Pharmacy

A career in pharmacy is much more than counting pills. Pharmacists provide pharmaceutical care to millions in patient-centered, outcome-driven settings. As a member of the total health care management team, the pharmacist is uniquely qualified and positioned to positively impact patient outcomes. With thousands of prescription and over-the-counter drugs being sold in the U.S., the pharmacy has evolved into a consultation center where patients learn more about their medications and ways to increase safety and effectiveness of treatments. Providing excellent care is further challenged by the fact that many patients take a variety of drugs and see several health care specialists, placing the pharmacist in the critical position to monitor and advise both patients and physicians.

Pharmacists work in a wide range of settings. While the retail pharmacy may be the most familiar setting (65%), pharmacists also work in hospitals (22%), research facilities, home health care, long-term care pharmacies, compounding pharmacies, veterinary, mail order, government and nuclear pharmacy settings. The American Pharmacists Association provides Career Option Profiles which discuss not only the characteristics of each career setting, but also provide survey results from pharmacists about working conditions and duties.¹

The job outlook for pharmacists is expected to grow more slowly than other employment sectors and job prospects are expected to decline slightly according to the Bureau of Labor Statistics. Employment of pharmacists is expected to grow 3% between 2014 and 2024. Median wages of pharmacists in May 2015 was $121,500, with 90% of pharmacists earning more than $86,790 per year. Demand will also grow for additional pharmacists in mail order settings, outpatient care centers, doctor offices, and nursing care facilities.² The number of pharmacy schools has grown in recent years, creating more pharmacy school graduates and therefore more competition for jobs. Students who choose to complete a residency program gain additional experience that may improve their job prospects. Certification from the Board of Pharmacy Specialties or as a Certified Diabetes Educator may also be viewed favorably by employers.

Becoming a Pharmacist: To become a licensed pharmacist, you must complete a Doctor of Pharmacy degree (PharmD), typically a four-year professional school program. There are currently 136 fully accredited pharmacy schools in the U.S., with eight in Texas. Most PharmD programs have a minimum of 62 -90 hours of required prerequisite courses, including the basic sciences and core curriculum (About 5% require a baccalaureate degree).³ Additional requirements for admission are the Pharmacy College Admission Test (PCAT), various assessments (letters of recommendation and/or evaluations), and a complete application. Some pharmacy schools also require documentation of your volunteer or work experience in a pharmacy. Most schools subscribe to the Pharmcas application service, which opens in July. Selected applicants are interviewed in late fall and early spring. Offers of admission are generally made before June.

Prerequisites. Although a bachelor’s degree is not currently required, over half of new pharmacy students do possess one at the time of enrollment, and some school ‘prefer’ those with a degree. The proportion of

¹ American Pharmacists Association http://www.pharmacist.com/career-option-profiles (visited April 12, 2017). You will find comprehensive surveys of various pharmacy fields, including job satisfaction and working conditions. Also, examine http://pharmacyforme.org/career-pathways/
³ Detailed characteristics of each school and its prerequisite courses are available online in the School Directory at http://www.pharmcas.org. (visited April 12, 2017).
pharmacy students who enter with a degree is expected to rise as admission becomes more competitive across the country. Texas A&M does not have a designated pre-pharmacy major, so students have the luxury to choose from over 150 major fields of study. Most students select majors which include the science prerequisites and which provide an alternate career choice.

The Texas A&M Pharmacy Prerequisite chart is an excellent starting point for planning your undergraduate experience and was developed in consultation with the pharmacy schools and is accurate as of April 2017. However, please note that you are responsible for gaining approval for any alternate course. For example, if you take a different calculus course than one listed for a particular school you should contact the admissions office at each school to gain approval. Also, you are responsible for ensuring that courses taken at another school will be acceptable by the pharmacy school.

**Pharmacy College Admission Test (PCAT).** The PCAT is required for admission to any pharmacy school and is typically given during three testing periods per year: July, September, and January. Additional dates are sometimes available in October and November. The test covers general biology, microbiology, anatomy & physiology, chemistry, organic chemistry, math (including calculus), reading, writing, and verbal abilities. Although scaled scores are provided, most schools and applicants discuss scores in terms of percentiles. Applicants should plan to take the exam no later than July in the year they apply. This allows the applicant to retest in September if necessary.

**Confirming your Career in Pharmacy.** As in any career choice, applicants should confirm their decision to become a pharmacist through personal experience. Such experience ranges from shadowing a pharmacist, working in a pharmacy, participating in related research and learning more about different fields. Keep track of all experience (date, location, description) because some schools request a listing when you apply or matriculate. Working in a pharmacy as a Pharmacy Technician is a great way to obtain long-term exposure to the daily life of pharmacist. In Texas, you must pass the exam given by the Pharmacy Technician Certification Board and pass a background investigation by the State of Texas. Pharm techs typically earn competitive wages while working part-time and gaining valuable experience. Additionally, some shadowing and internship programs require you have your PharmTech trainee certification in order to participate. You should gain certification as soon as possible so that you are able to participate in activities.

**Other Items of Importance.** Pharmacy schools are looking for people of good character who enjoy helping others and who possess the intellectual curiosity to excel in a challenging curriculum. Participate in community service projects and get involved in causes that you care about. Consider working on a research project while you are an undergraduate; check with your academic advisor or favorite professors. Gain leadership experience through student activities, work, and community involvement. Some students study abroad or participate in internships with the government, nonprofits or corporations. Plan your undergrad time wisely and you will be prepared for handling the rigors of professional school. Throughout your studies at Texas A&M, take advantage of the programs and services provided by Professional School Advising, including workshops, one-on-one advising, listserv announcements, visits with pharmacy schools and professional development opportunities. The Texas A&M Pre-Pharmacy Society is an excellent organization for pre-pharmacy students.

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4 Information about testing can be found at http://www.pctb.org and licensing at http://www.tsbp.state.tx.us/Pharmacytechs.htm. You may obtain a 'trainee' license through the state without taking or passing the exam. You will typically need a trainee license in order to gain shadowing experience. Getting the license approved takes several weeks after your score is available. Testing is available throughout the year.
This prerequisite sheet is offered as a **guide** to assist you. Prerequisites change, so it is ultimately the applicant's responsibility to check with each pharmacy school on a regular basis. Applicants must get any course exceptions approved by individual pharmacy schools.

<table>
<thead>
<tr>
<th>Biology</th>
<th>Chemistry</th>
<th>Physics</th>
<th>Microbiology</th>
<th>Other biological Sciences</th>
<th>Math</th>
<th>Statistics</th>
<th>English</th>
<th>Public Speaking</th>
<th>Social Science</th>
<th>Other</th>
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<tbody>
<tr>
<td>Biol 111 AND Biol 112</td>
<td>Chem 101/111 and Chem 102/112 and Chem 227/237 and Chem 228/238</td>
<td>Phys 201</td>
<td>Biol 206 or Biol 351 or Vtpb 405</td>
<td>Biol 319 and Biol 320</td>
<td>Math 147, 151 or 171</td>
<td>Stat 201, 211, 301, 302 or 303</td>
<td>ENGL 103, 104, 203 or 210 (6 hr total)</td>
<td>Comm 203</td>
<td>3 hrs of Psyc, Soci, or Econ</td>
<td>Med Terminology; 3 hr computer science</td>
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<td>Biol 351</td>
<td>3 hours. See TxTech HSC note</td>
<td>Math 150 and Math 151</td>
<td>Stat 201 or 302</td>
<td>Engl 104 and Engl 203 and Soph. Lit* (9 hr total)</td>
<td>Comm 203</td>
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<td>Biol 351 or Vtpb 405</td>
<td></td>
<td>Math 131, 147, 151, or 171</td>
<td>Stat 201, 211, 301, 302 or 303</td>
<td>Engl 104 and (Engl 210 or 301) and soph lit.* (9 hr total)</td>
<td>Comm 203</td>
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<td>Biol 206 or Biol 351 or Vtpb 405</td>
<td>Gene 302</td>
<td>Math 131, 147, 151, or 171</td>
<td>Stat 201 or 302</td>
<td>6 hours, plus soph lit*. (9 hr total)</td>
<td>Comm 101 or 203</td>
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<td>Biol 351, Biol 456 or Vtpb 405</td>
<td>(Biol 319 &amp; 320) OR (Vibs 305 &amp; Vtpb 423)</td>
<td>Math 131, 147, 151, or 171</td>
<td>Stat 201 or 302</td>
<td>Engl 104 and soph. lit.* (9 hr total)</td>
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<td>Biol 206, Biol 351 or Vtpb 405</td>
<td>3 hr anatomy and 3 hr genetics</td>
<td>Math 131, 147, 151, or 171</td>
<td>Stat 201, 211, 301, 302 or 303</td>
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<td>Gene 301, 302, or 320</td>
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If you will not graduate from Texas A&M undergraduate before entering pharmacy school, you must meet Core Curriculum requirements for that pharmacy school. You must ask each pharmacy school to ensure that courses you take will satisfy that school's admission committee. For some schools, if you are considered "Core Curriculum Complete" at Texas A&M, then you are complete for that pharmacy school as well.

*Sophomore Literature includes Engl 221, 222, 227, 228, 231, or 232. Engl 203 might be used if taken at Texas A&M.

**TX Tech HSC note:** The three hours of 'other human based science’ could be genetics, anatomy, physiology, histology, molecular, etc

**TSU note:** There is not a one hour Medical terminology course offered at Texas A&M; Hlth 354 is acceptable and HIT1305 at Blinn is also acceptable. Math 150 (precalculus) is required even if you already took calculus; you may have to take Math 2312 or 2412 at a community college. CSCE 111 is acceptable for computer science.

**UNTHSC/UT Tyler note:** The pre-pharmacy advisor has submitted BIMS-specific courses to both schools for approval, but they currently do not count for anatomy/physiology.
Web Resources
American Association of Colleges of Pharmacy http://www.aacp.org
American Pharmacists Association http://www.pharmacist.com
Office of Professional School Advising http://opsa.tamu.edu
http://www.facebook.com/opsa.tamu
Pharmacy Application Service http://www.pharmcas.org
Pharmacy College Admission Test http://www.pcatinfo.web
Pharmacy Technician Certification Board http://www.ptcb.org
Texas A&M Pre-Pharmacy Society http://aggieprepharm.wixsite.com/home
Texas State Board of Pharmacy http://www.tsbp.state.tx.us/
Board of Pharmacy Specialties www.bpsweb.org/

Pharmacy Schools in Texas
Texas A&M HSC Rangel College of Pharmacy http://pharmacy.tamhsc.edu
Texas Southern University College of Pharmacy http://www.tsu.edu/pages/460.asp
Texas Tech HSC College of Pharmacy http://www.ttuhsc.edu/sop/
University of Houston College of Pharmacy http://www.uiw.edu/pharmacy
University of the Incarnate Word http://www.uiw.edu/pharmacy/
University of North Texas http://www.hsc.unt.edu/education/scp
University of Texas College of Pharmacy http://www.utexas.edu/pharmacy
University of Texas at Tyler http://www.utttyler.edu/pharmacy

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Professional School Advising is partially funded by the Association of Former Students