



# Pharmacy

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, pharmacists also work in hospitals, 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.<sup>1</sup>

According to the Bureau of Labor Statistics, employment of pharmacists is expected to grow 6% between 2016 and 2026. Median wages of pharmacists in May 2016 was \$122,230, with 90% of pharmacists earning more than \$87,120 per year. Demand is projected to increase for pharmacists in a variety of healthcare settings, including hospitals and clinics. These facilities will need more pharmacists to oversee the medications given to patients and to provide patient care, performing tasks such as testing a patient's blood sugar or cholesterol. The large baby-boom generation is aging, and older people typically use more prescription medicines than younger people. Higher rates of chronic diseases such as diabetes among all age groups will also lead to demand for prescription medications. In addition, scientific advances will lead to new drug products. Employment of pharmacists in some traditional retail settings, like grocery stores, is projected to decline slightly as mail order and online pharmacy sales increase. 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.<sup>2</sup>

**Becoming a Pharmacist:** To become a licensed pharmacist you must complete a Doctor of Pharmacy degree (PharmD), typically a four-year professional school program. 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).<sup>3</sup> 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.

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<sup>1</sup> American Pharmacists Association <http://www.pharmacist.com/career-option-profiles> (visited March 3, 2018). You will find comprehensive surveys of various pharmacy fields, including job satisfaction and working conditions. Also, examine <http://pharmacyforme.org/career-pathways/>

<sup>2</sup> Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2016-17 Edition*, Pharmacists, on the Internet <https://www.bls.gov/ooh/healthcare/pharmacists.htm> (visited March 3, 2018).

<sup>3</sup> Detailed characteristics of each school and its prerequisite courses are available online in the School Directory at <http://www.pharmcas.org>. (visited March 3, 2018).

**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 schools 'prefer' those with a degree. The proportion of pharmacy students who enter with a degree is expected to rise as admission becomes more competitive across the country.

Texas currently has nine pharmacy schools with twelve locations. Texas A&M does not have a designated pre-pharmacy major, so students may choose from over 200 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 a guide to assist you in planning your undergraduate experience. It was developed in consultation with the pharmacy schools and is accurate as of January 2018. 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, November, and February. The test covers general biology, microbiology, anatomy & physiology, general 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.<sup>4</sup> 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 to be around like-minded students and continue to learn about the field of pharmacy.

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<sup>4</sup> Information about testing can be found at <http://www.pctb.org> and licensing at <http://www.tsbp.state.tx.us/Pharmacytechs.htm> (visited March 8, 2018). 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 to ensure courses will satisfy that school's admission committee. Applicants must get any course exceptions approved by individual pharmacy schools.

	<b>Texas A&amp;M Univ HSC Rangel COP</b> <i>Kingsville and College Station</i>	<b>Texas Southern Univ COPHS</b> <i>Houston</i>	<b>Texas Tech Univ HSC SOP</b> <i>Amarillo, Abilene, and Dallas</i>	<b>The Univ of Texas at Austin COP</b> <i>Austin</i>	<b>The Univ of Texas at El Paso SOP</b> <i>El Paso</i>	<b>The Univ of Texas at Tyler Ben and Maytee Fisch COP</b> <i>Tyler</i>	<b>Univ of Houston COP</b> <i>Houston</i>	<b>Univ of North Texas HSC System COP</b> <i>Fort Worth</i>	<b>Univ of the Incarnate Word Feik SOP</b> <i>San Antonio</i>
Biology	BIOL 111 & BIOL 112								
Chemistry	CHEM 101/111 & CHEM 102/112 <u>AND</u> CHEM 227/237 & CHEM 228/238								
Physics	PHYS 201								
Microbiology	BIOL 206, 351, <u>OR</u> VTPB 405	BIOL 351	BIOL 206, 351 <u>OR</u> VTPB 405	<b>BIOL 351 <u>OR</u> VTPB 405</b>	BIOL 206, 351, <u>OR</u> VTPB 405	BIOL 206, 351 <u>OR</u> 456, <u>OR</u> VTPB 405	BIOL 206 <u>OR</u> 351 <u>OR</u> VTPB 405	BIOL 206, 351 <u>OR</u> VTPB 405	BIOL 351, 456 <u>OR</u> VTPB 405
Other Biological Sciences	BIOL 213 <u>OR</u> GENE 301, 302, <u>OR</u> 320	BIOL 319 & 320		GENE 301, <b>302</b> , <u>OR</u> 320	BIOL 319 & 320 <u>AND</u> GENE 301, 302, <u>OR</u> 320	BIOL 319 & 320 <u>OR</u> VTPB 423	GENE 320, 301, <u>OR</u> 302	3 hr anatomy <u>AND</u> 3 hr genetics	BIOL 319 & 320 <u>OR</u> VIBS 305 & VTPB 423
Math	MATH 147, 151, <u>OR</u> 172	MATH 150 & 151 (6 hr total)	MATH 131, 147, 151, <u>OR</u> 171	MATH 131, 147, 151, <u>OR</u> 171	MATH 131, 147, 151, <u>OR</u> 171	MATH 147, 151, <u>OR</u> 171	MATH 131, 147, 151, <u>OR</u> 171	MATH 131, 147, 151, <u>OR</u> 171	MATH 131, 147, 151, 171 <u>OR</u> 172
Statistics	STAT 201, 211, 301, 302 <u>OR</u> 303	STAT 201 <u>OR</u> 302	STAT 201, 211, <b>302</b> <u>OR</u> 303	STAT 201, 211, <u>OR</u> 302	BMEN 350, STAT 201, 211, 302, <u>OR</u> 303		STAT 201, 211, 301, 302, <u>OR</u> 303	3 hrs	STAT 201 <u>OR</u> 302
English	ENGL 103, 104, 203 <u>OR</u> 210 (6 hr total)	ENGL 104 & ENGL 203 & Soph lit* (9 hr total)		ENGL 104 & 221, 227, <u>OR</u> 231 (6 hr total)					ENGL 104 & (ENGL 210 <u>OR</u> 301) & (221, 222 <u>OR</u> other Soph Lit) (9 hr total)
Public Speaking	COMM 203	COMM 203	COMM 203			COMM 101 <u>OR</u> 203		Recommend COMM 203	COMM 203
Social Science		3 hrs of PSYC, SOCI, <u>OR</u> ECON	ECON 202 <u>OR</u> 203			ECON 202 <u>OR</u> 203	PSYC 107 <u>OR</u> SOCI 205		3 hrs of ANTH, ECON, GOVT, PSYC, <u>OR</u> SOCI
Other	See TAMHSC COP note	See TSU COPHS note			See UTEP SOP note	See UT Tyler COP note		See UNTHSC COP note	PHIL, ARTS <u>AND</u> Strongly rec BICH 410
Dual Degree Option**	MBA		MBA	PhD			MBA <u>OR</u> PhD	MS <u>OR</u> PhD	MAA

You **must** meet Core Curriculum requirements for each pharmacy school you are interested in, if you will **not** graduate with an undergraduate degree from Texas A&M, before entering pharmacy school. **For some schools**, if you are considered "Core Curriculum Complete" at Texas A&M, then you are complete for that pharmacy school as well.

\*\*Bachelor's degree required for most additional programs. Check each pharmacy school website for additional information on dual degree program(s).

**TAMHSC COP note:** A bachelor's degree will not waive the following 24 hours: 3 hrs of Art, Music, Theater, other Visual OR Performing Arts, 6 hrs Humanities, Lit, PHIL, Modern OR Classical Lang/Lit, ANTH, GEOG, OR Cultural Studies, 3 hrs of SOCI, PSYC, ECON, OR CSCE, 6 hrs HIST 105 AND 106, AND 6 hrs POLS 206 AND POLS 207.

**TSU COPHS note:** \*Lit must be a 200 level class. Bible-based literature or Technical writing will **not** be accepted. There is not a one-hour Medical terminology course offered at Texas A&M; HLTH 354 at TAMU or HITT 1305 at Blinn are 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 COP note:** Will not accept BIMS specific courses for anatomy/physiology.

**UTEP SOP note:** BICH 410 OR 440, 3 hr upper level writing intensive course AND 3 hr college level SPAN. Recommend PHIL 111, ECON 202 AND 203 for Language, Philosophy & Culture and Social & Behavioral Science Texas Core Curriculum requirements.

**UT Tyler COP note:** Will **not** accept BIMS specific course for anatomy.

## Pharmacy Schools in Texas

1. Texas A&M HSC Irma Lerma Rangel College of Pharmacy [pharmacy.tamhsc.edu](http://pharmacy.tamhsc.edu)
2. Texas Southern University College of Pharmacy and Health Sciences [tsu.edu/academics/colleges-and-schools/college-of-pharmacy-and-health-sciences/](http://tsu.edu/academics/colleges-and-schools/college-of-pharmacy-and-health-sciences/)
3. Texas Tech University HSC College of Pharmacy [www.ttuhschool.edu/pharmacy](http://www.ttuhschool.edu/pharmacy)
4. The University of Texas at Austin College of Pharmacy [pharmacy.utexas.edu](http://pharmacy.utexas.edu)
5. The University of Texas at El Paso School of Pharmacy [www.utep.edu/pharmacy](http://www.utep.edu/pharmacy)
6. The University of Texas at Tyler Ben and Maytee Fisch College of Pharmacy [www.uttyler.edu/pharmacy](http://www.uttyler.edu/pharmacy)
7. University of Houston College of Pharmacy [www.uh.edu/pharmacy](http://www.uh.edu/pharmacy)
8. University of North Texas HSC System College of Pharmacy [www.hsc.unt.edu/education/scp](http://www.hsc.unt.edu/education/scp)
9. University of the Incarnate Word Feik School of Pharmacy [www.uiw.edu/pharmacy](http://www.uiw.edu/pharmacy)

## Web Resources

- American Association of Colleges of Pharmacy (AACP) [www.aacp.org](http://www.aacp.org)  
American Pharmacists Association [www.pharmacist.com](http://www.pharmacist.com)  
Office of Professional School Advising [opsa.tamu.edu](http://opsa.tamu.edu)  
Pharmacy Application Service (PharmCAS) [www.pharmacas.org](http://www.pharmacas.org)  
PharmCAS Applications Instructions for Fall 2018 Enrollment [portal.pharmacas.org/pharmacasHelpPages/wp-content/uploads/sites/5/2016/07/Instructions-2017-2018.pdf](http://portal.pharmacas.org/pharmacasHelpPages/wp-content/uploads/sites/5/2016/07/Instructions-2017-2018.pdf)  
Pharmacy College Admission Test (PCAT) [pcatweb.info](http://pcatweb.info)  
Pharmacy Technician Certification Board [www.ptcb.org](http://www.ptcb.org)  
Texas A&M Pre-Pharmacy Society [aggieprepharm.wixsite.com/home](http://aggieprepharm.wixsite.com/home)  
Texas State Board of Pharmacy [www.tsbp.state.tx.us](http://www.tsbp.state.tx.us)  
Board of Pharmacy Specialties [www.bpsweb.org](http://www.bpsweb.org)



**CAREER CENTER**

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