007, MATH 1107, MATH 2007, MATH 2008;
6. 1.0 credit in BIOL 1003, BIOL 2200;
7. 0.5 credit in PHYS 1003 or PHYS 1007;
8. 0.5 credits in NSCI 1000 or Approved Arts or Social Sciences;
9. 1.5 credit in Approved Arts or Social Sciences;
10. 1.0 credit 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. 5.5 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2203, CHEM 2206, CHEM 3101, CHEM 3102, CHEM 3106, CHEM 3503, CHEM 3504, CHEM 4406;
2. 1.0 credit in BIOC 3100 [1.0];
3. 5.0 credits in COMP 1002, COMP 1005, COMP 1006; COMP 2002, COMP 2003, COMP 2004, COMP 3000, COMP 3004, 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 credit in MATH 1007, MATH 1107, MATH 2007, MATH 2008, MATH 2107;
7. 1.0 credit in BIOL 1003, BIOL 2200;
8. 0.5 credit in PHYS 1003 or PHYS 1007;
9. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
10. 1.5 credits in Approved Arts or Social Sciences;
11. 1.0 credit in free electives.

Chemistry and Geology B.Sc. Combined Honours (20.0 credits)

A. Credits Included in the Major CGPA (12.0 credits):

1. 4.0 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2102, CHEM 2302, CHEM 2303, CHEM 3503, CHEM 3504;
2. 1.0 credit in Chemistry at the 4000-level;
3. 0.5 credit chosen from GEOL 1007, GEOL 1008;
4. 2.5 credits in GEOL 1006, GEOL 2203, GEOL 2205, GEOL 2208, GEOL 2801;
5. 1.0 credit in Geology at the 3000-level;
6. 1.0 credit in Geology at the 4000-level;
7. 1.0 credit in Chemistry or Geology;
8. 1.0 credit in either CHEM 4908 or GEOL 4908;

B. Credits Not Included in the Major CGPA (8.0 credits):

9. 1.5 credits in MATH 1007, MATH 1107, MATH 2007;
10. 0.5 credit in MATH or STAT at the 2000-level;
11. 1.0 credit in either (PHYS 1003 and PHYS 1004) or (PHYS 1007 and PHYS 1008);
12. 1.0 credit in Science Faculty Electives (not CHEM or GEOL);
13. 1.0 credit in Science Faculty Electives;
14. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
15. 1.5 credits in Approved Arts or Social Sciences;
16. 1.0 credit in free electives;

C. Additional Non-Credit Requirement:

17. The Department of Earth Sciences Language Requirement must be satisfied. (consult the Earth Sciences program section for more information)

Chemistry and Physics B.Sc. Combined Honours (20.0 credits)

A. Credits Included in the Major CGPA (12.5 credits):

1. 1.0 credit in (PHYS 1001 and PHYS 1002) or (PHYS 1003 and PHYS 1004) or (PHYS 1007 and PHYS 1008);
2. 3.0 credits in PHYS 2202, PHYS 2604, PHYS 3007, PHYS 3606, PHYS 3701, PHYS 4707;
3. 1.0 credit in Physics at the 4000-level;
4. 4.5 credits in CHEM 1000 [1.0], CHEM 2101, CHEM 2102, CHEM 2203, CHEM 3102, CHEM 3503, CHEM 3504, CHEM 4102;
5. 0.5 credit from: CHEM 2204 or CHEM 2206;
6. 0.5 credit from: CHEM 3105 or CHEM 3106;
7. 0.5 credit in Chemistry at the 4000-level;
8. 1.0 credit from: CHEM 4908 [1.0], PHYS 4909 [1.0];
9. 0.5 credit in ELEC 3105;

B. Credits Not Included in the Major CGPA (7.5 credits):

10. 3.0 credits in MATH 1004, MATH 1005, MATH 1104, MATH 2004, MATH 3502, MATH 3705;
11. 0.5 credit in ECOR 2606;
12. 0.5 credit from: COMP 1005 or COMP 1007;
13. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;

14. 0.5 credit in Chemistry, Physics, Mathematics, Statistics, Computer Science, or Engineering excluding CHEM 0100, CHEM 1003, PHYS 1900, MATH 1805, COMP 1805;
15. 1.5 credits in Approved Arts or Social Sciences;
16. 1.0 credit in free electives.

Minor in Chemistry

The Minor in Chemistry is available to degree students registered in programs other than those associated with the Department of Chemistry.

Requirements (4.0 credits):

1. 1.0 credit in CHEM 1000;
2. 3.0 credits in Chemistry at 2000-level or higher.
3. The remaining requirements of the major discipline(s) and degree must be satisfied.