

# UNC ESHELMAN SCHOOL OF PHARMACY

## Introduction

Pharmacists are drug information experts and are among the most trusted and most accessible health care professionals. Generalists practice in a variety of environments, including community pharmacies, health-system pharmacies, and the pharmaceutical and health care industries. Specialty pharmacy practitioners pursue training beyond the doctor of pharmacy (Pharm.D.) through residencies and fellowships and may ultimately practice in areas such as pediatrics, geriatrics, cardiology, oncology, ambulatory/community care, and others.

Pharmacists evaluate complex approaches to drug therapy and advise patients and other health care professionals on strategies to achieve the best results from pharmaceutical care. Other pharmacists are engaged in practices that monitor, manage, and implement policies affecting drug prescription and use across large groups of patients, such as those enrolled in a health plan.

The UNC Eshelman School of Pharmacy's doctor of pharmacy is a 4-year professional program that offers a curriculum centered on patient care. Our Pharm.D. program offers a highly immersive curricula, with patient care immersion experiences commencing during students' second year of study.

## Advising

In the UNC Eshelman School of Pharmacy, advising is a form of teaching. Faculty advisors serve as content experts and mentors and are assigned to new students prior to the first semester of study. To fully maximize both curricular and co-curricular experiences, students are encouraged to schedule consistent and ongoing advising appointments throughout the course of their study.

## Career Opportunities

Pharmacy offers a variety of opportunities for career advancement and job security in all areas of the health care system, including:

- Community pharmacy, as a practitioner or a manager in a retail pharmacy, clinic, or office practice
- Health system pharmacy, as a practitioner, supervisor, or manager in large or small hospitals, nursing homes, extended care facilities, and health-maintenance organizations
- Pharmaceutical industry, in positions involving research, production, product development, product marketing, and drug information
- Government, in the United States Public Health Service, Veterans Administration, Drug Enforcement Administration, Food and Drug Administration, and military services

## Admission Requirements

The doctor of pharmacy requires at least two years of undergraduate study (at least 72 credit hours), followed by four years of study in the professional program.

Applicants must complete all prerequisites by the end of May of the year they plan to enroll.

Students who will have earned a baccalaureate degree prior to enrolling in their first year of the program must complete the math and science prerequisites only.

Students who will not have earned a baccalaureate degree prior to enrolling in their first year of the program must complete both the math and science prerequisites and the general education requirements.

## Application Procedures

Students applying to the UNC Eshelman School of Pharmacy must submit complete applications to the Pharm.D. program through the Pharmacy College Application Service (PharmCAS) and the school. For application deadlines, processes, and procedures, visit the website (<http://www.pharmacy.unc.edu>).

## Prerequisites

All prerequisite courses must be completed with a letter grade of C minus or better (not Pass/Fail).

### If you have a bachelor's degree:

Code	Title	Hours
CHEM 101 & 101L	 General Descriptive Chemistry I and  Quantitative Chemistry Laboratory I <sup>H, F</sup>	4
CHEM 102 & 102L	 General Descriptive Chemistry II and Quantitative Chemistry Laboratory II <sup>H, F</sup>	4
CHEM 241 & 241L	Modern Analytical Methods for Separation and Characterization and Laboratory in Separations and Analytical Characterization of Organic and Biological Compounds <sup>1, H</sup>	4
CHEM 261	Introduction to Organic Chemistry I <sup>H</sup>	3
CHEM 262 & 262L	Introduction to Organic Chemistry II and  Laboratory in Organic Chemistry <sup>H</sup>	4
BIOL 101 & 101L	 Principles of Biology and  Introductory Biology Laboratory <sup>H, F</sup>	4
BIOL 252 & 252L	 Fundamentals of Human Anatomy and Physiology and Fundamentals of Human Anatomy and Physiology Laboratory <sup>H</sup>	4
MCRO 251	Introductory Medical Microbiology	4
PHYS 114	 General Physics I: For Students of the Life Sciences <sup>F</sup>	4
PHYS 115	 General Physics II: For Students of the Life Sciences <sup>2, F</sup>	4
MATH 231	 Calculus of Functions of One Variable I <sup>H, F</sup>	4
STOR 151 or STOR 155	 Introduction to Data Analysis and  Introduction to Data Models and Inference	3
CHEM 430	Introduction to Biological Chemistry <sup>H</sup>	3

<sup>H</sup> Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Only required for students completing prerequisite courses at UNC-Chapel Hill.

<sup>2</sup> Not required of students completing CHEM 241/CHEM 241L at UNC-Chapel Hill.

## If you do not have a bachelor's degree:

Students enrolling in the program without a bachelor's degree are required to complete at least two years of undergraduate coursework (at least 60 semester credit hours) including the math, science, and general education prerequisites from a regionally accredited institution.

Code	Title	Hours
CHEM 101 & 101L	 General Descriptive Chemistry I and  Quantitative Chemistry Laboratory I <sup>H, F</sup>	4
CHEM 102 & 102L	 General Descriptive Chemistry II and  Quantitative Chemistry Laboratory II <sup>H, F</sup>	4
CHEM 241 & 241L	Modern Analytical Methods for Separation and Characterization and Laboratory in Separations and Analytical Characterization of Organic and Biological Compounds <sup>1, H</sup>	4
CHEM 261	Introduction to Organic Chemistry I <sup>H</sup>	3
CHEM 262 & 262L	Introduction to Organic Chemistry II and  Laboratory in Organic Chemistry <sup>H</sup>	4
BIOL 101 & 101L	 Principles of Biology and  Introductory Biology Laboratory <sup>H, F</sup>	4
BIOL 252 & 252L	 Fundamentals of Human Anatomy and Physiology and  Fundamentals of Human Anatomy and Physiology Laboratory <sup>H</sup>	4
MCRO 251	Introductory Medical Microbiology	4
PHYS 114	 General Physics I: For Students of the Life Sciences <sup>F</sup>	4
PHYS 115	 General Physics II: For Students of the Life Sciences <sup>2, F</sup>	4
MATH 231	 Calculus of Functions of One Variable I <sup>H, F</sup>	4
STOR 151 or STOR 155	 Introduction to Data Analysis and  Introduction to Data Models and Inference	3
CHEM 430	Introduction to Biological Chemistry <sup>H</sup>	3

H Honors version available. An honors course fulfills the same requirements as the nonhonors version of that course. Enrollment and GPA restrictions may apply.

F FY-Launch class sections may be available. A FY-Launch section fulfills the same requirements as a standard section of that course, but also fulfills the FY-SEMINAR/FY-LAUNCH First-Year Foundations requirement. Students can search for FY-Launch sections in ConnectCarolina using the FY-LAUNCH attribute.

<sup>1</sup> Only required for students completing prerequisite courses at UNC-Chapel Hill.

<sup>2</sup> Not required of students completing CHEM 241/CHEM 241L at UNC-Chapel Hill.

## General Education Prerequisites

English 105 (Composition and Rhetoric) 3

Social sciences; 2 courses; 6  
examples of accepted courses include psychology, sociology, economics, political science, and anthropology

Humanities; two courses; examples 6  
of accepted courses include English, history, philosophy, ethics, ethnic and gender studies, social justice, or foreign language study

## Professional Degree

- Doctor of Pharmacy (Pharm.D.) (<https://catalog.unc.edu/undergraduate/programs-study/pharmd/>)

## Minor

- Pharmaceutical Sciences Minor (<https://catalog.unc.edu/undergraduate/programs-study/pharmaceutical-sciences-minor/>)

## Graduate Programs

- M.S. in Pharmaceutical Sciences (<https://catalog.unc.edu/graduate/schools-departments/eshelman-school-pharmacy/>)
- M.P.S. in Regulatory Science (<https://catalog.unc.edu/graduate/schools-departments/eshelman-school-pharmacy/>)
- Ph.D. in Pharmaceutical Sciences (<https://catalog.unc.edu/graduate/schools-departments/eshelman-school-pharmacy/>)

## Distinguished Professors

**Kristy Ainslie**, Pharmacoengineering and Molecular Pharmaceutics  
**Jeffrey Aubé**, Chemical Biology and Medicinal Chemistry  
**Ronny Bell**, Pharmaceutical Outcomes and Policy  
**Bob Blouin**, Pharmacotherapy and Experimental Therapeutics  
**Kim Brouwer**, Pharmacotherapy and Experimental Therapeutics  
**Stefanie Ferreri**, Practice Advancement  
**Stephen Frye**, Chemical Biology and Medicinal Chemistry  
**Leaf Huang**, Pharmacoengineering and Molecular Pharmaceutics  
**Michael Jay**, emeritus, Pharmacoengineering and Molecular Pharmaceutics  
**Alexander Kabanov**, Pharmacoengineering and Molecular Pharmaceutics  
**Angela Kashuba**, Pharmacotherapy and Experimental Therapeutics, Dean of Eshelman School of Pharmacy

**David Lawrence**, Chemical Biology and Medicinal Chemistry  
**Craig Lee**, Pharmacotherapy and Experimental Therapeutics  
**Jian Liu**, Chemical Biology and Medicinal Chemistry  
**Denise Rhoney-Metzger**, Practice Advancement  
**Betsy Sleath**, Pharmaceutical Outcomes and Policy  
**Alexander Tropsha**, Chemical Biology and Medicinal Chemistry

**Paul Watkins**, Pharmacotherapy and Experimental Therapeutics

## Professors of the Practice

John Bamforth, Eshelman Institute for Innovation  
 Jon Easter, Practice Advancement  
 Ouita Gattton, Practice Advancement  
 Anthony Hickey, UNC Catalyst for Rare Disease  
 Stephanie Kiser, Practice Advancement

## Professors

Timothy Ives, Practice Advancement  
 Jennifer Elston-Lafata, Pharmaceutical Outcomes and Policy  
 Samuel Lai, Pharmacoeengineering and Molecular Pharmaceutics  
 Andrew Lee, Chemical Biology and Medicinal Chemistry

Rihe Liu, Chemical Biology and Medicinal Chemistry

Mary McClurg, Practice Advancement  
 William Zamboni, Pharmacotherapy and Experimental Therapeutics

## Associate Professors

Albert Bowers, Chemical Biology and Medicinal Chemistry  
 Yanguang Cao, Pharmacotherapy and Experimental Therapeutics  
 Delesha Carpenter, Pharmaceutical Outcomes and Policy  
 Daniel Crona, Pharmacotherapy and Experimental Therapeutics  
 Julie Dumond, Pharmacotherapy and Experimental Therapeutics  
 Daniel Gonzalez, Pharmacotherapy and Experimental Therapeutics  
 Nathaniel Hathaway, Chemical Biology and Medicinal Chemistry  
 Erin Heinzen Cox, Pharmacotherapy and Experimental Therapeutics  
 Shawn Hingtgen, Pharmacoeengineering and Molecular Pharmaceutics  
 Michael Jarstfer, Chemical Biology and Medicinal Chemistry  
 Jacqueline McLaughlin, Practice Advancement  
 Juliane Nguyen, Pharmacoeengineering and Molecular Pharmaceutics  
 Sachiko Ozawa, Practice Advancement  
 Gauri Rao, Pharmacotherapy and Experimental Therapeutics  
 Robert Shrewsbury, Practice Advancement  
 Scott Singleton, Chemical Biology and Medicinal Chemistry  
 Kathleen Thomas, Pharmaceutical Outcomes and Policy  
 Carolyn Thorpe, Pharmaceutical Outcomes and Policy  
 Joshua Thorpe, Pharmaceutical Outcomes and Policy  
 Dennis Williams, Pharmacotherapy and Experimental Therapeutics  
 Timothy Wiltshire, Pharmacotherapy and Experimental Therapeutics  
 Qisheng Zhang, Chemical Biology and Medicinal Chemistry

## Assistant Professors

Rachel Church, Pharmacotherapy and Experimental Therapeutics  
 Klarissa Jackson, Pharmacotherapy and Experimental Therapeutics  
 Lindsey James, Chemical Biology and Medicinal Chemistry  
 Alan Kinlaw, Pharmaceutical Outcomes and Policy  
 Robert McGinty, Chemical Biology and Medicinal Chemistry  
 Megan Roberts, Pharmaceutical Outcomes and Policy  
 Amanda Seyerle, Pharmaceutical Outcomes and Policy

## Teaching Assistant Professor

Laura Rhodes, Practice Advancement

## Research Professors

Kenneth Pearce Jr., Center for Integrative Chemical Biology and Drug Discovery (CICBDD)  
 Xiaodong Wang, Center for Integrative Chemical Biology and Drug Discovery (CICBDD)  
 Timothy Willson, Structural Genomics Consortium

## Research Associate Professors

Eric Bachelder, Pharmacoeengineering and Molecular Pharmaceutics  
 Elena Batrakova, Center for Nanotechnology in Drug Discovery (CNDD)  
 David Drewry, Structural Genomics Consortium  
 Juan Li, Pharmacoeengineering and Molecular Pharmaceutics  
 Eugene Muratov, Chemical Biology and Medicinal Chemistry  
 Samantha Pattenden, Chemical Biology and Medicinal Chemistry  
 Elias Rosen, Pharmacotherapy and Experimental Therapeutics  
 Marina Sokolsky-Papkov, Pharmacoeengineering and Molecular Pharmaceutics  
 Yongmei Xu, Chemical Biology and Medicinal Chemistry

## Research Assistant Professors

Katelyn Arnold, Chemical Biology and Medicinal Chemistry  
 Alison Axtman, Structural Genomics Consortium  
 Mackenzie Cottrell, Pharmacotherapy and Experimental Therapeutics  
 Anita Crescenzi, Practice Advancement  
 Scott Davis, Pharmaceutical Outcomes and Policy  
 Yury Desyaterik, Pharmacotherapy and Experimental Therapeutics  
 Kevin Frankowski, Chemical Biology and Medicinal Chemistry  
 Masuo Goto, Chemical Biology and Medicinal Chemistry  
 Lauren Haar, Chemical Biology and Medicinal Chemistry  
 Dulcie Lai, Pharmacotherapy and Experimental Therapeutics  
 Jine Li, Chemical Biology and Medicinal Chemistry  
 Melanie Livet, Practice Advancement  
 Jillian Perry, Center for Nanotechnology in Drug Discovery (CNDD)  
 Paul Sapienza, Chemical Biology and Medicinal Chemistry  
 Zhenwei Song, Pharmacotherapy and Experimental Therapeutics  
 Junjiang Sun, Pharmacoeengineering and Molecular Pharmaceutics  
 Jacqueline Tiley, Pharmacotherapy and Experimental Therapeutics  
 Qunzhao Wang, Chemical Biology and Medicinal Chemistry  
 Bin Xiao, Pharmacoeengineering and Molecular Pharmaceutics

## Clinical Professors

Robert Dupuis, Pharmacotherapy and Experimental Therapeutics  
 Adam Persky, Pharmacotherapy and Experimental Therapeutics  
 Jo Ellen Rodgers, Pharmacotherapy and Experimental Therapeutics  
 Mollie Scott, Practice Advancement  
 John Greene Shepherd, Practice Advancement

## Clinical Associate Professors

Amanda H. Corbett, Pharmacotherapy and Experimental Therapeutics  
 Wendy Cox, Practice Advancement  
 Stephen Eckel, Practice Advancement  
 Suzanne Harris, Practice Advancement  
 Macary Marciniak, Practice Advancement  
 Nicole Pinelli Reitter, Practice Advancement  
 Philip Rodgers, Practice Advancement  
 Deborah Sturpe, Pharmacotherapy and Experimental Therapeutics  
 Charlene Williams, Practice Advancement

## Clinical Assistant Professors

Heidi Anksorus, Practice Advancement  
 Amber Frick, Pharmacotherapy and Experimental Therapeutics  
 Kathryn Fuller, Practice Advancement  
 Kathryn Morbitzer, Practice Advancement  
 Benyam Muluneh, Pharmacotherapy and Experimental Therapeutics  
 Kimberly Sanders, Practice Advancement  
 Amanda Savage, Practice Advancement  
 Carla White, Practice Advancement  
 Jacqueline Zeeman, Practice Advancement

*The course requirements for the Pharm.D. program have been edited and republished on 11.19.2025.*

## PHCY–Pharmacy

All courses and electives for the Pharm.D. program are listed below by year in the curriculum. See the Student Handbook (<https://pharmdstudenthandbook.web.unc.edu/>) and the program's Web site (<https://pharmacy.unc.edu/education/pharmd/curriculum/>) for information about course sequence by semester.

### Professional Year 1

Code	Title	Hours
Fall Term		
PHCY 500	Pharmacy Bridging Course	3
PHCY 501	On Becoming a Pharmacist	1
PHCY 502	Pathophysiology of Human Disease	3.5
PHCY 503	Molecular Foundations of Drug Action	3.5
PHCY 504	Evidence-Based Practice	3
PHCY 508	Pharmaceutical Calculations	1
PHCY 509	Immunizations and Medication Administration Training	1
PHCY 513L	Pharmaceutical Compounding	1.5
Fall total credit hours		17.5
Spring Term		
PHCY 510	Foundations of Clinical Pharmacology	3
PHCY 511	Foundations of Pharmacokinetics	3
PHCY 512	Pharmaceutics and Drug Delivery Systems	3
PHCY 516	Foundations of Patient Care	2
PHCY 519	Self-Care and Nonprescription Medications	1.5
PHCY 529	Pharmacotherapy: Foundations	3
Spring total credit hours		15.5
Summer Term		
Assigned 1 immersion experience:		6
PHCY 591	Immersion Experience: Community	
PHCY 691	Immersion Experience: Health System	
Summer total credit hours		6
PY1 total credit hours		39

### Professional Year 2

Code	Title	Hours
Fall Term		
PHCY 601L	Patient Care Lab	1.5
PHCY 609	The US Healthcare System	2
PHCY 611	Applied Clinical Pharmacology	3
PHCY 617	The Patient Care Experience	1.5
PHCY 630	Pharmacotherapy: Applied	4
Fall total credit hours		12
Spring Term		
PHCY 619	Business of Healthcare: Focus on the Pharmacy Enterprise	2
PHCY 631	Pharmacotherapy: Integrated I	5
PHCY 636	Leadership and Professional Development I	1
Enroll in 1 or 2 elective courses (Need total of 7 elective credit hours to graduate)		
Assigned 1 immersion experience:		6
PHCY 591	Immersion Experience: Community	

PHCY 691	Immersion Experience: Health System	
PHCY 791	Immersion Experience: Direct-Patient Care	
Spring total credit hours		14
		+elective credit hours
PY2 total credit hours		26
		+elective credit hours

### Professional Year 3

Code	Title	Hours
Fall Term		
PHCY 732	Integrated Pharmacotherapy II	5
PHCY 737	Leadership and Professional Development II	1
Enroll in 1 or 2 elective courses (Need total of 7 elective credit hours to graduate)		
Assigned 1 immersion experience:		6
PHCY 591	Immersion Experience: Community	
PHCY 691	Immersion Experience: Health System	
PHCY 791	Immersion Experience: Direct-Patient Care	
Fall total credit hours		12
		+elective credit hours
Spring Term		
PHCY 718	The Patient Care Experience II	2
PHCY 722	Pharmacy Law: Regulation of Pharmacy Practice	3
PHCY 733	Integrated Pharmacotherapy III	5
Enroll in 1 or 2 elective courses (Need total of 7 elective credit hours to graduate)		
Spring total credit hours		10
		+elective credit hours
PY3 total credit hours		22
		+elective credit hours

### Professional Year 4

Code	Title	Hours
Fall Term Seminar		
PHCY 898	Professional Development and Career-Readiness: Fourth Year Seminar I	1
Spring Term Seminar		
PHCY 899	Professional Development and Career-Readiness: Fourth Year Seminar II	1
Fall/Spring Terms (immersions may be scheduled for either term)		
PHCY 891	Advanced Immersion Experience: Community	
PHCY 892	Advanced Immersion Experience: Health Systems	
PHCY 893	Advanced Immersion Experience: Ambulatory Care	
PHCY 894	Advanced Immersion Experience: General Medicine	
PHCY 895	Advanced Immersion Experience: Clinical I	

PHCY 896	Advanced Immersion Experience: Clinical II	
PHCY 897	Advanced Immersion Experience: Clinical III	
Choose two of the following immersions:		
PHCY 886	Advanced Immersion Experience: Patient Care Elective I	
PHCY 887	Advanced Immersion Experience: Patient Care Elective II	
PHCY 888	Advanced Immersion Experience: Non-Patient Care Elective I	
PHCY 889	Advanced Immersion Experience: Non-Patient Care Elective II	
PY4 total credit hours		38
Pharm.D. program total credit hours		132

## Electives

See the Student Handbook (<https://pharmdstudenthandbook.web.unc.edu/>) for the Pharm.D. Elective policy. The below list does not include all courses offered by other UNC departments and schools that may be approved electives.

Code	Title	Hours
PHCY 608I	Interprofessional Perspectives Diabetes Mellitus Management	2
PHCY 700	SHAC: Community Outreach and Service Learning	0
PHCY 624	Research and Scholarship in Pharmacy I	1.5
PHCY 725	Research and Scholarship in Pharmacy II	1.5
PHCY 726	Research and Scholarship in Pharmacy III	3
PHCY 800	Geriatric Pharmacy Practice	3
PHCY 801	Radiopharmacy I: Introduction to Radiopharmacy	2
PHCY 802	Radiopharmacy 2 - The Drugs of Nuclear Medicine	2
PHCY 803	Radiopharmacy 3	3
PHCY 804	Travel Medicine Care	1.5
PHCY 807	Veterinary Pharmacotherapy	3
PHCY 808	Critical Care	3
PHCY 810	The Science of Pharmaceutical Compounding	1
PHCY 811	Infectious Diseases	1.5
PHCY 812	Pediatric Pharmacotherapy	1.5
PHCY 813	Clinical Toxicology	1.5
PHCY 814	Disaster Preparedness and Emergency Care	1.5
PHCY 815	Data Science in Pharmacy	1
PHCY 817	Making Medicine: The Process of Drug Development	1.5
PHCY 822	Hematology/Oncology Pharmacotherapy	3
PHCY 823	International Clinical Classroom Case Discussion	2
PHCY 824	Solid Organ Transplantation Pharmacy Practice	1.5
PHCY 825	Business of Health Care Seminar	1.5
PHCY 826	Business of Health Care Seminar II	1.5
PHCY 827	Business of Health Care Seminar III	2
PHCY 832	Innovations in Community-Based Pharmacy Practice	1.5
PHCY 833	Advanced Cardiovascular Pharmacy	1.5
PHCY 835	LGBTQIA+ Affirming Care	1.5
PHCY 836	Prevention, Treatment, and Recovery of Substance Use Disorders	1.5
PHCY 837	Pharmacogenetics	1.5

PHCY 840	Health Policy and Managed Care	3
PHCY 841	Rural Pharmacy Health 1: Introduction to Rural Pharmacy Practice	1.5
PHCY 842	Rural Pharmacy Health 2: Cultural Responsiveness in Rural Health	1.5
PHCY 843	Rural Pharmacy Health 3: Interprofessional Practice	1.5
PHCY 844	Rural Pharmacy Health 4: Population Health Management	1.5
PHCY 846	Perspectives in Mental Health	2
PHCY 850	Pharmacy Internship and Career Development	1.5
PHCY 851	Foundations in Ambulatory Care	2
PHCY 852	Ambulatory Care Services I	1.5
PHCY 853	Ambulatory Care Pharmacy Services II	1.5
PHCY 854	Ambulatory Care Capstone Course	2
PHCY 870	Global Pharmacy Elective	1.5
PHRS 815	Foundations in Implementation Science: Examples in Precision Health and Society	1.5

## Contact Information

### UNC Eshelman School of Pharmacy

Visit Program Website (<http://www.pharmacy.unc.edu>)  
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### Dean

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