PRE-PHARMACY

Introduction

Students interested in a career in Pharmacy may pursue a four-year degree in any major along with completing specific prerequisites or students may complete only two or three years of study before starting pharmacy school, as long as the required prerequisites are taken. Students should stay in contact with the Pre-Medical Center from their first college year for assistance in planning appropriately for entry into pharmacy schools. Most students at Canisius College choose the 4-year option majoring in either Chemistry (Health Professions Track), Biochemistry, or Biology. Majoring in other academic areas is also possible. Further information can be found in the catalog sections for each of those departments. Students must gain a thorough understanding of the pharmacy profession, including shadowing or work experience in a pharmacy. Students may also need to earn competitive scores on the PCAT (Pharmacy College Admissions Test) which is required by some schools. In addition to the information in this section, please check the general information at the pre-medical and pre-health section of the catalog (http://catalog.canisius.edu/undergraduate/academics/curricular-information/pre-professional-programs/pre-medical-pre-health-sections/).

Joint and Early Assurance Programs

Canisius College has seven-year (3+4) joint degree programs with State University of New York at Buffalo School of Pharmacy and Pharmaceutical Sciences* and D’Youville University School of Pharmacy, and both six- (3+3, PA campus) and seven-year (3+4, FL campus) joint degree programs with Lake Erie College of Osteopathic Medicine School of Pharmacy. These programs allow students to earn both the bachelor degree from Canisius College and the Doctor of Pharmacy degree from the partner institution. In these programs, students complete the Core Curriculum or the All College Honors Program and three years of the Chemistry Health Track major (courses approved by the chair of the Chemistry Department) or the Biology major (courses approved by the chair of the Biology Department). After the first year of pharmacy school, the bachelor degree is awarded by Canisius. Students also have the option to apply to a wide range of pharmacy schools under the 3+4 program. For more information regarding these programs and their specific course requirements, contact the Pre-Health Advisor.

* Please note that SUNY Buffalo prerequisites require careful planning from the first year.

Recommended Pre-Pharmacy Courses

Academic admission requirements vary substantially by pharmacy school, but usually require the following courses. These recommendations prepare a student to apply to multiple pharmacy programs.

English

One year of English composition or the Honors Program equivalent:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>ENG 111</td>
<td>Academic Writing</td>
<td>3</td>
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<tr>
<td>ENG 112</td>
<td>Writing about Literature</td>
<td>3</td>
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<table>
<thead>
<tr>
<th>Option 1:</th>
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<td>ENG 111</td>
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<th>Option 2:</th>
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<tr>
<td>HON 101</td>
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| and an Honors Literature course (3 credits) |

Biology

At least one year of general biology with laboratory. Many schools also require at least one year of anatomy/physiology (BIO 114-BIO 115 or (BIO 324-BIO 340). Many programs also require microbiology with laboratory (BIO 307). Some programs require additional physiology. Please work with the Pre-Health Advisor to determine coursework that aligns to your schools of interest.

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<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIO 111</td>
<td>Introductory Biology I and Introductory Biology Laboratory I</td>
<td>4</td>
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<tr>
<td>BIO 112</td>
<td>Introductory Biology II and Introductory Biology Laboratory II</td>
<td>4</td>
</tr>
<tr>
<td>BIO 115</td>
<td>Musculoskeletal Anatomy and Physiology Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>BIO 307</td>
<td>Microbiology Laboratory</td>
<td>4</td>
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Anatomy & Physiology

Select one of the following:

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<th>Option 1:</th>
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<td>BIO 114 &amp; 114L</td>
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<td>BIO 115 &amp; 115L</td>
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<th>Option 2:</th>
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<tr>
<td>BIO 324 &amp; 324L</td>
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<td>BIO 340 &amp; 340L</td>
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</table>

Microbiology

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>BIO 307</td>
<td>Microbiology Laboratory</td>
<td>4</td>
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Chemistry

One year of general chemistry and one year of organic chemistry with laboratories:

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<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>CHM 111 &amp; 111L</td>
<td>General Chemistry I and General Chemistry I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHM 112 &amp; 112L</td>
<td>General Chemistry II and General Chemistry II Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHM 227 &amp; 227L</td>
<td>Organic Chemistry I and Organic Chemistry I Laboratory</td>
<td>4</td>
</tr>
<tr>
<td>CHM 228 &amp; 228L</td>
<td>Organic Chemistry II and Organic Chemistry II Laboratory</td>
<td>4</td>
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</tbody>
</table>

1 Students may take CHM 109, CHM 110, and CHM 111L to fulfill this requirement.
Biochemistry
One semester of biochemistry. Note that not all programs require biochemistry. Please work with the Pre-Health Advisor to determine coursework that aligns to your schools of interest:

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<td>Select one of the following:</td>
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<tr>
<td>Option 1:</td>
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<tr>
<td>BIO 211</td>
<td>Biochemistry and Cell Biology I</td>
<td>3</td>
</tr>
<tr>
<td>BIO 212</td>
<td>Biochemistry and Cell Biology II</td>
<td>3</td>
</tr>
<tr>
<td>Option 2:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BCH 301</td>
<td>Introduction to Biochemistry</td>
<td>3</td>
</tr>
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Physics
One semester of introductory physics with laboratory. Not all schools require physics. A student’s major may dictate the option they should select. Please work with the Pre-Health Advisor to determine coursework that aligns to your schools of interest:

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<thead>
<tr>
<th>Code</th>
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<tr>
<td></td>
<td>Select one of the following:</td>
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<tr>
<td>PHY 201 &amp; 201L</td>
<td>College Physics I and College Physics I Laboratory</td>
<td>4</td>
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<tr>
<td>or PHY 223 &amp; 223L</td>
<td>General Physics for Physical Science Majors I and General Physics for Physical Science Majors I Laboratory</td>
<td></td>
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Mathematics
One semester each of calculus and statistics. Some of the more competitive schools require one year of college level calculus (this would include taking MAT 112). Chemistry majors must take MAT 141. Please work with the Pre-Health Advisor to determine coursework that aligns to your schools of interest:

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Calculus</td>
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<tr>
<td>MAT 111</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>Statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAT 141</td>
<td>Inferential Statistics and Computers for Science</td>
<td>4</td>
</tr>
<tr>
<td>or PSY 201</td>
<td>Basic Statistics for Behavioral Sciences</td>
<td>3</td>
</tr>
</tbody>
</table>

1 Students may take MAT 109, MAT 110 to fulfill this requirement.

Additional Pre-Pharmacy Courses
Some schools recommend additional coursework from the following:

Economics: Many programs require one semester of economics (ECO 101 or ECO 102). Some programs specifically require or recommend microeconomics ECO 102.

Public Speaking: Some programs require one semester of oral communications (COM 201).

Humanities and/or Social/Behavioral Science: One to four semesters of psychology, sociology, U.S. history, theology and/or philosophy. Some programs specifically require psychology. Please work with the Pre-Health Advisor to determine coursework that aligns to your schools of interest.

Elective Courses
HRP 101 allows students to explore different health professions.

HRP 111 introduces students to medical terminology.

HRP 201 and HRP 202 allow students to explore areas of medicine in more depth.

HRP 498 is an internship in medical informatics. A medical scribe internship is also available.

HRP 498A is a medical (and pharmacy) mission trip.