Pre-Pharmacy Guide

For further information, contact Laurie Cook (Pre-Professional Health Program Pharmacy Advisor) or Maggie Logan (Co-Director, Pre-Professional Health Program):

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<thead>
<tr>
<th>Dr. Laurie Cook</th>
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<tbody>
<tr>
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“Pharmacists dispense prescription medications to patients and offer expertise in the safe use of prescriptions. They also may conduct health and wellness screenings, provide immunizations, oversee the medications given to patients, and provide advice on healthy lifestyles. Pharmacists work in pharmacies, including those in grocery and drug stores. They also work in hospitals and other healthcare facilities.” (Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, 2016-17 Edition, Pharmacists, http://www.bls.gov/ooh/healthcare/pharmacists.htm (visited November 03, 2016).)

Pharmacists graduate with a Doctor of Pharmacy (Pharm. D.) degree from a four-year program at an accredited college of pharmacy and must obtain a license to practice. Students can attend pharmacy school after completing two, three, or four years of college. The current composition of students entering pharmacy schools nationally consists of approximately 20% with two years of college, 40% with three years, and 40% with a bachelor’s degree or higher. What is important to pharmacy schools is that during their time in college, students have completed the prerequisite courses for that particular pharmacy school, and used that course content to do well on the PCAT exam.

Sample Pre-Pharmacy Four-Year Academic Plan; Assumes Application during the Summer between Years 3 and 4

(NOTE: This is just a sample plan. Many variants are possible!)

<table>
<thead>
<tr>
<th>Year</th>
<th>Fall</th>
<th>Spring</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>ENG 112 College Composition</td>
<td>MTH 201 Calculus I&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td></td>
<td>BIO 201 General Biology I</td>
<td>BIO 202 General Biology II</td>
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<td>CHM 205 College Chemistry I</td>
<td>CHM 206 College Chemistry II</td>
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<td></td>
<td>Major&lt;sup&gt;a&lt;/sup&gt;/Gen Ed</td>
<td>PSH 110 Principles of Psychology&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td>2</td>
<td>BIO 302 Genetics&lt;sup&gt;c&lt;/sup&gt;</td>
<td>BIO 310 Biological Chemistry&lt;sup&gt;c&lt;/sup&gt;</td>
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<td></td>
<td>CHM 305 Organic Chemistry I</td>
<td>CHM 306 Organic Chemistry II</td>
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<td>MTH 202 Calculus I&lt;sup&gt;b&lt;/sup&gt;</td>
<td>SOC 100 Introduction to Sociology&lt;sup&gt;d&lt;/sup&gt;</td>
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<tr>
<td></td>
<td>Major&lt;sup&gt;a&lt;/sup&gt;/Gen Ed</td>
<td>MTH 243 Statistics&lt;sup&gt;b&lt;/sup&gt;</td>
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<td>3</td>
<td>BIO 321 Anatomy &amp; Physiology I</td>
<td>BIO 322 Anatomy &amp; Physiology II</td>
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<td></td>
<td>PHS 205/235 Physics I&lt;sup&gt;e&lt;/sup&gt;</td>
<td>PHS 210/240 Physics II&lt;sup&gt;e&lt;/sup&gt;</td>
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<td></td>
<td>ENG 300 Advanced Composition&lt;sup&gt;f&lt;/sup&gt;</td>
<td>BIO 323/423 Microbiology</td>
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<td>ECN 201 Microeconomics&lt;sup&gt;g&lt;/sup&gt;</td>
<td>CMC 201 Public Speaking&lt;sup&gt;g&lt;/sup&gt;</td>
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<td></td>
<td>BIO 315 Cell Biology&lt;sup&gt;c&lt;/sup&gt;</td>
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July after year 3: Take Pharmacy College Admissions Test and apply for admission to pharmacy school as soon as possible after mid-July, when PharmCas opens.

Year 4 Major/Minor Major/Minor
Electives Electives
Any remaining degree requirements

<sup>a</sup> A student should choose to major in a field he/she is passionate about and in which he/she will excel. The health professions requirements are also the foundation courses for a major in Biology, Biochemistry, or Chemistry. For a Physics major, Physics and Calculus should begin in year 1.
Many pharmacy schools no longer require/recommend Calculus II (although University at Buffalo and Binghamton University both do), but many science majors do, and by including these courses you keep open the option of eligibility for admission at all pharmacy schools. Statistics is also required/recommended by most schools. Both calculus and statistics content are tested on the PCAT.

BIO 302 (Genetics) is optional. It is not required by many pharmacy schools, but provides useful base knowledge and is required for both Biology and Biochemistry majors. BIO 310, Biological Chemistry, is accepted as the required Biochemistry course at both University at Buffalo and Saint John Fisher. Other schools may require CHM 467 (Biochemistry I). Check your schools of interest to be sure!

While psychology and sociology courses are not required for all pharmacy schools, we recommend that all students interested in the health professions take PSH 110 and SOC 100 as general education courses. Consult with your pre-health advisor for more information. You may also consider the Pre-Professional Health Minor.

Most pharmacy schools do not require calculus-based physics (algebra-based physics, PHS 205 and 210, may meet requirements), but some science majors do. By choosing calculus-based physics you are taking the mathematically more rigorous course. Similarly, few pharmacy schools require Physics II, but most science majors do. Physics may be required prior to matriculation at pharmacy school, but (depending on your major requirements) can be scheduled after taking the PCAT. University at Buffalo is discontinuing Physics as a prerequisite effective Fall 2019, but it will still be strongly encouraged.

Many pharmacy schools require 6 credits of writing courses, and some require 6 credits of English composition; another writing intensive course may satisfy this requirement, but requirements vary by school, and courses with codes other than ENG may be questioned.

Many pharmacy schools are now requiring a public speaking course and some even require an economics course as a prerequisite for admission. Be sure to consult with individual admissions advisors for the schools to which you are applying.

Notes: Some pharmacy schools may have slightly different prerequisites—see http://www.aacp.org/resources/student/pharmacyforyou/admissions/admissionrequirements/Pages/PharmDSchoolInformation.aspx, with links to web sites of individual pharmacy schools for more information.

Many pharmacy schools recognize AP or CLEP as fulfilling these science and mathematics admissions requirements, but it is always a good idea to check the websites of individual pharmacy schools for more information.

Academic Guidelines for Admission: GPA and PCAT
Admission to pharmacy schools is competitive. Typical median cumulative GPA’s for entering classes are 3.3-3.5. Students whose academic records fall significantly below the averages are less likely to be accepted. Many schools require that no prerequisite grade be below a C to qualify for admission.

The Pharmacy College Admission Test (PCAT), www.pcatweb.info, is required for applicants to nearly all colleges of pharmacy. The PCAT should be taken no later than September prior to the application deadline, and preferably during the July test dates. Pre-registration for the exam is required; dates are listed on the PCAT web site. The PCAT consists of a writing subtest and four multiple choice subtests: 1) Biological Processes; 2) Chemical Processes; 3) Critical Reading; and 4) Quantitative Reasoning. Significant preparation is typically required to do well on the exam. For the University at Buffalo Fall 2016 incoming class, the PCAT composite percentile score was 68-90 for the middle 50th percentile of students (that is, the students between the 25th and 75th percentiles).

Non-Academic Guidelines for Admission
Admission to pharmacy school requires more than high grades and test scores! Important non-academic factors include high ethical standards, excellent interpersonal skills, a deep commitment to health care and service to others, evidence of leadership potential, and good judgment, dependability, conscientiousness, and detail orientation. Each student is unique, and prepares to apply in his/her own way, but here are some possibilities.

- Gain an understanding of the pharmacy profession and the role of the pharmacist. Shadow pharmacists or work in a pharmacy setting, possibly as a pharmacy tech. Exploration of the field helps students make a more informed decision regarding their suitability for a career in pharmacy, as well as reassuring admissions committees that the student has a realistic understanding of the profession.
• Participate in organizations that serve others, within or outside healthcare.
• Participate in leadership opportunities, such as serving as a peer mentor; becoming a leader in a Brockport student club; or through participation in Brockport’s Leadership Development Program.
• Consider exploring research opportunities with science faculty members. Credit for research can be arranged for BIO 424 or CHM 399, for example. Research experience as an undergraduate is a plus, but do it only if you are interested. Having this experience is not a deal maker—although many successful applicants have participated in a research project.

**Diversity in the Pharmacy Profession**
Pharmacy schools, seek a diverse class of students. Programs seek to recruit individuals from diverse ethnicities, socioeconomic backgrounds, and life experiences to the Pharmacy profession and to equip them with the necessary clinical and professional knowledge, skills and abilities to provide high quality, compassionate medical care to diverse patient populations. There are summer programs (such as SHPEP) to help college students who would bring diversity to pharmacy prepare for application. Individual pharmacy schools also sponsor summer enrichment programs. Students should contact their pre-health advisors, and individual pharmacy schools, for more information.

**The Application Process**
General information about Pharmacy Admissions can be found at [www.aacp.org/resources/student/pharmacyforyou/admissions/Pages/default.aspx](http://www.aacp.org/resources/student/pharmacyforyou/admissions/Pages/default.aspx). Students should begin researching schools early in their academic careers as programs have different admission requirements. Students may find the information contained in the Pharmacy School Admissions Requirements (PSAR) helpful. The directory can be downloaded for free at [www.aacp.org/resources/student/pharmacyforyou/admissions/admissionrequirements/Pages/PharmDSchoolInformation.aspx](http://www.aacp.org/resources/student/pharmacyforyou/admissions/admissionrequirements/Pages/PharmDSchoolInformation.aspx).

Students can apply to most pharmacy schools, by completing their initial application through the web-based Pharmacy College Application Service (PharmCAS, [www.pharmcas.org](http://www.pharmcas.org)). Programs not participating in PharmCAS accept applications directly to their schools. Schools using PharmCAS may or may not require a supplemental application; check with each program. The application cycle starts in mid-July for enrollment in fall of the next year. **It is to your advantage to apply as early as possible.**

**Letters of Evaluation**
Letters are processed through the PharmCAS application service and must be submitted electronically. Schools vary somewhat in the number and nature of the evaluators required, but PharmCAS limits you to four letters. These letters can be from an employer, professor, supervisor of a community service project, etc. They may not come from a family member or friend. Select letter writers who know you well and have personally observed the academic and non-academic attributes described above. Letters should be received by PharmCAS by the application deadline.

**Interviews**
Pharmacy schools require personal, on-campus interviews. The schools will contact selected candidates to arrange interviews. Interviews vary by school; applicants should check with the schools to which they have applied for the interview timeline. The interview is an important part of the selection process, and candidates should prepare well for the interview.

Because schools of pharmacy do not value the committee interview/committee letter process, you may not have had a chance for a “dry run”. The Pre-Professional Health Advisory Committee is happy to do a mock interview and to coach you on your interview performance. Practice interviews are also available through Career Services in Rakov Center.

**Criminal Background Checks**
The PharmCAS application asks applicants whether they have been convicted of a felony, as well as whether they have been subject to disciplinary action while attending college. The applicant has the opportunity to describe what was learned through the experience. This information is communicated to the pharmacy schools. Information on misdemeanor and felony arrests may be requested by the applicant’s designated programs. Students should make careful decisions throughout their undergraduate years, since incidents of drug and/or alcohol use or possession, academic
dishonesty, and others, can have negative consequences for a pharmacy school application. Most pharmacy schools participate in the Centralized Criminal Background Check program. Students found to have been dishonest on their applications are not admitted or are dismissed. The lesson from this is that you must disclose everything in your application: The consequence of not disclosing is greater than the consequence of disclosing! Many pharmacy schools also participate in the PharmCAS-facilitated Drug Screening Service.

Websites
- Explorehealthcareers.org, a website that provides reliable information about many possible careers within the area of health: www.explorehealthcareers.org.
- American Association of Colleges of Pharmacy: www.aacp.org
- American Association of Colleges of Pharmacy student resources and information: https://www.aacp.org/resources/students/future
- Pre-Professional Health website: www.brockport.edu/premed/
- Pre-Professional Health group on Blackboard for current students. Contact Dr. Logan at mlogan@brockport.edu to be added to the group. Include your goal of pharmacy in your email, so that you are placed in the correct subgroup.

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9/2018 (LC, MEL)