

Pathway to Pharmacist

What is a Pharmacist? What's the job outlook?

Pharmacists dispense prescription medications to patients and offer expertise in the safe use of prescriptions. They may also conduct health and wellness screenings and immunizations.



Employment for pharmacists is expected to decline by 2 percent from 2020 to 2030. Many pharmacists work in retail pharmacies and drug stores, which are expected to lose jobs as more people fulfill their prescriptions via mail order or online and as pharmacy chains reduce the number of their retail locations. Pharmacy technicians are also increasingly performing tasks previously done by pharmacists. That said, demand is projected to increase in healthcare settings such as hospitals and clinics to oversee medications given to patients and patient care. The annual mean wage for pharmacists in the Denver Metro area is \$116,030.*

*U.S. Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, Pharmacists, on the Internet at <https://www.bls.gov/ooh/healthcare/pharmacists.htm#tab-1>

How do I become a Pharmacist?

Pharmacists must have a Doctor of Pharmacy (Pharm.D.) as well as licensure in the state in which they practice. Most pharmacy programs require at least 3 years of undergraduate study, although some require a bachelor's degree. Some programs require applicants take the Pharmacy College Admissions Test (PCAT), however neither CU-Anschutz or Regis currently require this exam as part of their application process. Pharm.D. programs typically take 4 years to complete.

Upon completion of the program, prospective pharmacists must pass two exams to get a license. The North American Pharmacist Licensure Exam (NAPLEX) will test pharmacy skills and knowledge and the Multistate Pharmacy Jurisprudence Exam (MPJE), or an equivalent state-specific test, will cover pharmacy law.

Pharm.D. programs in Colorado can currently be found at two institutions: University of Colorado Anschutz Medical Campus and Regis University. For more information on the admissions process for each of these programs, please refer to the following websites.

- University of Colorado Anschutz Medical Campus - <https://pharmacy.cuanschutz.edu/academics/pharmd>
- Regis University - <https://www.regis.edu/academics/majors-and-programs/graduate/pharmacy-pharmd>

Biology Faculty Advisors who can guide you for this path are:

Dr. Jeff Simpson

email: simpsonj@msudenver.edu

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Course prerequisites required for those interested in pursuing pharmacy school include:

- **General Biology with lab** – BIO 1080/1090 and BIO 1081/1091; 2 semesters
- **Human Anatomy & Physiology I & II** – BIO 2310 and BIO 2320; 2 semesters
- **General Microbiology** – BIO 2400; 1 semester
- **General Chemistry with lab** – CHE 1800/1801 and CHE 1810/1811; 2 semesters
- **Organic Chemistry with lab** – CHE 3100/3120 and CHE 3110/3130; 2 semesters
- **Biochemistry I** – CHE 4310, no lab required; 1 semester
- **Math** – MTH 1110 and MTH 1120 (prerequisites for CHE & PHY); 2 semesters
- **Calculus** – MTH 1410; 1 semester
- **Physics** – PHY 2010 or 2311; 1 semester
- **English Composition** – ENG 1010 and ENG 1020; 2 semesters
- **Public Speaking** – COMM 1010; 1 semester
- **Macroeconomics OR Microeconomics** – ECO 2010 or ECO 2020; 1 semester
- **Social Sciences** – cultural anthropology, history, psychology or sociology; 9 semester credits
- **General Education** – does NOT include vocational, arts, crafts or PE courses

**REQUIREMENTS FOR A MAJOR IN BIOLOGY
for 2020-2021 or future catalogs ONLY**

A grade of "C-" or better is required for each BIO prefix course to count towards the major

Required Biology Courses for both the B.A. or the B.S. Degree

| | |
|--|---|
| BIO 1080-3 General Biology I | 3 |
| BIO 1090-1 General Biology Lab I..... | 1 |
| BIO 1081-3 General Biology II | 3 |
| BIO 1091-1 General Biology Lab II..... | 1 |
| | |
| BIO 3520-3 General Ecology | 3 |

Take ONE of these Genetics options:

- BIO 3600-4 General Genetics (no lab).....4
 OR
 BIO 3610-4 Genetics: Principles & Analysis (has lab)4

Pick ONE of these options:

- Option 1: BIO 2100-5 General Botany
 OR
 Option 2: BIO 2400-5 General Microbiology
 OR
 Option 3: **Both BIO 2310-4 and BIO 2320-4** (Anatomy & Physiology I & II)
 (You must take both semesters to get credit for this option)
 OR
 Option 4: **Either BIO 3200-4** Invertebrate Zoology or **BIO 3260-4** Vertebrate Zoology
 (If you wish to take both zoology courses, the other will count as an upper division elective)

Students are required to take a Senior Experience course:

| Fulfills Senior Experience Requirement | |
|---|---|
| <input type="checkbox"/> BIO 4050-3 Advanced Cell & Molecular Biology | <input type="checkbox"/> BIO 4510-4 Microbial Ecology |
| <input type="checkbox"/> BIO 4230-3 Issues in Conservation Biology | <input type="checkbox"/> BIO 4540-4 Plant Ecology |
| <input type="checkbox"/> BIO 4300-3 Neurobiology | <input type="checkbox"/> BIO 4550-4 Animal Ecology |
| <input type="checkbox"/> BIO 4820-4 Developmental Biology | |
| <input type="checkbox"/> BIO 4850-3 Evolution | |

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Elective Biology courses: Biology courses from 2000, 3000, and 4000 must be completed to bring the total of biology courses approved for the major to 40 credits. *At least 21 of these Biology credits must be from the 3000 or 4000 courses of the Department of Biology.*

Recommended Elective Courses To Choose From (Specific to Pharmacy):

- BIO 3050 – Cell Biology Credits: 4
- BIO 3350 – Immunology Credits: 3

Total Credit Hours in Biology (minimum of 40) _____

Upper Division Biology Credit Hours (minimum of 21) _____

B.S. Non-Bio Course Requirements:

CHE 1800-4 Gen Chemistry I _____

CHE 1801-1 Gen Chemistry I Lab _____

CHE 1810-4 Gen Chemistry II _____

CHE 1811-1 Gen Chemistry II Lab _____

CHOOSE YOUR PATH:

CHE 3100-4 Organic Chemistry I _____

CHE 3120-1 Organic Chemistry I Lab _____

AND

CHE 3110- 3 Organic Chemistry II _____

~OR~

ºCHE 3090- 4 Survey of Organic Chem _____

CHE 3120-1 Organic Chemistry I Lab _____

AND

ºCHE 4310-4 Biochemistry _____

B.A. Non-Bio Courses Requirements:

*CHE 1100-4 Principles of Chem _____

CHE 2100-4 Intro to Org/Biochem _____

~OR~

CHE 1800-4 Gen Chemistry I _____

*CHE 1801-1 Gen Chemistry I Lab _____

CHE 1810-4 Gen Chemistry II _____

CHE 1811-1 Gen Chemistry II Lab _____

*To use CHE 1100 or 1800 for the Natural and Physical Sciences requirement, students must take the corresponding lab (CHE 1150 or CHE 1801, respectively).

- º Note on CHE 3090 – Survey of Organic Chemistry - this class is no longer being offered
- º Note on CHE 4310 – Biochemistry – requires completion of both Organic Chemistry I and II

Math Requirement:

Two Semesters of Math: _____

One Semester of Math: _____

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Choose from the following math courses:

MTH 1108-1109 (Stretch College Algebra)*, MTH 1111 and MTH 1101 (College Algebra with lab), MTH 1110 (College Algebra), MTH 1112 (College Algebra through Modeling), MTH 1115/1116 (College Algebra through Modeling with Lab), MTH 1120 (Trigonometry), MTH 1210 (Intro to Statistics), MTH 1410 (Calculus I)**

MTH 1108-1109 is a Stretch Course and only counts as ONE of the required math courses for the BIO BS.

Students planning to take Calculus must take MTH 1108-1109, MTH 1110, or MTH 1111

Physics Requirement (Specific to Pharmacy)

PHY 2010 - College Physics I*

OR

PHY 2311 - General Physics I**

*Prerequisite for PHY 2010 includes MTH 1120- College Trigonometry

**Prerequisite for PHY 2311 includes MTH 1410 – Calculus I

General Policies In Applying to Pharmacy School

1. All pre-pharmacy coursework must be completed with a “C” or better.
2. Calculus and pre-pharmacy science coursework taken more than 10 years prior to the fall semester admission must be retaken for a grade unless the applicant’s academic or work experiences relate directly to the coursework.

General Studies Requirements (33 cr. total), please visit

<http://www.msudenver.edu/advising/facultystaff/generalstudiesrequirements/>

Total Credits (Minimum 120) _____

Total Upper Division Credits (Minimum 40 TOTAL) _____

What is your Minor? (required) _____