

Physics

Department of Physics
Faculty of Science

This section presents the requirements for:

- **Applied Physics – B.Sc. Honours**
- **Mathematics and Physics – B.Sc. Double Honours**
- **Biology and Physics – B.Sc. Combined Honours**
- **Chemistry and Physics – B.Sc. Combined Honours**
- **Minor in Physics**

The Department of Physics also offers the program: **Engineering Physics – B.Eng.** Consult the Engineering program section for details about this program.

The Co-operative Education Option is available in conjunction with the programs of the Department of Physics (see the Co-operative Education section of this Calendar for details).

Graduation Requirements

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

- i) the University regulations including the process of Academic Performance Evaluation (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 Breadth requirements (see the *Academic Regulations and Requirements for the Bachelor of Science*).

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

Course Categories for Physics

The program descriptions below make use of the following course categories, which are defined in the *Academic Regulations for the Bachelor of Science* section of this Calendar:

- **Approved Arts or Social Science**
- **Free Elective**

Program Requirements

Applied Physics

B.Sc. Honours (20.0 credits)

A. Credits Included in the Major CGPA (11.5 credits):

1. 1.0 credit in either (PHYS 1001 and PHYS 1002) or (PHYS 1003 and PHYS 1004) or (PHYS 1007 and PHYS 1008 with an average grade of B- or better);
2. 1.0 credit in PHYS 2202 and PHYS 2604;
3. 1.5 credits in ECOR 2606, ELEC 2501 and ELEC 2507;
4. 4.0 credits in PHYS 3007, PHYS 3606, PHYS 3701, PHYS 3802, PHYS 3807, PHYS 4409, PHYS 4008 and PHYS 4707;
5. 1.5 credits in ELEC 3105, ELEC 3908 and ELEC 3909;
6. 1.0 credit in one of:
 - a) PHYS 4907 plus 0.5 credit in free elective;
 - b) PHYS 4908 plus 0.5 credit in free elective;
 - c) PHYS 4909[1.0];

7. 1.0 credit in Physics at the 4000-level;
8. 0.5 credit from: COMP 3005, ELEC 3509 or Physics at the 4000-level;

B. Credits Not Included in the Major CGPA (8.5 credits):

9. 1.0 credit from: (BIOL 1003 and BIOL 1004), CHEM 1000[1.0], or any two of GEOL 1006, GEOL 1007 or GEOL 1008;
10. 3.0 credits in MATH 1004, MATH 1005, MATH 1104; MATH 2004, STAT 3502 and MATH 3705;
11. 0.5 credit in COMP 1005;
12. 1.0 credit in either:
 - a) COMP 1006, and (COMP 2002 or COMP 2004),
or
 - b) SYSC 2002 and SYSC 2004;
13. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
14. 1.5 credits in Approved Arts or Social Sciences Electives;
15. 1.0 credit in free electives.

Mathematics and Physics

B.Sc. Double Honours (21.5 credits)

Continuation in the program after first year requires an average of at least 9.00 on MATH 1002 and MATH 1102 and at least 9.00 on PHYS 1001 and PHYS 1002 or the equivalent mathematics and physics courses.

A. Credits Included in the Major CGPA (17.0 credits):

1. 7.5 credits in MATH 1002[1.0], MATH 1102[1.0], MATH 2000[1.0], MATH 2100[1.0], MATH 2454, STAT 2655, MATH 3705, MATH 3001, MATH 3002, MATH 3057, MATH 3106;
2. 1.0 credit in Mathematics (MATH, STAT) at the 4000-level or above;
3. 1.0 credit in either (PHYS 1001 and PHYS 1002) or (PHYS 1003 and PHYS 1004);
4. 4.5 credits in PHYS 2202, PHYS 2604, PHYS 3802, PHYS 3007, PHYS 3606, PHYS 3701, PHYS 4409, PHYS 4707, PHYS 4708;
5. 1.0 credit in Physics at the 4000-level or above;
6. 1.0 credit in ELEC 3105, ELEC 3909;
7. 1.0 credit in either:
 - a) MATH 4905 or PHYS 4907 or PHYS 4908, and 0.5 credit Free Elective;
 - or*
 - b) PHYS 4909[1.0];

B. Credits Not Included in the Major CGPA (4.5 credits):

8. 1.0 credit from BIOL 1003 and BIOL 1004, or CHEM 1000[1.0], or GEOL 1005[1.0], or GEOL 1006 and one of GEOL 1007 or GEOL 1008;
9. 0.5 credit in COMP 1005 or COMP 1007;
10. 0.5 credit in Computer Science;
11. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
12. 1.5 credits in Approved Arts or Social Sciences Electives;
13. 0.5 credit in free elective.

Note: in Requirement 2 above, MATH 4003 is highly recommended.

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

A. Credits Included in the Major CGPA (13.0 credits):

1. 1.0 credit in (PHYS 1001 and PHYS 1002), or (PHYS 1003 and PHYS 1004), or (PHYS 1007 and PHYS 1008);
2. 2.5 credits in PHYS 2604, PHYS 2202, PHYS 4409, ECOR 2606, ELEC 3105;
3. 2.0 credits in PHYS 3007, PHYS 3207, PHYS 3606, PHYS 3701;
4. 1.0 credit from PHYS 3802, PHYS 4007, PHYS 4203, PHYS 4508, PHYS 4707, ELEC 3909;
5. 4.0 credits in BIOL 1003, BIOL 1004; BIOL 2200, BIOL 2104, BIOL 2001, BIOL 3201, BIOL 3104, BIOL 3305;
6. 1.0 credit from BIOL 4106, BIOL 4109, BIOL 4202, BIOL 4301, BIOL 4302, BIOL 4306;
7. 1.5 credits in BIOL 4901 and BIOL 4908[1.0], or PHYS 4909[1.0] and 0.5 credit in free elective;

B. Credits Not Included in the Major CGPA (7.0 credits):

8. 1.0 credit in CHEM 1000[1.0];
9. 0.5 credit in MATH 1004 or MATH 1007;
10. 0.5 credit in MATH 1104 or MATH 1107;
11. 2.0 credit in STAT 2507, MATH 1005, MATH 2004, MATH 3705;
12. 0.5 credit in COMP 1005 or COMP 1007;
13. 0.5 credits in NSCI 1000 or Approved Arts or Social Sciences;
14. 1.5 credits in Approved Arts or Social Sciences;
15. 0.5 credit in free elective.

Note: in items 3 and 4 above, PHYS 3008 may replace PHYS 3007, PHYS 4008 may replace PHYS 4007.

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):

9. 3.0 credits in MATH 1004, MATH 1005, MATH 1104, MATH 2004, MATH 3502, MATH 3705;
10. 0.5 credit in ECOR 2606;
11. 0.5 credit from: COMP 1005 or COMP 1007;
12. 0.5 credit in NSCI 1000 or Approved Arts or Social Sciences;
13. 0.5 credit in Chemistry, Physics, Mathematics, Statistics, Computer Science, or Engineering excluding CHEM 0100, CHEM 1003, PHYS 1900, MATH 1805, COMP 1805;
14. 1.5 credits in Approved Arts or Social Sciences;
15. 1.0 credit in free electives.

Minor in Physics

The Minor in Physics is available to students registered in degree programs other than those offered by the Department of Physics.

Requirements:

1. 0.5 credit from: PHYS 1001, PHYS 1003, PHYS 1007 (see note below);
2. 0.5 credit from: PHYS 1002 or PHYS 1004 or PHYS 1008 (see note below);
3. 0.5 credit in PHYS 2604;
4. 0.5 credit in PHYS 3701;
5. 2.0 credits selected from PHYS 2202, PHYS 2203, PHYS 3007, PHYS 3204, PHYS 3207, PHYS 3606, PHYS 3802, PHYS 3807, or Physics credits at the 4000-level.

Note: PHYS 1007, PHYS 1008 are acceptable only provided a grade point average of at least 7.0 is presented on these courses.