Courses and Modules in the Department of Physics and Astronomy

Faculty in the Department of Physics & Astronomy have research interests ranging from the very small (atoms and nanomaterials) to the astonishingly large (galaxies, and the universe itself). We study natural phenomena (star formation, the Earth’s atmosphere, meteors), as well as applications of physics to medicine (imaging, radiotherapy) and technology (nanofabrication, optoelectronic devices, biomaterials).

Students in Physics & Astronomy develop skills in problem solving, physical measurements, computation, and analysis - abilities highly sought after in many fields. Our graduates have gone on to a wide range of careers in the physical sciences, applied sciences, medicine, science education, and even non-scientific fields such as finance, management, and law. Indeed, it is difficult to find any career in which physicists are not represented.

Modules in the Department of Physics & Astronomy:

At Western, a degree is built from modules, which you choose from one or more subject areas. For a four-year degree, you’ll need at least a Major or Specialization (and can choose to add an additional minor or major), but you can earn a three-year BSc with just a double Minor. In Physics & Astronomy, we offer:

<table>
<thead>
<tr>
<th>Minor (4.0 courses)</th>
<th>Major (6.0 courses)</th>
<th>(Honors) Specialization (9–10 courses)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physics</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Astrophysics</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Medical Physics</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Materials Science</td>
<td>✓ ✓</td>
<td>✓</td>
</tr>
<tr>
<td>Conceptual Astronomy</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

All but the Minor in Conceptual Astronomy require full first-year courses in both Physics and Calculus.

In addition, we offer Minors in Advanced Physics and in the Physics of Materials to further prepare Honors Specialization students for careers and graduate school.

First-year Courses at a Glance:

<table>
<thead>
<tr>
<th>Course</th>
<th>High school Physics requirement</th>
<th>High school Math requirement</th>
<th>Primary audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Astronomy 1021</td>
<td>none</td>
<td>none</td>
<td>general interest</td>
</tr>
<tr>
<td>Physics 1021</td>
<td>none</td>
<td>none</td>
<td>non-science students only</td>
</tr>
<tr>
<td>Physics 1028A/1029B</td>
<td>none</td>
<td>Advanced Functions (MHF4U)</td>
<td>biological &amp; medical sciences</td>
</tr>
<tr>
<td>Physics 1301A/1302B</td>
<td>none</td>
<td>Calculus &amp; Vectors (MCV4U)</td>
<td>all sciences</td>
</tr>
<tr>
<td>Physics 1401A/1402B</td>
<td>Grade 12U (SPH4U)</td>
<td>Calculus &amp; Vectors (MCV4U)</td>
<td>engineering students</td>
</tr>
<tr>
<td>Physics 1501A/1502B</td>
<td>Grade 12U (SPH4U)</td>
<td>Calculus &amp; Vectors (MCV4U)</td>
<td>physical sciences</td>
</tr>
</tbody>
</table>

For more information visit: [http://www.physics.uwo.ca/undergraduate/](http://www.physics.uwo.ca/undergraduate/)
Which first-year Physics courses are right for you?

Are you registering in the Faculty of Engineering?
- if so, your only choice is Physics 1401A followed by 1402B
- if you are in another faculty and decide to transfer to Engineering, any combination of Physics 1301A or 1501A, followed by 1302B or 1502B, can be accepted via special permission.

Are you in a non-science faculty, looking for a Science elective?
- a good choice is Physics 1021, which introduces the concepts of physics without the math
- another conceptual course you might be interested in is Astronomy 1021
- note that neither of the above courses will serve as a prerequisite to upper-level Science courses
- upper-year students (not in Science) might also consider:
  - Astronomy 2021A/B: Search for Life in the Universe
  - Astronomy 2022A/B: Origin of the Universe
  - Physics 2065A/B: Going Faster and Farther: The Physics of the Sporting Environment
  - Physics 2070A/B: Understanding Earth’s Atmosphere

Are you in the Faculty of Science? Then you should choose between Physics 1028A, 1029B 1301A, 1302B, 1501A, and 1502B. Consider the following questions:

Do you want courses that will give you a good background for any Science degree?
- a good choice is Physics 1301A followed by 1302B, which together cover all of the standard material, as well as some topics in modern physics

Are you very interested in physics, thinking of getting a degree in one of the physical sciences (physics, astrophysics, chemistry, geophysics, applied mathematics, etc.), and have good mathematical skills?
- a good choice is Physics 1501A + 1502B, which cover fewer topics in greater depth, and include some advanced topics, such as relativity
- Physics 1301A + 1302B also offers good preparation for upper-year physics

Are you a biology major? Then you need a half course in physics.
- the best choice is Physics 1028A, which was designed for this purpose
- if you later enter a program that requires a full course in physics, you can complete the requirement with Physics 1029B
- Physics 1028A + 1029B present physics from the perspective of the life sciences

Are you interested in the BMSc program (modules offered by the basic medical science departments)?
- Physics 1028A + 1029B are suitable for all modules offered by the basic medical science departments with the exception of Medical Biophysics modules (for which a combination of Physics 1301A or 1501A followed by 1302B or 1502B is recommended)

Note: If your selection for Term A doesn’t work for you, you should consult Academic Counselling for the options available to you.

The bottom line: choose the course that will inspire you to learn the most!